#### BLACK SEA REGION | EUROPE | MIDDLE EAST

NOVEMBER 2020

# EINDUSTRY REVIEW

### CASE STUDY The ROMEO Project

#### LUKOIL ANNOUNCES BLACK SEA EXIT

Exxon Wants USD 1.2bn for Its Stake in Neptun Deep Project

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# Catalin Nita, Executive Director of the Oil and Gas Employers' Federation

Importance of Being Digital in Oil & Gas

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# COVID-19 CRISIS **Reshaping** the Future of Energy

n its latest report, the International Energy Agency shows how the response to the Covid-19 crisis can reshape the future of energy. The Covid-19 crisis has

left scars that surely will last for years to come. But whether this upheaval ultimately helps or hinders efforts to accelerate clean energy transitions and reach international energy and climate goals will depend on how governments respond to today's challenges.

The World Energy Outlook 2020 focuses on the pivotal period of the next 10 years, exploring different pathways out of the crisis. The new report provides the latest IEA analysis of the pandemic's impact: global energy demand is set to drop by 5% in 2020, energy-related CO2 emissions by 7%, and energy investment by 18%. The WEO's established approach – comparing different scenarios that show how the energy sector could develop – is more valuable than ever in these uncertain times. Among these pathways the following are particularly important.

• The Stated Policies Scenario (STEPS), in which Covid-19 is gradually brought under control in 2021 and the global economy returns to pre-crisis levels the same year. This scenario reflects all of today's announced policy intentions and targets, insofar as they are backed up by detailed measures for their realisation. • The Delayed Recovery Scenario (DRS) is designed with the same policy assumptions as in the STEPS, but a prolonged pandemic causes lasting damage to economic prospects. The global economy returns to its pre-crisis size only in 2023, and the pandemic ushers in a decade with the lowest rate of energy demand growth since the 1930s.

• In the Sustainable Development Scenario (SDS), a surge in clean energy policies and investment puts the energy system on track to achieve sustainable energy objectives in full, including the Paris Agreement, energy access and air quality goals. The assumptions on public health and the economy are the same as in the STEPS.

• The new Net Zero Emissions by 2050 case (NZE2050) extends the SDS analysis. A rising number of countries and companies are targeting net-zero emissions, typically by mid-century. All of these are achieved in the SDS, putting global emissions on track for net zero by 2070. The NZE2050 includes the first detailed IEA modelling of what would be needed in the next ten years to put global CO2 emissions on track for net zero by 2050.

The vision of a net-zero emissions world is increasingly coming into focus. The ambitious pathway mapped out in the Sustainable Development Scenario relies on countries and companies hitting their announced net-zero emissions targets on time and in full, bringing the entire world to net zero by 2070.

"Despite a record drop in global emissions this year, the world is far from doing enough to put them into decisive decline. The economic downturn has temporarily suppressed emissions, but low economic growth is not a low-emissions strategy – it is a strategy that would only serve to further impoverish the world's most vulnerable populations," warns the Executive Director of the International Energy Agency Dr Fatih Birol.

He concludes that only faster structural changes to the way we produce and consume energy can break the emissions trend for good. Governments have the capacity and the responsibility to take decisive actions to accelerate clean energy transitions and put the world on a path to reaching our climate goals, including net-zero emissions.

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#### EUR 30bn to Accelerate Economic Revival

Minister of Economy, Energy and Business Environment Virgil Popescu attended a meeting organized by Romanian President Klaus Iohannis, together with PM Ludovic Orban and ministers with responsibilities in the field of European funds management to analyse the status of preparation of the National Recovery and Resilience Plan.

Funds to be accessed through the multiannual budget of the Union for the period 2021-2027 is a historical opportunity to develop Romania, to build highways, railways, to modernize the energy and environment infrastructure, to implement digitization programs in the economy and administration. During the meeting, discussions were held on specific ways for Romania to fully access and use as effective as possible these funds.

Twelve priority directions were established, namely: health, education, digitization and cybersecurity, sustainable transport, combating climate change, environmental protection, energy, energy efficiency, urban mobility, business environment and entrepreneurship, researchinnovation and increasing the capacity of resilience in conditions of crisis in the health and food areas.

#### MEEMA Completed the Guide for the 'Electric Up' Program

Under the Electric Up program, the state grants non-reimbursable funds of up to EUR 100,000 to companies in HORECA sector, to install photovoltaic panels with an installed power of 27 kWp - 100 kWp, as well as recharging stations of 22 KW for electric and plug-in hybrid vehicles.

Examples of expenses to be settled under this program: expenses with the acquisition of the photovoltaic panel system with an installed power of at least 27 kWp and maximum 100 kWp, having as main parts: photovoltaic panels; inverter(s); connection equipment; system assembly structure; means of communication; smart meters measuring the amount of energy produced by the photovoltaic panel system installed and which allow remote collection and transmission of relevant data, in electronic format; direct current/alternating current electrical panel; expenses with the acquisition of at least one recharging station of minimum 22 kW for electric and plug-in hybrid vehicles, with minimum two charging units; expenses with the design, obtaining the necessary permits.

#### Romania Makes Progress in Balancing and Transparency in the Gas Market

The European Federation of Energy Traders (EFET) published its seventh edition of the Gas Hubs Benchmarking Study. Some progress has been made in almost every market, though improvement has mostly been marginal. Key changes have been observed in better transparency and implementation of the Balancing Network Code. The study reflects specifically the design of the virtual trading points in each market; the success of a hub also depends on wider market conditions that are not measured here.

The 2020 update focuses on new and less mature hubs in line with the original objectives of the study and no longer measures the most developed virtual trading points. For the first time, it also includes assessments of the Republic of Ireland, the Baltic markets and Finland. The assessment criteria were unchanged from 2019, but the revised focus provides opportunities for refinement in the coming year.

The Republic of Ireland and the Baltic markets with Finland have been added for the first time this year and make a solid start with good transparency and balancing rules. Greatest gains have been made in Ukraine, Bulgaria and Romania again related to balancing and transparency; gas release programmes in Bulgaria and Romania took place though the design was criticized by EFET and they remain low in the table.

#### Deloitte Romania Advised CEZ Group in the Sale of Its Romanian Subsidiaries



Deloitte Romania advised the Czech energy group CEZ in the sale of seven of its Romanian subsidiaries, active in electricity distribution, supply and renewables, to the infrastructure investor Macquarie Infrastructure and Real Assets (MIRA), one of the world's leading alternative asset managers, owned by the Australian group Macquarie. The assets included in the transaction are CEZ Romania's electricity distribution network, the electricity and gas supply business, with 1.4 million clients, and the largest onshore wind park in Europe, located in Fantanele-Cogealac. This is considered a landmark deal in the Romanian mergers and acquisitions market and the largest transaction in the energy sector in the last years. The agreement was signed at the end of October 2020 for an undisclosed amount and is subject to approval from the European Antitrust Authority and the Romanian Supreme Council of Defence.

CEZ Group, which entered the Romanian market in 2005, announced in June 2019 its new strategy, which included the decision to sell selected assets in several countries, among which Romania, Bulgaria, and Poland. Upon the transaction completion, the Czech group will remain active in Romania in energy trading and energy services (ESCO).

"This is a landmark deal for any professional in our field, considering its impact on the local energy industry, its duration of over one year and the crossborder collaboration it required. I would like to thank CEZ Group for entrusting Deloitte with this complex project for which we combined expertise from teams siting in multiple countries, including experts from Deloitte Czech Republic, to be able to provide all the knowledge and experience of our network and make sure that our client is served in the most proficient possible way. Upon its completion, this transaction will mark the entrance on the Romanian market of one of the world's largest financial group, Macquarie, which has been clear about its interest in the local market for several years," stated Radu Dumitrescu, Financial Advisory Partner-incharge, Deloitte Romania.



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#### **HEADLINES**

#### Albania to Launch New Auction for a PV Park

Albania will launch the third auction for the construction of a solar photovoltaic park, with a planned capacity of 100 MW.

It would be the third auction for large solar power plants in the country. In August Albania signed a contract for the 140 MW Karavasta project with Voltalia, which would now be the biggest photovoltaic power plant of its kind in Southeastern Europe. The first auction for the project in the Akerni salt flats has been on hold for almost two years, ever since India Power's consortium gave the best bid at Albania's first auction.

The auction rules will be similar to competition for the Karavasta solar park. The state will pay a privileged price for the production from 50 MW, while the rest will be sold on the market. The price achieved on auction for Karavasta is the lowest solar power price in Balkans. Voltalia has offered to sell electricity for just EUR 24.89 per MWh while country authorities said it would agree to the fixed price for half of the 140 MW for 15 years, while the contract is for 30 years.

On the first auction, for the Akerni project, India Power's consortium offered EUR 59.9 per MWh for half of the planned 100 MW. Voltalia also participated in the auction.

### EUR 9bln from the EC for Western Balkans

The European Commission adopted an extensive economic and investment plan for the Western Balkans, which aims to boost the long-term economic recovery of the region, to support green and digital transition, as well as promote regional integration and convergence with the European Union. The economic and investment plan sets a substantial package of investment measures for the region, worth up to EUR 9 billion. They will support sustainable connectivity, human capital, competitiveness, and inclusive growth, as well as the double green and digital transition.

In parallel with the economic investment plan for supporting the region, the Commission presented guidelines on the implementation of the Green Agenda for the Western Balkans, which is expected to be adopted within the Western Balkans Summit, which will take place in Sofia in November 2020. It provides for actions organized around five pillars, namely: climate action, including decarbonization, energy and mobility; circular economy, addressing especially waste, recycling, sustainable production and efficient use of resources; biodiversity, aiming at the protection and restoration of the natural wealth of the region; combating air, water and soil pollution and sustainable food systems and rural areas.

#### **Boskalis' Contracts for Coastal Protection and Maintenance**

Boskalis recently secured three contracts for coastal protection and port maintenance activities in Germany. These dredging contracts carry a combined value of EUR 45 million for Boskalis and will all commence in the coming months.

The first contract was awarded by the German Waterways and Shipping Office WSA Weser-Jade-Nordsee to upgrade the existing coastal defence on the island of Wangerooge to provide flood protection to the island's residents. This project will be executed with a local German partner and involves the reinforcement of the groins and revetment for which 200,000 tons of rock will be used. In addition to a backhoe dredger several split barges will be deployed. Construction works will commence in November 2020 and are expected to be completed late 2021.

Boskalis furthermore received a contract award from WSA Weser-Jade-Nordsee for maintaining a 90-kilometer-long section of the shipping fairway of the Weser river between Nordenham and Bremerhaven. Under a two-year maintenance contract Boskalis will dredge a total quantity of around 14 million cubic meters of sand and silt, which will be deposited at designated locations along the river. Boskalis will deploy a medium-sized trailing suction hopper dredger to carry out the dredging work that will start early 2021 and last until the end of 2022.





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#### **HEADLINES**

#### bp Brings Ghazeer Gas Field Online

bp, in partnership with OQ, PETRONAS and the Ministry of Energy & Minerals in Oman, announced production has begun from its Block 61 Phase 2 Ghazeer gas field, 33 months after the development was approved.

Ghazeer, the second phase of the giant Khazzan gas field in Oman, was initially expected to come into production in 2021. The first phase of development of Block 61 was brought online in September 2017.

"I am delighted to see bp bringing the Ghazeer gas field online - it's an important project for Oman and we are extremely proud of it. The gas from Ghazeer will contribute towards Oman's 2040 vision in terms of providing additional energy to local industries as well as diversifying the economy," His Excellency Dr. Mohammed Al Rumhy, Minister of Energy & Minerals of the Sultanate of Oman, stated.

"The start-up of Ghazeer is an important milestone in our strategic partnership with Oman, delivering critical national infrastructure for the Sultanate. We appreciate the collaborative support we have received from the government of Oman and our partners in delivering this significant start-up safely and ahead of schedule, particularly as Oman prepares to celebrate its 50th national day," Bernard Looney, bp chief executive, said.

#### Equinor to Reach Netzero Emissions by 2050

Equinor announces its ambition to become a netzero energy company by 2050. The ambition includes emissions from production and final consumption of energy. It sets a clear strategic direction and demonstrates Equinor's continued commitment to longterm value creation in support of the Paris Agreement.

"Equinor is committed to being a leader in the energy transition. It is a sound business strategy to ensure long-term competitiveness during a period of profound changes in the energy systems as society moves towards net zero. Over the coming months, we will update our strategy to continue to create value for our shareholders and to realise this ambition," says Anders Opedal who took over the position as Chief Executive Officer (CEO) and President of Equinor.

Earlier this year, Equinor announced its plans to achieve carbon neutral global operations by 2030 and to reduce absolute greenhouse gas (GHG) emissions in Norway to near zero by 2050. At the same time, Equinor outlined a value-driven strategy for significant growth within renewables, as well as a new net carbon intensity ambition. Continuing to deliver on the short and mid-term ambitions will be key to achieving net-zero emissions.

#### Access to Wholesale Gas and Power Markets in Europe

The European Federation of Energy Traders (EFET) calls on European governments not to impose national regulatory restrictions on market access on companies located in another European country with a fully liberalised energy sector.

The restrictions may take the form of artificial pre-requisites for obtaining a national supply licence. Such prerequisites are already precluded inside the European Union, if they discriminate against a foreign entity located in another EU member state, by EU law. There is no valid reason for them to be applied either in relation to (nor by) an interconnected third country, if it has already opened gas and power networks to regulated third party access and gas and power markets to competition.

EFET discourages governments from succumbing to the temptation to introduce an artificial national requirement to locate trading staff and set up a branch within a given jurisdiction. This is simply not a legitimate condition in a modern economy, in order for an energy market participant based outside the country to qualify for a supply licence within the relevant national territory. Their view is the same, whether the national government tempted to act in this way is a member state of the European Union or not. In either case, such artificial obligations constitute a barrier to trade, may jeopardise security of energy supply and may impede the established efficiency of pan-European wholesale power and gas markets.

#### **Total's First Carbon Neutral LNG Cargo**

Total has delivered its first shipment of carbon neutral liquefied natural gas (LNG) to the Chinese National Offshore Oil Corporation (CNOOC). The loading operation was carried out at the Ichthys liquefaction plant in Australia, and the shipment was delivered on September 29 to the Dapeng terminal, China.

"We are proud to have completed this first shipment of carbon neutral LNG with CNOOC, a long-standing partner of Total. This first LNG shipment, whose carbon emissions have been offset throughout the value chain, represents a new step as we seek to support our customers towards carbon neutrality," explains Laurent Vivier, President for Gas at Total. "The development of LNG is essential to meet the growth in global demand for energy while reducing the carbon intensity of the energy products consumed."

The carbon footprint of the LNG shipment was offset with VCS

(Verified Carbon Standards) emissions certificates financing two projects: Hebei Guyuan Wind Power Project, which aims to reduce emissions from coal-based power generation in northern China; Kariba REDD+ Forest Protection Project, which aims to protect Zimbabwe's forests.

Total has made natural gas, the least pollutant of all fossil fuels, a cornerstone of its strategy to meet a growing global demand for energy while helping to mitigate climate change.

#### OPEC Cuts Oil Demand Forecasts for 2021

Global oil demand will recover much more slowly in 2021 than previously estimated, due to extension of the coronavirus (COVID-19) pandemic, according to the October report published by the Organization of Petroleum Exporting Countries (OPEC), thus increasing difficulties faced by the group and its allies in balancing the market. According to estimates of the organization of exporting countries, an increase in the global oil demand is expected, by 6.54 million barrels per day (bpd) next year, to 96.84 million barrels per day, the cartel forecasts after initially OPEC predicted an increase in demand by seven million bpd in 2021.

"While the 3Q20 recovery in some economies was impressive, the near-term trend remains fragile, amid a variety of ongoing uncertainties, especially the near-term trajectory of COVID-19. As this uncertainty looms large, amid a globally strong rise in infections, it is not expected that the considerable recovery in 3Q20 will continue into 4Q20 and in 2021," the OPEC report specifies.

To offset the drop in demand and support oil prices, the Organization of Petroleum Exporting Countries and other producers outside the cartel, regrouped into the OPEC+ alliance, decided in May to reduce production by 9.7 million barrels per day.

#### LUKOIL and KazMunayGas Sign Agreement on Al-Farabi Project

President of LUKOIL Vagit Alekperov and Chairman of the Management Board of JSC NC KazMunayGas (KMG) Alik Aidarbayev signed an agreement on the Al-Farabi Project (formerly I-P-2 license block) in the Kazakh Sector of the Caspian Sea.

The agreement defines rights and obligations of LUKOIL and KMG as future license holders under the project. This is a next step after the principle's agreement, concluded in June of 2019. The parties intend to proceed with signing a contract on exploration and production of hydrocarbons, that will come into force as soon as KMG receives the license and the parties close the deal to establish a joint venture with 50.01% (KMG) and 49.99% (LUKOIL) shares.

As part of LUKOIL and KMG strategic cooperation, the companies are partners in major projects – Karachaganak, Tengiz, Kumkol, and in oil transportation project of Caspian Pipeline Consortium. The Ministry of Energy of the Republic of Kazakhstan, KMG and LUKOIL signed an agreement to explore and produce hydrocarbons at Zhenis offshore block on April 1, 2019.

Al-Farabi license block is in the Kazakh Sector of the Caspian Sea, 100 – 130 kilometres away from the shore with the water depth of 150-500 meters.

#### **HEADLINES**

#### Total and ADNOC Sign Agreement on CO2 Emissions Reduction and CCUS

Total signed a strategic framework agreement with the Abu Dhabi National Oil Company (ADNOC), to explore joint research, development, and deployment partnership opportunities in the areas of CO2 emission reductions and carbon capture, utilization, and storage (CCUS).

The agreement brings together the best-in-class in low carbon technologies from ADNOC and Total and expands on the long-standing partnership and collaboration between the two leading energy producers across the full value chain. The agreement was signed by His Excellency Dr. Sultan Ahmed Al Jaber, UAE Minister of Industry and Advanced Technology and ADNOC Group CEO, and Patrick Pouyanné, Chairman & CEO of Total during a meeting in Abu Dhabi.

"We are pleased to strengthen

our partnership and alliance with Total as we work towards a low carbon future. The agreement builds on our sustainability goal to decrease greenhouse gas (GHG) intensity by 25% by 2030 and reinforces ADNOC's commitment to responsible oil and gas production as we deliver on our 2030 smart growth strategy," said H.E. Dr Sultan Ahmed Al Jaber, ADNOC Chief Executive Officer.

#### bp and Ørsted to Create Renewable Hydrogen Partnership in Germany

bp and Ørsted have signed a Letter of Intent (LOI) to work together to develop a project for industrialscale production of green hydrogen – a significant step in developing bp's hydrogen business. Green hydrogen is made by the electrolysis of water using renewable power, producing zero emissions.

In their proposed Lingen Green Hydrogen project, the two firms intend to build an initial 50-megawatt (MW) electrolyser and associated infrastructure at bp's Lingen Refinery in north-west Germany. This will be powered by renewable energy generated by an Ørsted offshore wind farm in the North Sea and the hydrogen produced will be used in the refinery.

Under their LOI, bp and Ørsted will now work together to further define the project, agree definitive documents and plan to make a final investment decision (FID) early 2022, subject to appropriate enabling policies being in place. The companies anticipate the project could be operational by 2024.

Electrolysis splits water into hydrogen and oxygen gases. When powered by renewable energy, this produces 'green' hydrogen, without generating direct carbon emissions. Hydrogen is widely used in refinery processes.

#### Volvo Trucks to Launch Full Range of Electric Heavy-Duty Trucks in Europe

Next year, hauliers in Europe will be able to order all-electric versions of Volvo's heavy-duty trucks. This means that Volvo Trucks will offer a complete heavy-duty range with electric drivelines starting in Europe in 2021. Volvo Trucks' massive drive towards electrification marks a major step forwards on the road to fossil-free transport.

Volvo Trucks is now running tests of the electric heavy-duty Volvo FH, Volvo FM, and Volvo FMX trucks, which will be used for regional transport and urban construction operations in Europe. These trucks will have a gross combination weight of up to 44 tonnes. Depending on the battery configuration the range could be up to 300 km. Sales will begin next year and volume production will start in 2022. This means that from 2021 onwards Volvo Trucks will sell a complete range of battery-electric trucks in Europe for distribution, refuse, regional transport, and urban construction operations.

"By rapidly increasing the number of heavyduty electric trucks, we want to help our customers and transport buyers to achieve their ambitious sustainability goals. We're determined to continue driving our industry towards a sustainable future," says Roger Alm, President Volvo Trucks.





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#### **HEADLINES**

#### **MET Group Acquires 42 MW Wind Park in Bulgaria**

Swiss-based European energy company MET Group has acquired a 100% stake in a 42-megawatt wind park in Bulgaria, after signing a share purchase agreement with Italian Enel Green Power. The transaction is part of MET's growth strategy to develop a significant renewable portfolio in the CEE region.

MET Group signed a share purchase agreement with Enel Green Power S.p.A., the renewable arm of Enel Group, to acquire its 42 MW wind park located close to Kavarna, in North-eastern Bulgaria. The closing of the transaction is expected to take place before the end of December 2020.

The wind park, the 5th largest in Bulgaria, consists of two sites in the municipality of Shabla and Kamen Bryag, with 14 units of Vestas-V90 wind turbines – 3 MW capacity each. The wind farm, operating since 2010, supplies power equivalent to the consumption of around 30,000 households.

MET Group has entered the renewable generation market with two solar parks in Hungary. The company now has ambitious plans in renewable energy production in Central and Eastern Europe. MET considers the growth in the renewable power generation in Central and Eastern Europe as a core part of its business strategy going forward, whilst also supporting the energy transition away from coal in Europe.

"This acquisition is a clear sign of the implementation of MET Group's integrated strategy to develop a strong renewable portfolio in the CEE region." Benjamin Lakatos, CEO of MET Group commented on the transaction.

#### Scania and ENGIE to Develop Electric Charging Solutions in Europe

ENGIE and its subsidiary EVBox Group have signed a 4-year partnership with Scania to offer transport operators in 13 European countries a complete and tailor-made e-mobility solution. This unprecedented cooperation covering applications for trucks and buses will bring a complete eMobility solution to Scania customers: solutions tailored to the real needs of fleet and depot management, electrified heavy vehicles, intelligent charging infrastructure, service and maintenance, green energy supply, as well as financing.

To support its customers throughout the electrification process, Scania will offer electric vehicles and electric charging solutions: EVBox Group provides Scania with intelligent and scalable high-power charging solutions tailored to the needs of its customers.

#### Gazprom Obtains Record-high Gas Inflow on Kara Sea Shelf

Another set of tests has been performed in the upper levels of the exploration well at the Leningradskoye field of the Yamal gas production centre. Earlier, the well helped discover a new deposit in the lower levels.

During the exploration activities, commercial gas inflow of over 1 million cubic meters per day was obtained. This is a record-high figure for the fields located on the Arctic shelf of Russia, which proves that the productivity of the Leningradskoye field is much higher than anticipated.

To secure the reliability of gas supplies to consumers in the long term, Gazprom consistently expands its resource base. One of the key targets in this area is to exercise a comprehensive approach to the research and development of the Arctic shelf. This approach ensures a high effectiveness of geological exploration performed in the harsh natural environment and climate of the shelf. The Company successfully copes with the difficulties caused by the lack of infrastructure and insufficiently developed services market.

The Leningradskoye gas and condensate field is in the Kara Sea within the Leningradsky licensed block. The field's current recoverable gas reserves are estimated to total 1.9 trillion cubic meters and are classified as unique.

#### Enel and Polimi to Train the Electricity Grid Professionals of the Future

Training experts and specialists in the field of Smart Grids to build the electricity grids of the future and promote the energy transition: this is the goal of the second level international specializing Master's launched by Enel and Politecnico di Milano and aimed at young and promising talents with a master's degree in scientific disciplines and under the age of thirty.

The participants selected for the twenty places available will be hired on a paid apprenticeship contract of advanced training and research during the program, which will last approximately one year. Young graduates who work for Enel will also participate in the course, thus promoting the exchange of ideas and experiences.

Smart Grids represent the evolution of the electricity grid, an increasingly digital and resilient infrastructure, as well as an enabling element of energy sector decarbonization and the electrification of consumption, by favouring the use of distributed generation from renewable sources and the active participation of consumers in the energy market. The aim of the Master's is to train highly qualified professionals able to tackle complex problems related to the design and management of digital networks, as well as to promote technological innovation in the field of electricity distribution systems.

"With the collaboration of the Politecnico di Milano we aim to generate skills in line with the future of the energy sector," said Antonio Cammisecra, Director of Enel's Global Infrastructure and Networks unit.



VOICES



# **The Covid** Crisis Underscores the Critical **Choices We Face for Our Energy Future**

his has been an extraordinarily turbulent year for the global energy system. Covid-19 unleashed a crisis of exceptional ferocity on countries around

the world, with severe impacts on lives and livelihoods. The crisis is still unfolding today – and its consequences for the world's energy future remain highly uncertain.

Our new flagship report, the World Energy Outlook 2020, offers unparalleled insights into how the global energy sector could develop in the coming years and decades, depending on how the pandemic plays out and on the policies that governments pursue.

## Assessing the impacts of the crisis across all the key fuels and technologies

The International Energy Agency responded quickly and assertively to the pandemic, refocusing our work to assess the impacts of the crisis across all the key fuels and technologies. We enabled governments, companies, and citizens to better understand the emerging trends, such as the unparalleled plunge in global energy investment and its consequences. We offered practical policy advice, most notably in the WEO Special Report on Sustainable Recovery, which shows how governments – by implementing targeted energy policies – can boost economic growth, create jobs and put global emissions into decline over the next three years. Following that, we drew on the IEA's ever-growing convening power to bring together 40 Ministers from countries representing over 80% of the global economy at the IEA Clean Energy Transitions Summit on 9 July 2020, where they discussed the importance of a clean and resilient recovery.

The work of the IEA remains centred on the range of energy challenges the world faces today – and on how the pandemic is affecting them. We are contending with old and new threats, both to the energy supplies that economies and societies rely on today – and to the all-important clean energy transitions that will shape their future. The World Energy Outlook (WEO) is no exception. This year's WEO has adapted to the pandemic's disruption in three keyways.

#### New element: The Net Zero Emissions by 2050 case

First, Covid-19 has introduced huge nearterm uncertainty about the future of energy, so WEO-2020 focuses much more than its predecessors on the next 10 years. This is also important because we are entering a critical decade for accelerating clean energy transitions and putting emissions into structural decline.

Second, a key question is the future severity of the pandemic and its economic implications. In response, we have introduced a new scenario, the Delayed Recovery Scenario, to explore this and consider the different outcomes, depending on whether the world gets the pandemic under control in 2021 or it turns into a more prolonged crisis and a deeper economic slump. This has huge implications for the energy sector, especially in the developing world. A delayed economic recovery results in slower emissions growth, but it is not an answer to climate change. Our analysis makes it clear that the somewhat lower emissions come for all the wrong reasons and at huge economic and social costs. Low economic growth is not a low-emissions strategy.

Third, the rising number of countries and companies committing to net-zero emissions is a profoundly important development. All the pledges announced so far are in line with the vision mapped out in our Sustainable Development Scenario, in which countries achieving net-zero emissions by 2050 spur the world as a whole to reach it by 2070. But when I sat down at the beginning of this year with the lead authors of the WEO, Laura Cozzi and Tim Gould, we agreed it was time to deepen and extend our analysis of net-zero emissions.

That is why we have a new element in this WEO, the Net Zero Emissions by 2050 case, which examines what would need to be done over the next decade to put the entire world on course for net zero by mid-century. The analysis shows it would involve dramatic additional actions over and above the already ambitious measures called for in the Sustainable Development Scenario. Reaching net zero by 2050 would demand enormous and all-encompassing efforts from companies, citizens, investors and, most of all, governments. No part of the energy economy could lag behind, as it is unlikely that another would be able to move fast enough to make up the difference.

### Putting clean energy at the heart of the economic response to ensure a secure and sustainable recovery

How the world rises to these challenges will define our energy future and determine the success or failure of efforts to tackle climate change. The IEA has made its own position clear. Since the scale of the Covid-19 crisis began to emerge, we have been leading the calls to put clean energy at the heart of the economic response to ensure a secure and sustainable recovery, and we will continue to deepen and strengthen our efforts to lead clean energy transitions globally.

Today, we are seeing optimistic signs that clean energy transitions are gaining momentum. In this WEO, we highlight the enormously consequential nature of the choices and responsibilities facing decision makers. The massive sums of money they are committing to spur economic recovery are a historic opportunity to significantly accelerate transitions towards a cleaner and more resilient energy future. This is the moment for ambitious action. As this WEO makes clear, decisions taken now will echo down through generations to come.

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VOICES

Dumitru Chisalita

# Analysis of the Policy to Increase Connectivity to Gas Resources for the Residential Sector

urope's transformation into the first climate neutral continent by 2050 is the greatest challenge of our times. The Green Deal, recently presented by the European Commission, is the most ambitious package of measures that will make the transition towards a green and sustainable economy and which invites Member States to quickly redesign the strategies of energy systems.

The status of 'transition fuel' of natural gas begins to gradually dilute, while the role of the related infrastructure - as element facilitating the goals proposed by the European Green Deal - is subject to uncertainty. In Romania, a Member State characterized by an energy mix where natural gas holds a significant share in national consumption (around 30%) and a relatively complex gas infrastructure, the bet of relevant authorities is on heavy exploration/exploitation of this resource, respectively on significant investments in the related infrastructure, in order to increase consumption domestically.

In this context, the policy of the Romanian state for starting an intensive process of connection of the residential sector to gas distribution networks and, especially, the introduction of the possibility of free connection' of household customers to the distribution network, draws attention.

A recent analysis, conducted in October 2020 by the Intelligent Energy Association on Policies to increase connectivity to gas resources for the residential sector, highlights some of the most important implications and benefits that continuing to implement the mentioned strategy could generate and aims to provide a number of recommendations in terms of policies and regulations, likely to lead to a smart capitalization on natural gas on the Romanian market.

Besides benefits such as increasing the degree of comfort of the population and setting the prerequisites of a diminished carbon footprint by substituting the use of biomass with natural gas, especially in rural areas, 'free connection' to the gas distribution network poses a number of disadvantages and, even more so, even risks.

Socialization of costs with the connection of new consumers to the gas network through the distribution tariff, violation of the principle of economic efficiency stipulated in Law No. 123/2012, generation of prerequisites for increasing the pool of vulnerable customers and additional costs incurred by the customer in energy bills are some of the disadvantages of this initiative.

There is a false assumption that the process of connection to the gas distribution network is free of charge, as the costs related to this process will be dissipated in the bill of all customers in the respective distribution network, by increasing the gas distribution tariff. Moreover, many household customers, attracted by the charm of free connection, could request it, but free connection of household customers is not accompanied by assuming an obligation from them to also consume gas. This situation will generate additional costs for the end-customer, as the profitability of a distribution network decreases inversely with the volumes that are not conveyed through its pipelines.

Another negative effect of free connection to the gas network may be the increase in the number of vulnerable consumers. The capacity of vulnerable consumer involves, a priori, that it already benefits from a form of energy supply, but it cannot, for reasons purely material reasons, bear the cost with the energy bill. An intensive process of connection free of charge of willing customers does not support vulnerable customers, on the contrary, it creates the prerequisites for increasing this category of customers nationwide by increasing the gas distribution tariff, as explained above.

The discriminatory treatment between the household consumers already connected to the gas distribution system and those who want to connect free of charge may be another problem of free connection of new consumers. Let's consider the paradoxical situation where a distribution pipeline fully built at the expense of a consumer, prior to the entry into force of the provisions of the new ANRE order, will be used free of charge by the new consumer. The old consumer will find itself in the situation of paying partially (through the tariff) the costs with the connection used by the newly connected customers.

The fast growth of the number of consumers that use gas for heating purposes brings the current transmission and distribution systems on the verge of ceasing gas delivery during consumption peaks, endangering gas supply to all consumers.

Moreover, the 'free connection' could generate in the long run a number of risks, such as depletion of domestic gas resources prior to the expiry of the normal lifespan It is mandatory to consider the possibility of reduced safety of gas systems. Pressure exercised on the budget of distribution *operators* and/or transmission operator could bring gaps in the efficient management of the managed *infrastructure* amid the need to simultaneously manage applications for network extensions/ new *connections* and maintenance operations and workovers respectively.

of the distribution infrastructure, with the risk of reliance on gas imports, diminishing the safety in operation of existing gas networks as a result of sharing the resources of distribution operators or/and of the transmission operator between maintenance, workover activities and connection of new consumers, making investments that have no added value to the end-consumer in Romania and lack of correlation with the strategy of the European Commission on the development of H2 networks.

The mandatory prerequisite for the development of gas infrastructure in Romania is to recalibrate/reconsider the strategy of development of the gas infrastructure in Romania, so that new investments are correlated with a real benefit for the population of Romania, a lifespan calculated well enough allowing their efficient operation, and the degree of utilization be maximum and the objective of reaching climate neutrality by 2050.

The recommendations of the Intelligent Energy Association for Romania's energy policies towards 2050 are the following.

- An intensive strategy of connection of the residential sector should be implemented only in areas where there is no proven energy alternative from an economic point of view.
- The better use of natural gas by correlating the current policy of development of the transmission and distribution networks with a strategy for the relaunch of the industry using this type of resource as raw material (especially the chemical and petrochemical industries).
- The development of gas-fired power production capacities, in regime of cogeneration and trigeneration.
- State involvement in the development of Greenfield projects in the chemical and/or petrochemical sector.
- Ensuring a legal and fiscal framework favouring the development of this type of industry in Romania, thus ensuring the prerequisites for the smart use of natural gas.
- Redesigning investments targeting the gas infrastructure, so that the new investment objectives can also be used for hydrogen transmission.



# Energy Bluff or Just a Game?

hat would happen if all oil companies ceased investments in the major production, thus reducing or stopping implementation of new

technologies in the entire oil system with an obvious impact on the energy sector? How would the governments of consumer countries or the Commission in Brussels react, if this tough spot were reached, faced with the risk of depleting a resource that is and will be still essential? The answer to these questions is known by everyone: pretending that, in fact, oil is outside 'the energy game' and that this 'fall' could cost dearly.

Little is mentioned about oil, the global oil market, after this tsunami named coronavirus, proving a relative balance, although the presence of this resource seems convincing; it still ranks first in terms of source used to produce energy. The 'death', a heavy word, for now slow, of oil majors has started, an opinion expressed by the international media.

The consequent answer came from Saudi Arabia Prince Abdulaziz Bin Salman, who said: "I'm going to make sure whoever gambles on this market will be ouching like hell." Would it be necessary to introduce a slightly more careful thinking on the assessments set out above, recalling a well-known philosophical maxim – "better a slow death than a quick recovery"!? Who in the oil world could be convinced that the 'evil' in the previous The OPEC strategy. although a 100% *collective* agreement. does not mean resolving the decision to eliminate the market shares of the minority of producers: the situation in 2021 could lead to a critical risk that would *intensify* the tension with the **OPEC Plus** Universe.

sentence has passed, regarding the blow in April when the supply for producers reached 20 million bbl/day, a supply that exceeded in minus what had been forecasted? We forget that the price had slipped from USD 45/bbl (Brent) and with long terms, reaching only in mid-September around USD 40/bbl?

This fall was largely reflected in the weakening of the oil market, but also in fuelling the uncertainty in these markets. First of all, we must also consider the concerns related to the second wave of coronavirus, which has largely slowed down the recovery of the economy, supported by funds made available to governments, unfortunately reduced by the new pandemic explosion. Secondly, the fragility of the question, with the risk of the return of lockdown measures in parallel with the maintenance of a high level of current telework. Are both approaches associated with increasing reserves, which, although low, will be above seasonal levels of one billion barrels, as well as unusable productive capacity?

The prospects of the question are more optimistic than expected. Recent estimates related to the substance of the question support this stated optimism. In the opinion of the Paris Agency, the question of 2020 concerns the amount of 9 billion bbl/day to be extracted, estimated amount, compared to only 8.3 billion bbl/day achieved in 2019? The quantitative estimate for 2021 is that oil production will be 9.7 billion bbl/day, accepting it even lower, but not by more than 3%.

China, which has contributed the most to draining the supply surplus that began in April, estimates that demand in relation to supply is higher than in 2019 and, on average, is close to equilibrium. The US production has maintained, although Hurricane Laura in the Gulf of Mexico is manifesting itself with maximum force. In terms of prices, oil markets indicate a price of USD 40/bbl as an accepted point of equilibrium. However, if prices fall, competition between alternative sources and oil itself will be felt, with consequences on the speed of the energy transition with known implications for carbon emissions, a serious problem for pollution, pollution that sustains the coronavirus.

Oil experts, especially a veteran of the system, even launched an irony at those colleagues who still believe in the fall of oil, calling them 'idealists'!





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- Project management
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- Steel construction
- Installation of cracking and reaction furnaces
- Tank farm construction
- System integration, operating checks and commissioning
- Plant revisions
- Pipeline and bracket corrosion protection
- Insulation
- Scaffolding







# IMPORTANCE OF BEING DIGITAL IN OIL & GAS

Interview with Catalin Nita - Executive Director, The Oil and Gas Employers' Federation

> Text by LAVINIA IANCU Photo by JUSTIN IANCU

Recently, the Oil and Gas Employers' Federation (FPPG) was consolidated, welcoming new members.

Through consistent efforts, FPPG now brings together the main natural gas producers, which cover over 98% of national production, thus attesting to its representativeness for the energy sector.

We are talking to the Executive Director Catalin Nita about the role of the federation in the industry, the importance of digitalization for the development of the sector, the prospects of the profile market, as well as about the challenges of the next period for the energy companies.

Dear Mr. Nita, how was the Oil and Gas Employers' Federation established? How many members does it bring together, what is its role and what are its objectives?

Our goal is to strengthen the partnership with public authorities and most of the decision-makers involved in the legislative process that impacts the oil and gas sector.

FPPG has both a tradition, over 25 years of existence, and legitimacy as it brings together over 12 relevant companies in the field, among which we mention the main producers of natural gas and crude oil, operators of the national oil and natural gas transportation system, the main underground storage operator of natural gas.

Thus, acting as a forum for debate for our members, one of the most important missions of the federation is to support the relevant authorities in the field with expertise, whether we refer to analyzes, specialized studies or examples of best practices. In this collaborative manner, we appreciate that we can promote and facilitate a transparent dialogue between the business environment and the responsible authorities.

2020 was a complicated year for the national gas market. Romania has assumed a series of obligations to the European institutions, experts estimate that there are significant amounts of gas left in storage, there is a surplus of gas in the region, geopolitical resettlement are taking place in the region from the perspective of natural gas, elections are coming... How do you assess the current situation of the gas market in Romania and of the regional one?

The challenges for the oil and gas industry existed even before 2020.

The industrial sector had a downward trend since early 2018, and the pandemic thus aggravated the difficulties, industrial production falling by almost 40% in April this year.

In addition, the slow recovery in the coming quarters, both in 2020 and 2021, will continue to have an impact on fuel demand, with factories and industrial plants operating at lower levels.

Our estimates indicate that, in the long run, fuel consumption and overall purchasing behavior will change as the market structure is affected by this crisis.

Furthermore, the difficult economic environment prevents the continuation of drilling campaigns as originally planned, as well as other important projects, thus limiting or postponing the additional quantities of oil and gas to be produced in the future.

Also, in a broader context, if we refer to the international trade of fuels and gas, our expectations are that at least until 2022, we will face many challenges as the access to markets of Romanian producers will be extremely limited.

#### What decisive factors can influence this situation and what are the ways to recover?

Energy plays a key role in everyday life, and we all aknowledge this. However, in order to mitigate the impact on the business sector, support measures need to be implemented swiftly in order to support the whole chain of activities, from exploration and production to marketing and supply.

In other words, a fiscal framework and competitive market conditions, royalties and tax reduction schemes, access to EU funds, and access to better credit options are needed for oil and gas producers to at least maintain the current level of production, to continue operations in all areas currently exploited and in mature fields and to maintain the level of employment.

Similar economic support schemes are also needed to help the recovery of the general industrial sector and consumption on the Romanian market, as the recovery process is estimated to be relatively slow, as Romanian industry is significantly affected by the current COVID-19 crisis.

#### How do you think things will evolve in 2021? What means does FPPG have and how will it use them in the interest of its members, but also of the final consumers?

The industry recognizes the shared responsibility in managing the health crisis and is ready to contribute in a constructive way and we will

#### INTERVIEW / Catalin Nita



certainly continue to do so next year.

We believe that state aids to support the general consumption of the population for the main products, utilities and fuel must continue until the epidemiological crisis stops, as they translate positively into overall economic growth by recovering the investment potential of operators, the demand of the population will increase.

The measure would also stimulate other sectors, with the pressure on the income of the population given by the purchases of essential products, utilities and fuel being reduced.

Debates on the regime of the vulnerable energy consumer have resumed, and the federation is actively involved in the activity of the inter-ministerial working group.

The energy transition, the role of natural gas in the national energy mix, in the light of the new regulations at European level, new regulations related to the free market, digitalization, are just some of the challenges that energy companies are currently facing. How will they cope in the next period?

The federation is constantly working to identify and implement optimal solutions in response to the energy transition.

The role of natural gas is and will prove to be essential in this process, being a safe resource that can have multiple uses in distinct sectors such as transport, agriculture.

Globally, energy demand is growing, thanks to new technologies there will be synergies between industries, and here the know-how of companies in the oil and gas sector will be defining.



#### What is the position of the organization regarding the setting of the reference price for natural gas?

The federation has repeatedly argued that the Romanian state, as the owner of natural gas resources, should expect the value of natural gas production extracted in Romania, used to calculate the royalties for crude oil and natural gas, to reflect the net income that can be obtained in reality for such a production.

Therefore, FPPG considers that the reference price set for the calculation of the natural gas royalty should reflect the market value of the natural gas produced.

A structural divergence between a reference price and the market value of natural gas may, on the one hand, be to the detriment of petroleum agreements titleholders if the reference price is too high (and investments will be affected accordingly), or, on the other hand, to the detriment of the Romanian state if the reference price is too low.

To summarize, the reference price should reflect local characteristics, achievable prices and, perhaps above all, be the result of a dialogue between all parties involved from authorities to producers, market operators, academic environment and including consultants with proven expertise in the field. FPPG has repeatedly reiterated the importance of digitalization for the development of the national oil and gas sector, lagging behind in this regard compared to its European counterparts, and has even sent requests to the Romanian Government. What answers have you received from the authorities and what are your expectations for the future?

Romania's digitalization is a priority axis of government policies and an engine of economic development.

Regarding the digitalization of the oil and gas industry in Romania, this can be achieved only by updating the legislative framework and correlating it with technological progress.

The classification of some data makes their use difficult (operational impact) and makes their capitalization complicated by technologies located outside Romania.

By limiting access to digitalization for petroleum

companies and authorities, they are at a disadvantage in competing for capital over other industries in the region or the global market.

The need to use advanced information technology tools is even more pressing in the case of Romania, which has mature fields in operation, with a significant natural decline in production.

There is now openness on the part of the authorities, acknowledging the shortcomings of today, but the solutions cannot be put into practice overnight.

We have a close collaboration with the relevant actors in this process, and this will happen in the future as well, so, based on the answers and steps taken so far, we declare ourselves optimistic.

#### What is happening on the legislation side and what is the message sent to potential investors interested in Romania's natural resources?

It is already unanimously acknowledged that the legislation in this area needs to be modernized.

For any stakeholder seeking our opinion, the FPPG will always support and act in favour of a clear and stable regulatory framework capable of stimulating substantial investment projects.

We aim to initiate honest negotiations between industry and decision makers providing expertise for general and specific issues.

Romania is a country rich in resources, with huge potential, so the general message to an investor will always be encouraging.

On the legislation side, the current efforts will be continued in order to solve some blockages.

#### In your opinion, Romania still has chances to become an energy security pole in the region?

With an annual production of 11.8 billion cubic meters in 2017, Romania is the largest natural gas producer in Eastern Europe.

Romania's security of natural gas supply depends, in the long run, on the development of internal resources.

In the horizon of 2030, the largest contribution can be made by the Black Sea deposits.



Black Sea production would also give investors in the gas consumption segments confidence that their investment plans can generate the expected value, long term and in conditions of predictability.

Given the ambitious targets for reducing carbon emissions in the energy sector and increasing the percentage of renewable energy sources, natural gas will play a key role in electricity generation due to its flexibility (short start-up and shut-down times of groups), low emissions and relatively low capital requirements compared to other fuels.

In addition, the availability of natural gas resources in Romania gives our country a privileged position of energy security at the regional level in the coming decades.

Based on inspired and carefully calculated decisions, Romania has all the chances to become an energy security pole in the region.

OIL & GAS

# Serinus Energy Gets Licence Extension and Amended Work Commitment at Satu Mare

erinus Energy has received approval in Romania from the National Agency for Mineral Resources (NAMR) to amend the last outstanding work commitment for the third exploration phase of the Satu Mare Concession. In addition, NAMR has granted a 12-month extension to the work

commitment due to the COVID-19 related disruptions, with the new exploration phase now expiring on 27 October 2021. A further extension, corresponding to the duration of the Romanian 'State of Emergency/State of Alert', will be added to the extension once the COVID-19 related 'State of Emergency/ State of Alert' has been lifted.

The company had previously chosen the option of conducting a 120 km2 3D acquisition programme as the third and last work commitment for this exploration phase. As of the beginning of March, the Company had permitted a 148 km2 3D programme area in the Berveni area just north of the Moftinu gas plant. The company had reached land access agreements with all landowners within the seismic acquisition area and was in the process of mobilising the seismic equipment and staff. This mobilisation was postponed due to the uncertainty regarding the COVID-19 pandemic, and the State of Emergency issued by the Romania Government on 20, March 2020 that restricted the ability to travel and procure services in Romania and Satu Mare County.

Given the delay in the programme caused by the continuing COVID restrictions in Romania the Serinus Energy approached NAMR and requested modifications of the work commitment. NAMR has accepted the company's proposal to modify the final work commitment to drill two exploration wells, one to a total depth of 1,000m and a second well to a depth of 1,600m.

The first well, Moftinu–1008, has been permitted, surface preparation work has commenced and is expected to be spudded in early January 2021. It will be drilled to a depth of 1,000m into the producing Moftinu structure and is expected to intersect three proven gasbearing sand formations and two additional untested sand formations. Upon success, the Moftinu–1008 will be tied into the Moftinu gas plant through a 1.5 km flowline for processing and sale.

Serinus Energy expects the second planned well to be drilled into the Sancrai structure directly to the south of the Moftinu field. The previously completed Santau 3D seismic programme, conducted in 2013, highlighted the prospectivity of this structure. Reprocessing of legacy 2D lines over the remaining area of the structure has demonstrated structural closure with AVO processing showing bright amplitudes consistent with a gas-bearing reservoir. This well is expected to be drilled to 1,600m. The spud date has not yet been established but it is expected to be in mid-2021.

Serinus is an international upstream oil and gas exploration and production company that owns and operates projects in Tunisia and Romania.



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#### Challenging applications and tough environments

Ever since we first struck oil, it has been a vital asset to us. Every day we use hundreds of things that are made from oil or gas. In an industry with challenging applications and tough environments – Safety, reliability and innovation are key. And a global presence for local needs. It is hard to imagine the world without it. We are global – never far away. We believe in individual solutions. Atlas Copco – safe, high quality products that will increase your productivity.

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OIL & GAS

# Case Study: The ROMEO Project

#### A Joint Effort to Achieve Accurate Methane Emission Figures for the Romanian Oil & Gas Industry

ogether with other research teams, The Siffers provided its expertise in methane emission management and specifically quantification as a partner of Utrecht University during the unique ROMEO

project. Who was involved and what was the outcome?

#### Why the ROMEO project?

"If we look at the European Union, Romania's oil & gas sector reports the highest methane emission figures according to UNFCCC's statistics of 2015. This is especially the case with methane production and end use," says Prof. dr. Thomas Roeckmann, specialized in Marine and Atmospheric Research and Atmospheric Physics and Chemistry at Utrecht University.

Romania currently reports methane emissions, but they are based on estimations. These figures are derived from non-country specific Tier 1 emission factors. As a result, there was a need to check the accuracy of these reported emission figures. Instead of relying on estimations, it was time to start with identifying and quantifying methane emissions using different techniques.

#### How it all began

ROMEO (ROmanian Methane Emissions from Oil & gas) is a measurement campaign that was initiated by the European H2020 project called MEMO2 and received funding from the Climate and Clean Air



Coalition (CCAC) Oil and Gas Methane Science Studies.

The campaign was administered through the United Nations Environment Program. The ROMEO team collaborated with the Romanian ministries for Environment and Energy, the European Commission, the DG Energy funded project titled 'Limiting Methane Emissions in the Energy Sector' as well as OMV Petrom and Romgaz, the two main oil & gas companies in Romania.

"The discussions about ROMEO became serious in February 2019 at our MEMO2 Midterm Meeting. We quickly found an enthusiastic team, but we still needed a sponsor. We worked with the CCAC Methane Science Studies to receive funding, and then moved quickly to execute the project," says Prof. dr. Thomas Roeckmann.

"12 international research teams were brought together to identify and quantify methane emissions as well as other atmospheric compounds and meteorological data. So, we started





searching for a reliable subcontractor with extensive experience in methane emission surveys," Prof. Roeckmann adds.

"I met Ms. Cindy Verhoeven, International Sales Manager of The Sniffers during a networking event. She informed me about The Sniffers' activities and experience in methane emission surveys. After several discussions, we signed a contract where 2 Sniffers' specialists would become part of the ground team and perform onsite methane surveys," he concludes.

#### The setup

Prof. Roeckmann adds: "70 people from 20 nations were involved in this project. The 12 research teams were split up in 3 types: an airplane team using 2 aircrafts conducting facility-level quantification raster flights, a city team driving cars to measure methane in Bucharest and a ground team using drones and specialized measuring equipment."

"Two third of the team members were working directly onsite. The others supported the measurement teams by



providing modelling data, analyses and forecasts, logistics and admin."

"With more than 50.000 active wells and facilities spread over Romania, we were able to define specific regions we wanted to focus on during the campaign. In the end, the 3-week campaign took place in the regions Oltenia, Muntenia and Transylvania. These 3 regions already count more than 6.000 active wells and facilities."

"It was important that people in the field were distributed over the different teams to accelerate measuring at different facility types including oil and gas production, distribution and storage facilities."

#### **Different techniques**

Emission Division Operations Director Bas Hermans from The Sniffers highlights: "our specialists always use the best available techniques depending on the situation."

"Indy and Danut mostly used our Remote Methane Laser Detector (RMLD) for scanning non accessible sources fast on low pressure lines. The device detects 'methane clouds' through infrared absorption and gives a PPM value."

"We used an Optical Gas Imaging camera as our main measurement device. Due to safety reasons, we sometimes did not have access to the sources because of moving parts. We also used OGI at heights. We have been using the Optical Gas Imaging technique for more than 20 years and have seen great results."

"Whenever our specialists had access to sources and the conditions allowed it, they would quantify the leak using the High Flow Sampler and the Toxic Vapour Analyzer."

"Your results on the level of individual equipment provide relevant and important insight into the processes that lead to greenhouse gas emissions in Romania."

"High Flow Sampling is currently the most accurate method to measure emissions directly. With the TVA, we could then quantify the emissions and define losses in kg/ year."

#### The outcome

"From the 231 leaks that were identified, we could quantify 49. Leaks were immediately tightened whenever possible, which indicates the sense of responsibility from the oil & gas companies," says Bas from The Sniffers.

According to Prof. Roeckmann "the results on the level of individual equipment from The Sniffers provide relevant and important insight into the processes that lead to greenhouse gas emissions in Romania. It was a pleasure to have them in the ROMEO team. Reporting was also very thorough and professional. The first overall results were shown during the EGU 2020 in Vienna."





#### A project to remember

The Sniffers specialists Danut and Indy were excited to see the teams actively working on identifying methane emissions. "It was motivating to see so many companies with different technologies to quantify methane emissions. I am proud that we were able to help the Romanian oil & gas industry obtain more insight in their methane emission figures," says Indy.

"Through this bottom-up and top-down quantification of the Romanian emissions from oil and gas, we contribute to a better knowledge of these emissions. Another step closer to reaching the Paris Agreement goals," concludes the Professor from Utrecht University.

"Your results on the level of individual equipment provide relevant and important insight into the processes that lead to greenhouse gas emissions in Romania."

#### Some background info

This work was supported under the Climate and Clean Air Coalition (CCAC) Oil and Gas Methane Science Studies. The studies are managed by United Nations Environment Programme in collaboration with the Chief Scientist, Steven Hamburg of the Environmental Defense Fund.

Funding was provided by the Environmental Defense Fund, the European Commission, OGCI Companies (Shell, BP, ENI, Petrobras, Repsol, Total, Equinor, CNPC, Saudi Aramco, Pemex), and CCAC.

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OIL & GAS

# GRAMPET Group to Accelerate Innovation and Digitalization Projects

The GRAMPET Group – Grup Feroviar Roman (GFR), the largest railway group and private logistics operator in Romania and South-Eastern Europe, intensifies its activity of developing IT solutions and announces new applications, as the Coronavirus pandemic has accelerated the digitalization trend in most industries.

ompetitiveness in a company (and, implicitly, in an economy) is today closely linked to its level of digitalization, and this year's health and economic crisis has once again confirmed it," says Gruia Stoica, President and founder of the GRAMPET Group. "This is what we anticipated from

the beginning, as we have constantly been investing time and resources into the development of innovative solutions to optimize our business. Given the huge need and opportunities in technology, GFR has started to develop its own software capabilities. The Institute of Computing Technology (ITC), part of the GRAMPET Group since 2008, has also an important contribution. In recent years, we have implemented almost 20 digital solutions, most of them being available for the first time on the Romanian market, which played a significant role in simplifying and streamlining our operational and commercial activities."

For example, the Shunting Expert application developed by Grup Feroviar Roman (GFR) and launched two years ago, is currently used or is under implementation by all major refineries in Romania. However, the growing shortage of qualified staff as well as the health crisis have slowed down the implementation process of this new technology. The app provides a real time data system for monitoring and controlling the geographical position of wagons operated on huge refinery-specific infrastructures, as well as their commercial and technical status.

The application facilitates and helps the coordinator handling

operations to make the most appropriate decisions. Data accuracy generates important operational benefits, improving decisionmaking processes and use of resources, while also compensating for staff shortages whenever necessary.

"The quality of decisions in railway operations is essentially based on the quality of available information, such as the railway line for the wagon to be handled, the wagon's position on railway line, its condition, the room for manoeuvre depending on the line loading status," Amedeo Neculcea, deputy general manager at Grup Feroviar Roman, explains. "Basically, the Shunting Expert application responds to the following challenge: how can we constantly have total control over the position and status of some 1,000 wagons, on a railway platform spanning tens of hectares and 30 km of railway lines, with the least amount of effort and considering that wagons belong to several operators, are of different types and have multiple statuses."



"We have constantly been investing time and resources into the development of innovative solutions to optimize our business. Given the huge need and opportunities in technology, GFR has started to develop its own software capabilities," said Gruia Stoica, President and founder of the GRAMPET Group.

The latest IT solution implemented by GFR this July is Perform. Expert. "The concept behind is based on a new performance indicator for the Operations department, which is measured in real time and updated every five minutes (Daily Operational Routes), using the network-wide rail traffic data transmitted by CFR SA," explains Amedeo Neculcea. "During the trial period (July - September 2020), the commercial speed of transported commodities increased by 15%. Moreover, this September we overpassed the speed record for the past 10 years (since we have this type of data available)."

Another application that will be launched next year collects real time data from most existing applications (information about trains, wagons, locomotives, train service staff, traffic schedule, etc.), and provides decision makers with general information and the option to focus on details regarding the ongoing and planned operation process.

At the same time, all major players in the Oil Products industry are currently using the Electronic Consignment Note, which has replaced approximately 90% of GFR's hardcopy transport contracts by moving online the entire activity performed for partners and customers, such as online editing, management and tracking.

GFR manages more than 7,000 transports each month and issues the same number of consignment notes, over 2,800 from the total number being issued locally. In the traditional paper-format version, the issuing of consignment notes used significant resources (12 pages printed for each shipment, manual filling in of forms printed on atypical printers, which required higher costs than normal printers). Transferring these operations into a computer-based system has greatly reduced the environmental impact, but also the risk of human errors and delays.

At the same time, the Command of Train Service Personnel (CPDT) application is an excellent tool GFR uses to ensure adequate operational human resources needed for the uninterrupted movement of trains. This application is almost 10 years old and it also serves as a training platform for young engineers who could practice train scheduling, network geography and decision-making.

In addition to the solutions developed for the railway freight transport activity, the GRAMPET Group has a strategic objective to increase the digitization rate at organizational level, in all its activity areas. Currently, the group is carrying out an extensive process of analysis and internal diagnosis to identify other areas of activity that can be streamlined through digitization, robotization and artificial intelligence solutions. Last but not least, the team of specialists is working on solutions adapted to prevent cyber security breaches, a growing threat in recent years.

#### **About GRAMPET Group**

Established almost 20 years ago, GRAMPET is today the largest private rail freight and logistics operator in Romania and Southeast Europe. Its 16-company structure is strategically designed to span the entire chain of rail transport solutions and products, thus offering clients an integrated experience at the highest level of competence: freight railway transport, building, repairs and upgrading of rolling stock, spare parts production, lease of rolling stock, freight transhipment, logistic services, as well as innovative IT solutions for railway operators.

Its subsidiary Roserv Oil, which took over the industrial platform of the RAFO Onesti refinery in the summer of 2020, focuses on the national development of logistics terminals both on the container side and warehouses for petroleum products.

OIL & GAS

# Lukoil Announces Black Sea Exit

#### EXXON WANTS USD 1.2BN FOR ITS STAKE IN NEPTUN DEEP PROJECT

After the US Co. ExxonMobil had announced its intention to sell its 50% stake in Neptun Deep project in the Black Sea, the turn of Russia's Lukoil came recently to announce that it plans to sell its 87.8% interest in EX-30-Trident block, in the Black Sea. Romgaz, which is partner with the Russian company in this block, has confirmed that it had received a notification in this regard. While OMV Petrom postpones a decision regarding the Black Sea investment, the US Co. Black Sea Oil & Gas is the only one determined to start Black Sea gas exploitation. Gas deposits in the Romanian Black Sea are estimated at around 200 billion cubic meters, according to an estimate by BP.

by Adrian Stoica

ccording to sources in the oil and gas market, the US company ExxonMobil wants to sell its 50% stake in Neptun Deep project for USD 1.2 billion. Several companies had been interested in taking over its stake, including Poland's PGNiG, and Russia's Lukoil, but they have both withdrawn.

ExxonMobil requested the National Agency for Mineral Resources to extend the deadline for submission of the geological research report for 2021, in conditions in which it had to be handed over in this period. Based on this report, a final research report is prepared and then it moves to the next stage, of field development. Investments made so far in Neptun Deep Block by OMV Petrom - ExxonMobil amount to around USD 1.5 billion, according to public information.

#### Lukoil to withdraw from the EX-30-Trident block

Lukoil Overseas (whose majority shareholder is the parent company Lukoil) is titleholder, together with the Romanian company Romgaz, in the EX-30-Trident Block, in the Black Sea. It has an area of 1,006sq km and in 2012 exploration works identified a deposit of 30 billion cubic meters, the second largest after the one discovered in 2012 by OMV Petrom - Exxon Mobil, estimated at 42-84 billion cubic meters of gas.

In late October last year, the Competent Regulatory Authority for the Black Sea Petroleum Offshore Operations (ACROPO) sent to Lukoil Overseas the approval for the beginning of drilling operations in the Trident block.

#### BSOG to bring the first gas to shore in 2021

Petroleum company Black Sea Oil & Gas (BSOG), owned by Carlyle International Energy Partners and the European Bank for Reconstruction and Development, is the only Black Sea titleholder that has so far made the final decision to invest in the exploitation of offshore Romanian gas.

In September this year, the company launched works to lay the pipeline that will bring to shore gas from Midia block, following to begin production next year, estimated at one billion cubic meters of gas per year, the equivalent of 10% of Romania's gas consumption.

BSOG and Transgaz signed in August last year the order for the commencement of
works for the projects of the two companies for taking over production coming from the Midia Gas Development Project into the National Transmission System (NTS). Transgaz project 'NTS Expansion Vadu-T1' consists of building a pipeline with a diameter of Ø20" (Dn 500), designed to carry gas at a pressure of 55 bar, with a total length of approximately 24.37 km, which will connect the Black Sea Coast to the National Transmission System - T1 pipeline on the Black Sea Coast - Corbu - Sacele - Cogealac - Gradina direction, completion being estimated for 2021.

Even if they decided to start the investment, BSOG representatives mentioned that it did not mean that they dropped the request addressed to Romanian authorities, to create a friendlier business framework for investors in the oil and gas industry.

"We still insist that the revocation of the hostile measures such as the supplemental tax and Central Market Obligation that were imposed in November 2018 is essential in order to try and regain investor confidence in developing the Black Sea. We are seeing some efforts by the government to address these issues but without the full cooperation of all political parties, Romania will lose out on this tremendous, time-limited opportunity for the country. Our project is moving forward on the basis that these measures were to be resolved," said on the occasion of launching the pipelaying works BSOG CEO Mark Beacom.

Together with Midia block, BSOG portfolio also includes Pelican block.

## Turkey announces discoveries of 450bcm

While Romania risks losing its Black Sea investors amid stalling the amendment of the Offshore Law in line with the requests of titleholders, Turkey in August announced the discovery about 150 kilometres off its coast and near the area where the maritime borders of Romania and Bulgaria intersect, a deposit estimated at 320bcm of gas.

Subsequently, in October, Turkey announced that the field was estimated at 450 billion cubic meters.

Turkey's President mentioned on this occasion that drillship Fatih would start in November operations at other wells on the same block, Kununi drillship joining the operations.

Turkey plans to start using these resources as soon as 2023 and relies on annual deliveries of 15bcm as of 2025.



OIL & GAS

# OMV Petrom Launches in Romania First OMV Climate Neutral Card to Offset Fuel Carbon Emissions

OMV Petrom launches the OMV Climate Neutral card in Romania, through which companies can get active in climate actions and contribute to offsetting carbon emissions resulting from fuel usage. This option, a premiere for the Romanian fuel market, is enabled through the cooperation with ClimatePartner, an international solutions provider for corporate climate action.

MV Climate Neutral runs like a traditional fuel card and offers companies the possibility to offset carbon emissions caused during transportation by paying a fixed price of RON 0.023/liter for gasoline and RON 0.027/liter for diesel, in order to support the carbon offset projects in ClimatePartner's portfolio.

Any user of an OMV Climate Neutral card will be able to check, at any time, the volume of offset carbon emissions, on the ClimatePartner portal. The card can be ordered online through our virtual store on the OMV Romania website.

Customers will receive a certificate confirming their contribution by offsetting carbon emissions. This mechanism for compensating the emissions is performed in accordance with the standards imposed by the Intergovernmental Panel on Climate Change.

"By launching the OMV Climate Neutral card, we offer to our clients the

possibility to directly contribute to the offsetting of carbon emissions. It is a step that comes on top of our measures and objectives taken at company level. We are constantly investing in the whole production chain in order to ensure the quality of our products and to reduce the carbon footprint, from our operations in production to the ones in the refinery and in the filling stations, such as for the electric charging points or the photovoltaic panels," said Radu Caprau, member of OMV Petrom Executive Board, responsible for Downstream Oil.

Through continuous investments, OMV Petrom reduced carbon emissions of its operations by 22% in 2019 compared to 2010. Moreover, the energy company is the first company in Romania to have announced support for the recommendations issued by the TCFD with the aim to enhance transparency and allow stakeholders to better understand the company's efforts with regards to climate change.

The concept of climate neutrality has been first adopted at the Kyoto Conference in 1997 and has been constantly developed and improved ever since. To take climate actions by offsetting carbon emissions also includes the identification of greenhouse gas emissions within activities and products, measuring their impact and offsetting them by the financial support of certified carbon offset projects.



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OIL & GAS

# Slowing Climate Change Costs USD 130,000bln

# DEMAND FOR NATURAL GAS ON THE RISE UNTIL 2050

Even in the case of the expected increase in renewable energy sources, the planet will continue to face a major rise in temperature, according to a study by BloombergNEF (BNEF). According to authors, the global warming by 3.3 degrees Celsius by 2100 would result in a massive risk of irreversible change of climate models. The necessary investments until 2050 to avoid this scenario were estimated at USD 130,000 billion.

by Adrian Stoica

he stark drop in energy demand due to the coronavirus pandemic will remove some 2.5 years' worth of energy sector emissions between now and 2050, according to research company BloombergNEF's (BNEF) latest New Energy Outlook 2020 (NEO 2020).

BNEF's latest projection of the evolution of the global energy system over the next 30 years, using its proprietary Economic Transition Scenario, shows that emissions from fuel combustion peaked in 2019. Down approximately 8% in 2020 as a result of the Covid-19 pandemic, energy emissions rise again with economic recovery, but never again reach 2019 levels. From 2027 on, they fall at a rate of 0.7% per year to 2050.

The crisis generated by the Coronavirus will reduce emissions in the energy sector with the equivalent of a volume emitted in two years and a half if the pandemic did not exist, the quoted study shows.

Emissions should be reduced by 6% every year to remain way below a

rise in global temperature by two degrees.

"To stay well below two degrees of global temperature rise, we would need to reduce emissions by 6% every year startving now, and to limit the warming to 1.5 degrees C, emissions would have to fall by 10% per year," claims Matthias Kimmel, co-author of the BNEF report.

The New Energy Outlook 2020 offers the estimate of USD 78 trillion to USD 130 trillion of additional investment needed by 2050 to prevent the catastrophic scenario and reduce the rise in global temperature to well under two degrees Celsius, the basic target stipulated in the Paris Agreement. Current energy and climate policy and investment plans are leading to a 3.3-degree rise, the study found.

The difference is calculated against average temperatures from preindustrial times.

#### Wind and solar power, among the key factors in the energy transition

The next ten years will be crucial, according to the CEO of BNEF Jon Moore. Acceleration is necessary especially in the installation of wind and solar power plants, electric vehicles, smallscale renewable energy sources and heating technology with low carbon emissions, such as heat pumps and the development of fuels with zero carbon emissions, he says.

In this context, the report highlights hydrogen in particular.

#### What to expect

Wind and solar power will cover 56% of the global electricity production by mid-century and together with energy storage batteries take 80% of the USD 15,100 billion to be invested in new power capacity.

Oil demand will peak in 2035 and then

## Emissions in the NEO Economic Transition Scenario, by sector, and a 1.75°C carbon budget

GtCO2



start to fall, especially due to an increase in the number of electric cars, according to BNEF calculations.

Natural gas will be the only fossil fuel that will continue to grow by 2050, by 0.5% y/y, especially because of consumption in buildings and industry.

Regarding coal demand, data show that it reached its peak in 2018, its share in the primary energy consumption following to fall to 18%, compared to the current level of 26%.

## Global warming projection of 3.3 degrees is no surprise

Associate Professor Vladimir Đurđević from the Faculty of Physics in Belgrade said global warming above two degrees would boost risks of a great economic loss and different points of no return in the climate system. He told Balkan Green Energy News that the world would undergo "a dramatic transformation and face extreme weather and climate events."

However, he said that the 3.3-degree estimate is no surprise. Global warming projections for 2100 have weakened by between half a degree and one degree Celsius in the past years according to changes in energy and climate policy, which is only limited progress, he stressed.

Professor Vladimir Đurđević added favourable predictions for some areas could also be offset by possible worsening elsewhere.

#### NEO 2020 Climate Scenario

• BNEF has produced a Climate Scenario, to sit alongside its core Economic Transition Scenario. This year, it investigates a clean electricity and green hydrogen pathway to holding temperatures to well below 2 degrees.

· This pathway describes a low-carbon future energy economy

supplying 100,000TWh of clean electricity by 2050. This is five times all the electricity produced in the world today and would require a power system that is 6-8 times larger in terms of total capacity. Two-thirds of this energy would go to direct electricity provision in transport, buildings, and industry, the remaining third to manufacturing hydrogen.

• For green hydrogen to supply just under a quarter of final energy we would need 801MMT of fuel and an additional 36,000TWh of electricity – that's 38% more power than is produced in the world today. Doing this with wind and PV might be cheapest, but it would require 14TW of capacity covering 3.5 million square kilometres – an area roughly the size of India.

• According to BNEF a clean electricity and green hydrogen pathway requires between USD 78 trillion and USD 130 trillion of new investment between now and 2050 to cover growth in electricity generation and the power grid, as well as manufacturing, storing and transporting hydrogen.

"Our projections for the power system have become even more bullish for renewables than in previous years, based purely on cost dynamics. What this year's study highlights is the tremendous opportunity for low-carbon power to help decarbonize transport, buildings and industry – both through direct electrification and via green hydrogen," Seb Henbest, chief economist at BNEF and lead author of NEO 2020, said.

NEO 2020 sees total oil demand peaking in 2035 and then falling 0.7% year-on-year to return to 2018 levels in 2050. Electric vehicles are projected to reach upfront price parity with internal combustion vehicles in the years leading up to the mid-2020s. After that their adoption accelerates, eating more and more into the oil demand growth that otherwise comes from aviation, shipping and petrochemicals.

Ultimately, energy use in buildings, industry, and certain parts of the transport sector, such as aviation and shipping, have few cost-competitive low-carbon options, and so remain heavily reliant on gas and oil products.

## ′ OIL & GAS

# TAP Substantially Complete

After almost four and a half years since the start of construction, the Trans Adriatic Pipeline (TAP) is substantially complete. The TAP pipeline has been filled with natural gas from the Greek-Turkish border up to the pipeline receiving terminal in Southern Italy. TAP is currently finalising preparations for launching the commercial operations and offering capacity to the market in alignment with the adjacent TSOs.

by Adrian Stoica





he Interconnection Point between TAP pipeline and the natural gas transmission system of Snam Rete Gas in Puglia (Italy) is expected to be completed and ready to transport gas by mid-November 2020. The Trans Adriatic Pipeline (TAP) AG started to introduce the first natural gas into a 2 km section of the pipeline in Greece between the Evros river and the Kipoi compressor station last November. This is the initial stage of the pipeline commissioning process, which aims to ensure that the infrastructure is entirely safe and ready for operations after the completion of the process, in line with national and international safety and operational standards.

Introducing gas into the pipeline system is another milestone towards the start of Shah Deniz 2 gas deliveries to Europe. Commercial gas flows through TAP were being planned to start in October 2020 when the complete asset all the way to Italy was expected to be commissioned and tested.

Following the commissioning of the first section, gas will continue to be gradually introduced into other sections of the Greek pipeline and beyond in Albania and Italy in the upcoming months. Connecting with the Trans Anatolian Pipeline (TANAP) at Greece's border with Turkey, TAP stretches across northern Greece, Albania, and the Adriatic Sea before reaching Italy's coast. TAP is part of the Southern Gas Corridor, which also comprises the South Caucasus Pipeline (SCP) crossing Azerbaijan and Georgia, and TANAP.

More than 99 percent of trenching was completed along the Trans Adriatic Pipeline's (TAP) route, TAP AG consortium reported.

TAP's first offshore pipelines (7km) in Albania were successfully installed and backfilled in May. This is part of the 105 km section across the Adriatic Sea that will link the gas pipeline to Italy's transmission network.

The pipes will be laid on the Adriatic seabed: 37 km in Albanian territorial waters, 25 km in Italian territorial waters; and 43 km in international waters.

The 878km long pipeline will connect with the Trans Anatolian Pipeline (TANAP) at the Turkish-Greek border at Kipoi, cross northern Greece, Albania and the Adriatic Sea, before coming ashore in Southern Italy, where it will connect to Italy's gas transportation grid operated by Snam Rete Gas.

TAP is the European section of the Southern Gas Corridor, enhancing Europe's energy security and contributing to decarbonisation and the diversification of gas supplies.

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## ENVIRONMENT

# Reducing Greenhouse Gas Emissions: EU Methane Strategy

The European Commission presented on October 14 an EU strategy to reduce methane emissions. Methane is the second biggest contributor to climate change, after carbon dioxide. It is also a potent local air pollutant causing serious health problems. Tackling methane emissions is therefore essential to reaching our 2030 climate targets and the 2050 climate neutrality goal, as well as contributing to the Commission's zero-pollution ambition.



monitor emissions and help raise international standards," Frans Timmermans, Executive Vice-President for the Green Deal, and Commissioner for Energy Kadri Simson, underlined. his strategy sets out measures to cut methane emissions in Europe and internationally. It presents legislative and non-legislative actions in the energy, agriculture and waste sectors, which account for around 95% of methane emissions associated with human activity worldwide. The Commission will work with the EU's international partners and with industry to achieve emission reductions along the supply chain.

"To become the first climate-neutral continent, the European Union will have to cut all greenhouse gases. Methane is the second most powerful greenhouse gas and an important cause of air pollution. Our methane strategy ensures emissions cuts in all sectors, especially agriculture, energy, and waste. It also creates opportunities for rural areas to produce biogas from waste. The European Union's satellite technology will enable us to closely monitor emissions and help raise international standards," Frans Timmermans, Executive Vice-President for the Green Deal, said.

"We have adopted today our first strategy to tackle methane emissions since 1996. While the energy, agriculture and waste sectors all have a role to play, energy is where emissions can be cut the quickest with least costs. Europe will lead the way, but we cannot do this alone. We need to work with our international partners to address the methane emissions of the energy we import," Commissioner for Energy Kadri Simson, mentioned.

One of the priorities under the strategy is to improve measurement and reporting of methane emissions. The level of monitoring currently varies between sectors and Member States and across the international community. In addition to EU-level measures to step up measurement, verification and reporting standards, the Commission will support the establishment of an international methane emission observatory in partnership with the United Nations Environment Programme, the Climate and Clean Air Coalition and the International Energy Agency. The EU's Copernicus satellite programme will also improve surveillance and help to detect global super-emitters and identify major methane leaks.

To reduce methane emissions in the energy sector, an obligation to improve detection and repair of leaks in gas infrastructure will be proposed and legislation to prohibit routine flaring and venting practices will be considered. The Commission will engage in a dialogue with its international partners and explore possible standards, targets, or incentives for energy imports to the EU, and the tools for enforcing them.

The Commission will improve reporting of emissions from agriculture through better data collection and promote opportunities to reduce emissions with support from the Common Agricultural Policy. The focus will be on best practice sharing for innovative methanereducing technologies, animal diets, and breeding management. Targeted research on technology, nature-based solutions and dietary shift will also contribute. Non-recyclable organic human and agricultural waste and residue streams can be utilised to produce biogas, biomaterials, and biochemicals. This can generate additional revenue streams in rural areas and avoid methane emissions at the same time. The collection of these waste products will therefore be further incentivised.

In the waste sector, the Commission will consider further action to improve the management of landfill gas, harnessing its potential for energy use while reducing emissions, and will review the relevant legislation on landfill in 2024. Minimising the disposal of biodegradable waste in landfills is crucial to avoid methane formation. The Commission will also consider proposing further research on waste to biomethane technologies.

The Commission will also review the Effort Sharing Regulation and will consider expanding the scope of the Industrial Emissions Directive to cover methane emitting sectors not yet included in its scope.

#### Background

On a molecular level, Methane is more powerful than carbon dioxide. It contributes to tropospheric ozone formation and is a potent local air pollutant which causes serious health problems. At the end of its lifecycle, methane is transformed into carbon dioxide and water vapour, contributing further to climate change. Reducing methane emissions therefore contributes to both slowing down climate change and improving air quality.

The Impact Assessment for the EU's 2030 Climate Target Plan concluded that stepping up the level of ambition for reductions in greenhouse-gas emissions to at least 55% by 2030 would require an accelerated effort to tackle methane emissions. While the EU produces 5% of global methane emissions domestically, it will encourage international action as the largest global importer of energy and as a strong player in the agriculture and waste sectors.



## ENVIRONMENT

# IEA'S Special Report: CCUS in Clean Energy Transitions

The International Energy Agency (IEA) special report on Carbon Capture Utilisation and Storage 'CCUS in clean energy transitions' shows that one of the key technology areas for putting energy systems around the world on a sustainable trajectory will be carbon capture, utilisation, and storage (CCUS).

EA has long highlighted that there are no single or simple solutions to reaching international energy and climate goals. Doing so requires a wide range of technologies, some more mature than others. Its revamped Energy Technology Perspectives series, of which this special report is a key part,

has done important work in illuminating the contours of the major energy technology challenges we face today – and how to overcome them.

In a path towards meeting international goals, CCUS is the only group of technologies that contributes both to reducing emissions in key sectors directly and to removing CO2 to balance emissions that cannot be avoided. This is a critical part of reaching 'net zero' targets.

Today, there are only around 20 commercial CCUS operations worldwide – nowhere near the amount required to put global emissions on a sustainable path. But momentum is growing – and through smart policies, investments and international co-operation, governments and companies across the globe can give CCUS the boost it needs.

The United States has helped spur the development of CCUS facilities in its energy system through its innovative 45Q tax credits. And just before the launch of this special report in September 2020, Norway showed its leadership in Europe by making a major funding commitment to the Longship project. Longship will connect two different plants capturing CO2 in Norway with the Northern Lights storage facility deep under the North Sea. Northern Lights will be able to receive CO2 captured in neighbouring European countries, as well, thereby playing an important role in meeting not just Norway's ambitious climate goals but those of the entire region.

Plans for more than 30 commercial CCUS facilities have been

announced in the last three years – mainly in Europe and the United States, but also in Australia, the People's Republic of China, Korea, the Middle East and New Zealand. Projects now nearing a final investment decision represent an estimated potential investment of around USD 27 billion – more than double the investment planned in 2017.

"Co-operation – across borders, and between government and industry – is critical if CCUS is to grow at the pace needed to meet energy and climate goals. The IEA is committed to playing a leading role in those efforts, as demonstrated by this special report and the ongoing work of the Agency's team of CCUS analysts. Markets alone will not turn CCUS into the clean energy success story it must become. But governments and industry today have the chance to combine their forces to realise the environmental and economic benefits that CCUS offers. Without it, our energy and climate goals will become virtually impossible to reach," Dr. Fatih Birol, Executive Director of the International Energy Agency, stated.

## A new dawn for a vital technology area

Carbon capture, utilisation, and storage (CCUS) will need to form a key pillar of efforts to put the world on the path to net-zero emissions. A net-zero energy system requires a profound transformation in how we produce and use energy that can only be achieved with a broad suite of technologies. Alongside electrification, hydrogen, and sustainable bioenergy, CCUS will need to play a major role. It is the only group of technologies that contributes both to reducing emissions in key sectors directly and to removing CO2 to balance emissions that cannot be avoided – a critical part of 'net zero' goals. Stronger investment incentives and climate targets are building new momentum behind CCUS. After years of slow progress and insufficient investment, interest in CCUS is starting to grow. Plans for more than 30 commercial facilities have been announced in the last three years. And projects now nearing a final investment decision represent an estimated potential investment of around USD 27 billion – more than double the investment planned in 2017. This portfolio of projects is increasingly diverse – including power generation, cement and hydrogen facilities, and industrial hubs – and would double the level of CO2 captured globally, from around 40 million tonnes today.

Support for CCUS in economic recovery plans can ensure the Covid-19 crisis does not derail recent progress. Despite almost USD 4 billion in government and industry commitments to CCUS so far in 2020, the economic downturn is set to undermine future investment plans. CCUS is in a much stronger position to contribute to sustainable recoveries than it was after the 2008-09 global financial crisis. Since then, deployment has tripled (albeit from a small base), the range of demonstrated applications has expanded, costs have declined, and new business models have emerged.

## Reaching net zero virtually impossible without CCUS

CCUS technologies contribute to clean energy transitions in several ways:

- Tackling emissions from existing energy infrastructure. CCUS can be retrofitted to existing power and industrial plants that could otherwise emit 600 billion tonnes of CO2 over the next five decades almost 17 years' worth of current annual emissions.
- A solution for some of the most challenging emissions. Heavy industries account for almost 20% of global CO2 emissions today. CCUS is virtually the only technology solution for deep emissions reductions from cement production. It is also the most costeffective approach in many regions to curb emissions in iron and steel and chemicals manufacturing. Captured CO2 is a critical part of the supply chain for synthetic fuels from CO2 and hydrogen – one of a limited number of low-carbon options for long-distance transport, particularly aviation.
- A cost-effective pathway for low-carbon hydrogen production. CCUS can support a rapid scaling up of low-carbon hydrogen production to meet current and future demand from new applications in transport, industry and buildings.
- Removing carbon from the atmosphere. For emissions that cannot be avoided or reduced directly, CCUS underpins an important technological approach for removing carbon and delivering a netzero energy system.

#### CCUS grows and evolves on the path to net zero

In a transition to net-zero emissions, the role of CCUS evolves and extends to almost all parts of the global energy system. In the IEA's Sustainable Development Scenario – in which global CO2 emissions from the energy sector decline to net zero by 2070 – the initial focus of

CCUS is on retrofitting fossil fuel-based power and industrial plants and supporting low-carbon hydrogen production. By 2030, more than half of the CO2 captured is from retrofitted existing assets. Over time, the focus shifts to CO2 capture from bioenergy and the air for carbon removal – and as a source of climate-neutral CO2 for synthetic aviation fuels. In this scenario, around 60% of CO2 capture is linked to fossil fuels, and the rest is from industrial processes, bioenergy, and the air.

CCUS is one of the two main ways to produce low-carbon hydrogen. Global hydrogen use in the Sustainable Development Scenario increases sevenfold to 520 megatonnes (Mt) by 2070. Most of the growth in low-carbon hydrogen production is from water electrolysis using clean electricity, supported by 3 300 gigawatts (GW) of electrolysers (from less than 0.2 GW today). The remaining 40% of low-carbon hydrogen comes from fossil-based production that is equipped with CCUS, particularly in regions with access to lowcost fossil fuels and CO2 storage. CCUS-equipped hydrogen facilities are already operating in seven locations today, producing 0.4 Mt of hydrogen three times as much hydrogen as is produced from electrolysers.

A faster transition to net zero increases the need for CCUS. CCUS accounts for nearly 15% of the cumulative reduction in emissions in the Sustainable Development Scenario. Moving the net-zero goalposts from 2070 to 2050 would require almost 50% more CCUS deployment.

#### Carbon removal, part of the netzero equation

Underpinned by CCUS, carbon removal plays an important role in the net-zero transition. Technology-based carbon removal approaches are needed to balance emissions that are technically difficult or prohibitively expensive to eliminate. When net-zero emissions is reached in the Sustainable Development Scenario, 2.9 gigatonnes (Gt) of emissions remain, notably in the transport and industry sectors. These lingering emissions are offset by capturing CO2 from bioenergy and the air and storing it.

Direct air capture technologies have significant potential to accelerate the transition to net zero, but costs need to come down. Capturing carbon directly from the air and storing is an alternative to capturing it from bioenergy. Direct

## / ENVIRONMENT



#### World large-scale CCUS facilities operating and in development, 2010-2020

air capture plants are already operating on a small scale, but their costs are currently high. With further innovation, the availability of direct air capture technologies could offer an important backstop or hedge if other technologies fail to materialise or have slower-than-anticipated pathways to becoming commercially viable.

## CCUS is up and running in some sectors – but lagging in the most critical ones

CCUS facilities have been operating for decades in certain industries, but they are still a work in progress in the areas that need them most. CCUS has primarily been used in areas such as natural gas processing or fertiliser production, where the CO2 can be captured at relatively low cost. But in other areas, including cement and steel, CCUS remains at an early stage of development. These are the sectors where CCUS technologies are critical for tackling emissions because of a lack of alternatives.

## With ample storage available, success will hinge on getting the infrastructure right

Infrastructure to transport and store  $CO_2$  safely and reliably is essential for rolling out CCUS technologies. The development of CCUS hubs – industrial centres that make use of shared CO2 transport and storage infrastructure – could help accelerate deployment by reducing costs. At least 12 CCUS hubs are in development globally – including in Australia, Europe, and the United States – and many of them are linked to low-carbon hydrogen production. Norway's Northern Lights project, a large offshore CO2 storage facility in the North Sea, could provide a solution for emissions from neighbouring countries.

Major CO2 emissions sources are within reach of potential storage. IEA's detailed analysis in this report of CO2 emissions from power and industrial facilities in the People's Republic of China, Europe and the United States finds that 70% of the emissions are within 100 km of potential storage, a relatively practical and cost-effective range for transporting the captured CO2. In the United States, CO2 captured at existing facilities is transported an average of 180 km. But shorter distances can reduce costs and decrease infrastructure development times. The overall technical capacity for storing CO2 worldwide is vast, but detailed site-specific assessment is needed.

# GETEC Makes Progress with Climatefriendly Biomass Cogeneration Plant

GETEC, a leading German company specialized in developing decentralized energy solutions for industry and real estate, makes significant progress in the construction of the biomass plant in Podari, Dolj County, that will supply Clariant bioethanol plant.

onstruction works are progressing, with several important stages already being completed. In the first part of 2020, the two construction sites were supplied with electricity through the newly erected 110 kV transformer station, and in mid-September, works began on the installation of biomass boiler and gas redundancy boilers.

In October, the construction team began installing a large and complex water treatment plant, followed by the start of preparations for the beginning of works on the steam supply installation, which will be completed in the first quarter of 2021.

"The construction of the cogeneration plant in Podari advances according to plan and we want it to become operational as soon as possible, so as to start the production of green energy, right here in the commune. We bring to Romania a state-of-the-art technology and our plan is to shift people's perception on energy, proving that it can be efficient and sustainable at the same time. Decentralized energy is a completely renewable process and therefore climate neutral. It is an important step forward, confirming our commitment to sustainability. For GETEC, people matter, and the company's ultimate goal is to create a sustainable future and a better life," said Tomasz Muszynski, Managing Director, GETEC Romania. The new cogeneration unit brings multiple advantages at the local level, starting with the newly created jobs along the supply chain, for people of Dolj County, but also a cleaner environment and a long-term partnership between companies and the community. In addition to these benefits, the company is involved and contributes to the creation of an improved energy sector to leave a clean and ecological heritage for years to come.

GETEC entered the Romanian market in 2018, with an innovative cogeneration project for Clariant. The carbon-neutral biomass plant designed by GETEC will power Clariant cellulosic bioethanol facility in Podari, Dolj County. The plant will use a revolutionary technology that turns lignin – a residual product of the ethanol process – into carbon-neutral energy.

GETEC network includes 45 locations in Germany, Switzerland, the Netherlands, Austria, Poland, Hungary, as well as in Romania, through the Bucharest office. Back in the early days, the company developed heating solutions for the housing industry and energy solutions for industrial clients were added later on.

At present time, the fields and services provided by GETEC cover a fairly wide range: develops solutions for everything related to the power and gas supply, as well as the commercialisation of power produced with inhouse generation systems, offers services related to the planning, set-up and operation of energy supply networks and is specialized in the design and realisation and utilisation of renewable energies, specifically in the development and operation of systems for the generation of power, heat and gas from energy sources such as biogas, wood and even waste materials.

### ENVIRONMENT

# E.ON Energie Romania and Samus TEC, Strategic Partnership for a Greener Future

## CO2 EMISSIONS REDUCED BY OVER 394 TONS AND RADIOACTIVE WASTE - BY 3.75 KG

.....

ompanies E.ON Energie Romania and Samus TEC Dej have concluded a strategic partnership worth around EUR 1 million under which one of the most important systems in Romania for the generation of photovoltaic energy will be implemented. Therefore, E.ON will install

3,360 photovoltaic modules on the roof of a hall in Dej, on an area of approximately 10,000 sq. m. The benefits of the project do not resume to the quantity of electricity produced from solar power and taken over for self-consumption; they also mean environmental protection, by reducing pollution. Annually, the Dej-based company will reduce CO2 emissions by over 394 tons and radioactive waste - by 3.75 kg.

E.ON will build a photovoltaic plant with an installed power of 1,250 kWp that will produce around 1,250 MW of electricity from renewable sources per year. In this way, the company Samus TEC, one of the main players in the construction market in Romania, ensures annually 8-10% of its electricity needs.

"Each new partnership for photovoltaic power generating systems motivates us to move further on the road of sustainability. It is a road we have assumed, and we know that the future can only be designed from this perspective. Therefore, we want our solutions for the production of green energy to be implemented to as many partners as possible," said Catalin Iordache, Managing Director of E.ON Energie Romania.

"We have continuously invested in modern technological equipment, with integrated production flows, able to make products at international standards and environmentally friendly. Therefore, investment in a photovoltaic park is a natural step aimed to streamline our own production processes, by cutting electricity costs and being an integral part of the European and national effort to create a greener future," mentioned Ioan Tecar, CEO of Samus TEC. From 2018 to date, E.ON has developed over 120 projects of solar power production for customers in various sectors of the economy. About 25,000 photovoltaic panels have already been installed for 58 companies in the most performing industries. With the completion of the projects currently under development, the total photovoltaic power production will reach 30,000 MWh per year and CO2 emissions will be reduced by 8,800 tons per year.

#### **About Samus TEC**

Samus Constructii was created in 1991 by the spin-off from Trustul de Constructii Cluj and in 1999 was bought by Ioan Tecar. The basic activity of the company was construction works, concrete and concrete components production.

In 2007 Samus Constructii purchased a concrete production unit and an asphalt production unit which combine advanced production technologies and ensure a low energy consumption – investment of approximately 2 million euros. There were also acquired transportation machines specific to developed activities (agitating truck, caterpillar, dumper, backhoe etc.) At the end of 2015, the entire construction activity of the company was taken over by the new created company Samus Tec SA.

The most recent investment is the Precast Concrete Factory, started in 2017, with its two sections, the concrete precast and steel moulding one.

# Clariant Expands its Team in Podari

Clariant, a focused, sustainable, and innovative specialty chemical company, continues with the recruitment of future specialists for the sunliquid<sup>®</sup> cellulosic ethanol plant in Podari, Dolj county. The local Clariant team is expanding rapidly. Recently, 11 new employees joined the production team, four of them as team leaders that will coordinate the plant production processes in the future. In total, the local Clariant team consists now of 26 people.



he new staff members started their training at the precommercial sunliquid<sup>®</sup> plant in Straubing, Germany, and have followed an intensive training program in the past few months. In addition, another part of the training process takes place in Romania

in collaboration with the University of Craiova, an important and renowned educational center in the region that offers high-level training and, therefore, contributes to the development of a highly qualified workforce. Within the partnership with the University of Craiova, Clariant's new team members are involved in various projects and benefit from advanced courses in English, Chemistry, and Information Technology (IT).

"The sunliquid<sup>\*</sup> project in Podari is advancing, not only in terms of recruiting and training new staff members but also in terms of the ongoing construction works. On the construction site, several milestones have already been reached, such as the completion of the foundations, as well as the installation of the first large equipment. We are excited that our local team continues to grow with 11 new colleagues on board that benefit from a comprehensive training program in Romania and in Germany. We are constantly progressing in the construction, contributing to the development of the local economy and community", said Dragos Gavriluta, Project Director sunliquid<sup>\*</sup> Romania.

Once operational, the plant will process approx. 250.000 tons of straw and will produce 50.000 tons of cellulosic ethanol. Cellulosic ethanol is an advanced, truly sustainable, and carbon-neutral biofuel that can readily be used in today's existing car infrastructure.

The sunliquid<sup>\*</sup> plant is constructed on a 98.000 sqm area observing the highest technological standards while paying close attention to the comfort and life of the local community. The civil constructor is a Romanian company, and the construction works will involve a team of up to 800 workers in the peak phase. Clariant is making good progress with the construction. The construction completion is expected in 2021 and thereafter startup and production.

The project receives funding from the European Union's Seventh Framework Program for research, technological development and demonstration under Grant Agreement no. 322386 (FP7 SUNLIQUID) and from the Bio-Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation program under Grant Agreement no. 709606 (BBI LIGNOFLAG).

## ENVIRONMENT

# New European Strategies to Reach Climate Neutrality

The European Commission on October 14 adopted a number of proposals and reports on energy policy, which are fundamental for the implementation of the European Green Deal and for reaching the climate neutrality target by 2050, respectively the ambitious emission reduction targets for 2030.

#### by Daniel Lazar

herefore, the renovation wave strategy to improve the energy performance of buildings was adopted, through which the Commission plans to reach at least double renovation rates in the following ten years and ensure that renovations lead to an increase in energy efficiency and efficient use of resources. Approval was also given for a strategy for reducing methane emissions, which represent the second largest contributor to climate change after carbon dioxide, and for the report on the state of the energy union and accompanying documents, including individual assessments of the 27 national climate and energy plans.

#### **Renovation Wave Strategy**

In the context of the crisis caused by the COVID-19 pandemic, which brought, more than ever, into focus the importance of buildings in our lives, making them both a home, an office, and an educational or leisure area, the Commission aims to achieve at least double renovation rates over the next ten years and ensure that renovations lead to increased energy efficiency and efficient use of resources. Therefore, the aim is to renovate, by 2030, 35 million buildings and create 160,000 additional 'green' jobs in the construction sector.

The targets are ambitious and the EU must reduce its greenhouse gas emissions by 60%, energy consumption by 14% and energy consumption for heating and cooling by 18%, all these to reach the objective proposed by the Commission in September this year to reduce emissions by at least 55% by 2030. In conditions in which, currently, buildings consume only 50% of the energy of those built over 20 years ago, the initiative on the building renovation wave is necessary to bring these buildings to similar standards. Statistically speaking, 85% of the EU buildings were built over 20 years ago and it is expected that 85-95% of them will still exist in 2050.

## 40% of the EU's energy consumption is generated by buildings

Currently, buildings are responsible for approximately 40% of the EU's energy consumption and 36% of the greenhouse gas emissions. However, only 1% of buildings are undergoing energy-efficient renovations each year, so it is essential that effective measures are taken to make Europe climate-neutral by 2050.

Executive Vice-President for the European Green Deal Frans Timmermans stated in this regard: "We want everyone in Europe to have a home they can light, heat, or cool without breaking the bank or breaking the planet. The Renovation Wave will improve the places where we work, live and study, while reducing our impact on the environment and providing jobs for thousands of Europeans. We need better buildings if we want to build back better".

In turn, Commissioner for Energy Kadri Simson



"With the Renovation Wave we will tackle the many barriers that today make renovation complex, expensive and time consuming, holding back much needed action. We will propose better ways to measure renovation benefits, minimum energy performance standards, more EU funding and technical assistance encourage green mortgages and support more renewables in heating and cooling. This will be a game changer for homeowners, tenants, and public authorities," says Commissioner for Energy Kadri Simson.

mentioned that "the green recovery starts at home. With the Renovation Wave we will tackle the many barriers that today make renovation complex, expensive and time consuming, holding back much needed action. We will propose better ways to measure renovation benefits, minimum energy performance standards, more EU funding and technical assistance encourage green mortgages and support more renewables in heating and cooling. This will be a game changer for homeowners, tenants, and public authorities".

#### State of the Energy Union in 2020

For the first time since the adoption of the European Green Deal, the European Commission also adopted the 2020 report on the state of the Energy Union and its accompanying documents, targeting various aspects of the EU's energy policy. This year's report analyzes the contribution of the Energy Union to Europe's long-term climate objectives.

"The energy sector plays a crucial role in cutting emissions and delivering the European Green Deal. Today's State of the Energy Union Report shows the progress we are making as well as challenges and opportunities ahead. The investments and reforms we put in place need to drive the green recovery and put us on the right track for becoming climate-neutral by 2050," said Frans Timmermans.

"The National Energy and Climate Plans are an essential tool for our work with Member States to plan the policies and investments for a green and just transition. Now is the time to turn these plans into reality and use them to lead us out of the Covid-19 crisis with new jobs and a more competitive Energy Union," Kadri Simson also mentioned.

#### Conclusions

These detailed reports assess the contribution of the Energy Union to the European Green Deal, as well as opportunities for the energy sector following the green transition. It is important that all member states adhere unconditionally to these goals, because only in this way can we move to the next level in terms of energy.

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The FSD is a compact compressed air station for marine applications. With a width of just over one metre and a total footprint of only 4.1 m<sup>2</sup>, this powerful, reliable and efficient compressor will fit in almost anywhere.

Space on board maritime vessels is always at a premium, which makes Kaeser's new FSD series rotary screw compressors the ideal solution for marine applications. Measuring only a metre in width and with a total footprint of just  $4.1 \text{ m}^2$ , they are significantly more compact than equivalent conventional compressors. Of course, like all Kaeser compressors, they also guarantee outstanding dependability, performance, and energy efficiency.

With motor outputs of 240, 310 and 390 kW and covering delivery volumes up to 44 m<sup>3</sup>/min at pressures up to 14 bar, these versatile compressors are the ideal choice for a wide range of applications, such as nitrogen generation for example. Moreover, they are certified by all international marine classification societies.

Efficiency is always a key requirement for any ship's compressed air system - especially in view of ever-increasing energy costs. FSD series compressors owe their exceptional levels of efficiency and performance to meticulous engineering and design, which serve to save energy in four keyways. First of all, the rotary screw airend features flow-optimised, energy-saving 'Sigma Profile' rotors. Secondly, they are powered by IE4 Super Premium Efficiency drive motors for the highest levels of efficiency available on the market today and thirdly, Kaeser's highly efficient 1:1 drive concept eliminates the transmission losses associated with gear or belt-driven systems, as the motor drives the airend via a direct coupling. The fourth major energy-saving feature is the industrial PC-based 'Sigma Control 2' compressor controller with its five pre-programmed control modes, which enables compressor performance to be matched precisely to actual current air demand, thereby saving additional energy. This advanced controller, also certified for marine applications, offers the choice of operation in 30 selectable languages. Furthermore, not only does it ensure energy-efficient operation of the compressor, it also monitors the inlet and compressor temperatures, working in perfect interplay with the electronic fluid temperature control (Electronic Thermal Management) to prevent condensation from forming in the fluid circuit when there are differing levels of moisture in the intake air.

Cool, condensate-free compressed air is ensured by a highly efficient cooling system – fed by fresh water or optionally, seawater – equipped with an integrated, axially-mounted centrifugal separator and an energy-saving Eco-Drain electronic condensate drain.

To guarantee that the compressor remains firmly in place no matter how rough the seas may be, the system's stable base frame is specially designed to be bolted down or welded to the deck.

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## POWER

# Waiting for Restructuring

## **CE OLTENIA IS SINKING INTO DEBT**

Losses of Complexul Energetic Oltenia (CEO) will increase this year by around RON 307 million compared to the initial estimates included in the income and expenditure budget, amid the reduction of labour productivity caused by the coronavirus pandemic. Facing a difficult economic situation, CEO is waiting for the approval of its restructuring and decarbonization plan by the European Commission by the end of the year.

#### by Adrian Stoica

overnment has recently adopted a decision rectifying the budget of CEO. According to it, management estimates an increase in losses by RON 307 million. According to the explanatory memorandum to the legal act, for this year an electricity production of 8.5 TWh is estimated, of which 7.0 TWh of net electricity and 13.6 million tons of own coal production, a decrease in total income by 35.97% compared to the budget approved for 2020, following the lower electricity and coal production, a reduction of total expenses by 22.08% and losses of RON 1,136,948,000.

#### **Higher expenses with CO2 allowances**

The main reason that led to the adjustment of the income and expenditure budget for this year is the reduction of total income,



due to the lack of energy demand in the National Power System and as a result of lower activity in the national economy generated by measures taken by the Government to reduce the spread of infection with the SARS-CoV-2 virus, at the same time with a decline of electricity prices. This led to the reduction of gross profit and the registration of losses, the increase in the level of total expenses to RON 1,000 total income, as well as to the reduction of labour productivity. In the first six months of this year the realized average selling price of electricity was approximately RON 249/MWh compared to RON 298/MWh estimated to be achieved in 2020. At the same time, the price of CO2 allowances remains high, which leads to a negative gross result increased by RON 306,948 thousand. The difficult situation of the company is mainly due to a constant increase in expenses with CO2 allowances, the company's management mentions. In the approved budget for 2019 the gross result was negative, of RON 855,551,000, expenses with CO2 allowances being approximately RON 1,271,171,000 (around EUR 24/allowance). In the approved budget for 2020 a negative gross result of RON 830,000,000 was estimated, expenses with CO2 allowances being approximately RON 1,403,096,000 (around EUR 27.5/allowance). Therefore, to offset through the electricity price the increase to over EUR 27.5/allowance the price of electricity produced by CEO on the Romanian energy market should be increased from RON 249/MWh to over RON 360/ MWh and at an estimated increase to around EUR 30/allowance the price should be around RON 370/MWh.



#### Waiting for green light from Brussels

At the end of August, CEO sent to Brussels its restructuring and decarbonization plan and hopes that by the end of the year it will receive the green light. To reach the proposed objectives, CEO also wants to access European funds, both from the Modernization Fund and the Just Transition Fund.

The restructuring plan involves the gradual closure of four energy groups in three thermal power plants operated by the company, but only after commissioning gas-fired groups, and four coal exploitation quarries. At CET Craiova 2, the restructuring program provides the closure of the two current groups of 150 MW each starting with 2025, according to data so far, but which could suffer changes, depending on the final result of the feasibility study. These capacities will be replaced with a power unit of 200 MW in cogeneration, based on gas, commissioned a year before, in 2024. In Isalnita, power unit no. 8 will be closed as of 2025, and power unit 7 as of 2026.

The program shows that each of these groups will be replaced with one gas-fired group, of 400 MW. Each group will be commissioned in the year before the year of closure of the replaced coal-fired group, i.e. in 2024 and 2025, respectively. In Turceni, a group of 330 MW will be closed, group 3, in 2025. This, after in 2024 a gas-fired group of 400 MW will be put into operation. Besides conversion, the decarbonization plan involves the construction of two small hydro-power stations, one of 10 MW placed at SE Turceni and one of 2 MW at SE Isalnita. The construction of the first would start in 2022 and of the other in 2023. It is also planned to build photovoltaic parks, of 700 MW, which would be installed on the closed slag and ash depots at the Rovinari, Turceni and Isalnita thermal power plants. Investments in photovoltaic parks have chances to be the first to be started, considering that they can be financed through the priority axes of EU funds, and will be commissioned in 2023.

Complexul Energetic Oltenia is the second largest electricity producer in Romania, after Hidroelectrica, with an available installed power of 3,240 MW, in four power plants - Rovinari, Turceni, Isalnita and Craiova 2, which operates based on lignite.



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## POWER

# Romania and the US, New Steps of the Strategic Partnership

## SUPPORT FOR ENERGY AND INFRASTRUCTURE PROJECTS

Romania and the US on October 9 initialled an intergovernmental agreement for building Units 3 and 4 of Cernavoda Nuclear Power Plant, for retrofitting Unit 1 and for cooperation on various levels in the civil nuclear field in Romania. Besides this agreement, a Memorandum of Understanding was signed with EXIM US (the Export-Import Bank of the US) for USD 8bn financing for the development of nuclear projects, as well as in other fields, such as that of transport.

#### by Adrian Stoica

omania today takes a huge step forward in the development of the strategic partnership it has with the United States of America, regarding the energy component, respectively cooperation in the civil nuclear field. I promised and I delivered a strategic mission: Identification of partners from NATO states for Cernavoda Reactors 3 and 4. The agreement initialled today with the Secretary for Energy of the United States of America, Dan Brouillette, allows us to have US technology and expertise for both Reactors 3 and 4 and for retrofitting Unit 1, keeping CANDU 6 technology, within a wider Euro-Atlantic consortium, representing countries part of NATO, and with financial support from the involved partners," said Virgil Popescu, Minister of Economy, Energy and Business Environment.

"Moreover, the framework of an extensive cooperation between Romania and the US in the civil nuclear field is created. At the same time, we want to have as partners, besides the US partners, the Canadians and French. We prove today that serious, predictable partnerships can be obtained if there is political will and sustained work. For SNN this partnership is particularly important for the development of the company, which is on an upward slope, especially after entering the FTSE Russell indices. I congratulate SNN for the work done so far and encourage it to implement, with responsibility, the next steps," Virgil Popescu also mentioned.

#### **Project coordinated by AECom**

"This project in Cernavoda, worth USD 8 billion, under which Unit 1 will be reconditioned and Units 3 and 4 will be built, will contribute to Romania's energy independence and represent a paradigm of the future Romanian-American projects of economic and energy development. The project will be coordinated by AECom and involve a consortium consisting of companies from the US, Canada and France," shows a statement of the US Embassy in Bucharest.

Most likely, the turbines will be American, from General Electric (GE), and reactors - from Canada

(CANDU), but France's Framatome and Italy's Ansaldo will also be involved in the project.

AEcom is a major US engineering company, activating in over 150 countries, with revenues of over USD 20 billion obtained in 2019.

#### Nuclearelectrica to collaborate with Orano

Shortly after signing the agreement with the US, the Governments of Romania and France signed an indication of interest on cooperation between the two countries in the civil nuclear field, targeting the construction of reactors 3 and 4 and retrofitting reactor 1 of Cernavoda nuclear power plant, and Nuclearelectrica concluded an agreement with Orano, formerly Areva.

"The indication of interest aims, inter alia, at collaboration with strategic partners in the construction of reactors 3 and 4 in Cernavoda, and in the workover, upgrading, renovation of reactor 1, in an obviously wider framework, with strategic partners, an extremely important project for Romania's energy policy. An agreement was also signed between Nuclearelectrica and a French company, Orano," said on this occasion Prime Minister Ludovic Orban.

## The agreement with the US will be sent to the European Commission

According to the Agreement between the Government of Romania and the Government of the United States of America on cooperation regarding the nuclear power projects in Cernavoda and in the sector of civil nuclear energy in Romania, the initialling phase represents reaching an agreement in principle on the text and main elements of development of the projects and on the parties involved, the draft agreement following to be sent to the European Commission according to the provisions of EURATOM Treaty, cooperation within the agreement being subject to national, European and international provisions. The purpose of the Intergovernmental Agreement is development of the civil nuclear program in Romania by ensuring the technical, regulatory, nuclear security and safety expertise and, implicitly, strengthening the diversity, safety in operation and energy and environmental stability of Romania, objectives also associated to the investment projects of Nuclearelectrica (operator of Cernavoda NPP), retrofitting Unit 1 and extending the capacity of Cernavoda NPP. In addition to the current projects, Reactors 3 and 4 and Retrofitting of Unit 1 of Cernavoda NPP, the agreement also provides for cooperation in the long and very long term through the possibility to develop small modular reactors in Romania, on a site to be determined, in order to ensure in the future the flexibility and strengthening scalability of nuclear technologies.

"The technology used in the development of reactors 3 and 4 will be CANDU 6, similar to the one currently used in units 1 and 2. Regarding the financing component, the US expresses its firm interest in using Exim Bank, US International Development Finance Corporation and other financing institutions applicable and available in the US to support the global financing of the projects," the statement also shows.

## Deloitte and Kinetrics to update the feasibility study

The company EnergoNuclear, fully controlled by the state-owned company Nuclearelectrica (SNN), has recently completed the simplified public procurement procedure without electronic tender launched in summer, for contracting a consultant to update the feasibility study for the execution of the project of building reactors 3 and 4 of the power plant, the initial study dating back in 2012. The contract for updating the feasibility study was won by the Romanian division of Deloitte, in consortium with the Romanian subsidiary of Canada's Kinetrics, at the price of around RON 783,000. A single other bidder participated in the procedure, i.e. EY, having as subcontractor the company Canadian Nuclear Partners, controlled by one of the energy giants of Canada and North America, the state-owned company Ontario Power Generation, which owns CANDU nuclear power plants like the one in Cernavoda, controlled by the government of the Canadian province of the same name. According to the tender specifications, winners will have about 3-4 months available to conduct the feasibility study.

"Updating the feasibility study will consist of preparing a document that will contain at least the following: updating the forecast on electricity price and demand for a long term in the domestic and regional market; updating the cost of the project of units 3 and 4 by developing a methodology allowing an accurate evaluation, updating the financial model of the project taking into account the current situation both in the energy market and in the market of construction services; new relevant technical information obtained from other studies prepared by the care of SN Nuclearelectrica SA or EnergoNuclear SA, after 2012; updating the information regarding the power transmission infrastructure in Romania and the new interconnection lines; re-certification of the technical feasibility of the project; identifying the support mechanisms necessary for implementing the Project (e.g.: CfD, CWIP, state guarantees etc.)," reads the tender documentation. The updated feasibility study will also have to include a financial

## POWER

analysis targeting only the execution of unit 3 of Cernavoda NPP.

#### Road and railway infrastructure between the Black Sea and the Baltic Sea

According to the announcement made by US Ambassador to Romania Adrian Zuckerman, the US will also make several investments in the transport infrastructure in the region. Therefore, the US will start a new project for Romania, together with Poland, for building a highway and a railway, to link Constanta, at the Black Sea, to Gdansk, at the Baltic Sea. Investments come in the context where Romania and Poland are the central point of the Euro-Atlantic defence against Russia's aggression against the eastern flank of Europe.

At the same time, Romania will soon host more American soldiers. "This infrastructure project will represent a huge benefit for the economies of Romania and Poland, as well as for the economies in the region, for years to come," said Adrian Zuckerman. Economy Minister Virgil Popescu specified that the project could include the restoration of the port infrastructure in the Port of Constanta.

Therefore, Romania and the US benefit from new steps of the strategic partnership launched on July 11, 1997, on the occasion of the visit to Bucharest of US President Bill Clinton.

#### Romanian Railway Group welcomes the Rail-2-Sea initiative

GRAMPET Group – Grup Feroviar Roman (GFR), the largest private rail freight and logistics operator in Romania and in Central and South Eastern Europe, welcomes the Rail-2-Sea project as very auspicious and expects it to increase Constanta harbour business opportunities and attractiveness for the European and Central European countries.

"As global supply chains are being reconfigured, we are already talking about new transport corridors, and Rail-2-Sea



"Another important aspect is that this modernization will increase the attractiveness of Constanta harbour compared to those at the North Sea, respectively the Adriatic, for customers from Hungary, Slovakia, Austria, the Czech Republic, and southern Poland," said Sorin Chinde, Vice President of the Transports Department with the Group.

project, which has recently been announced by His Excellency Adrian Zuckerman, US Ambassador to Bucharest, creates many opportunities with an enormous potential for Romania," said Gruia Stoica, President of the GRAMPET Group.

GRAMPET Group officials consider that the railway and road infrastructure modernization connecting the Gdansk and Constanta harbours and, implicitly, the southern borders of Romania, will lead to the development of a new transit corridor for Scandinavian goods headed for Southern Europe/Turkey and the Middle East.

"Another important aspect is that this modernization will increase the attractiveness of Constanta harbour compared to those at the North Sea, respectively the Adriatic, for customers from Hungary, Slovakia, Austria, the Czech Republic, and southern Poland," added Sorin Chinde, Vice President of the Transports Department with the Group.

In the current epidemiological and economic context, the operator is gradually returning to the pre-pandemic operational levels and is aligning its strategy to the recent months' changes.

"For our freight transport division, the first 6 months of the year resulted into a 12% decrease in volume of activity and, as a consequence, a similar decrease in turnover compared to 2019," says Sorin Chinde.

At the same time, the consolidation strategy at European level is delayed by the travel restrictions imposed during this period.

"Even after 8 months of pandemic, our internal analyses confirm that the decision to expand to other European countries, namely Macedonia, Montenegro, Slovenia, Slovakia, the Czech Republic, Belgium, and the Netherlands, is still sound, and this gives us confidence to continue," Gruia Stoica concludes. Read the magazine everywere.

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# An Unsuccessful Revolution Before It Even Began?

by Carol Dan

Romania announces a real revolution, that of switching from coal to natural gas, but this conversion took place in the more civilized countries a long time ago, and natural gas is already seen with skepticism by Brussels, most likely following to be eliminated from the European energy mix. Could it be that Romania arrived too late at its own party?



## POWER



fter, in 2015, the old Kyoto Protocol - which, essentially, tried to stabilize greenhouse gas emissions to a level considered acceptable by all signatories - had been declared by the United Nations (UN) unable to achieve its goal, most countries of the world signed a

new deal aimed to make the air of the planet more breathable. The new ecological dogma, included in the Paris Agreement, established, like in a painful and long redemptive process, new penances that, for many states, including Romania, will be like floggings in the public market. The latest ecological scripture, the European Green Deal, presented by the European Commission at the end of 2019, proposes that Europe becomes a continent that allows no molecule of carbon dioxide by 2050. A neutral continent in terms of polluting emissions. Some sort of Switzerland of carbon dioxide.

As everything costs, this promise too will cost in the next ten years alone EUR 1,000 billion. But such purpose deserves any sacrifice. As in a premeditated murder, the victims are already chosen. Coal, the fuel of the first industrial revolution, is as good as gone from the European energy landscape, and natural gas and probably nuclear energy will also be sacrificed on the altar of renewable energy.

From the perspective of EU's Green Deal, Romania's position couldn't be worse. Especially that it did not get the chance to capitalize on the presumably huge offshore gas reserves and it still has enough coal reserves for a new reindustrialization, but this is less likely to happen. About a quarter of Romania's energy needs is covered by coal, which, from an ecological perspective, is unacceptable. Other 20% of the electricity needs is covered by gas-fired power plants (which are the future witches that will soon be hunted and burned on the altar of renewable energy), and the only, unique and impossible to develop Romania's nuclear power plant, the one in Cernavoda, also provides about 20% of energy nationwide. As far as nuclear energy is concerned, the recent government announcements about the 'historic' partnership with the US and Canada to build nuclear reactors 3 and 4 - around which a true mythology populated by Chinese dragons has been created - have every chance of making the anti-nuclear Brussels hysterical, although the entry in the same game of France may temper a little the anger. But, from a different perspective, we are witnessing a play almost identical to that from the promising year 2007, when the then Government announced, victorious, that no less than seven international and domestic companies would participate in this investment.

Indeed, at the moment there aren't seven companies, but there are still some, not insignificant, and all we can hope for from this combination of interests and benefits of various kinds is not to have the same end, when it succumbed when all investors withdrew. The various ministers who led the destiny of the Romanian energy sector those years have not explained yet - as no one has asked them to how they managed to block a project that seemed as good as done.

We are in the year of victories, so in early October the press was told that in Brussels a report had been approved on the Investment Plan of the European Green Deal, a report whose purpose was the 'adequate' financing of everything that meant the implementation of the Green Deal, in fact a movement which, according to the opinions of some, will create unemployment and force energy companies and governments to huge investments and finding other jobs for the tens of thousands of future unemployed. As if the initiators of the Green Deal were not aware, this plan will create new gaps between the EU Member States and deepen the already existing cracks between them. Hence the need for the 'adequate' financing to "reduce the gaps between the Member States and create European convergence, not leading to an even greater gap between the states of the European Union," as a MEP very happy with this victory said.

Romania, which from 1990 to 2000 was in a harsh transition from communism to capitalism (led by former communists, but these are just footnotes in the annals of history), must now face a new transition, which, most likely, will probably be painful too, but necessary, we are told. The same was the other one. Namely, transition from the current energy system, polluting, inefficient, insufficiently green, to a new one, non-polluting, abundant, and viable. Sounds almost utopian. Like the slogans before the '90s sounded.

The biggest vulnerability of Romania, but also of other countries like Bulgaria, Poland, or Greece, is obviously coal. However, banishing coal from the European energy cycle has its dose of irony, given that, in fact, coal is nothing but dead and rotten trees for hundreds of millions of years. But the nuances are not so important today. In Romania, the transition to green energy would involve, only for what in the bureaucratic language of Brussels is called the 'just transition' of the mining areas from which the coal that created them must disappear, about EUR 700 million by 2030, according to a study coordinated by the think-tank network SE3T.net, to which EPG and Bankwatch Romania contributed.

Just transition actually means speeding up the time when coal must be removed from the national and European energy mix. This study suggests that coal can be eliminated from the Romanian energy mix starting with 2022, on the principle of the sooner the abandonment of this fossil fuel, the lower the economic impact. In this way, the state budget would save EUR 200 million a year, which are now lost through subsidies granted to coal-fired power plants.

No one can dispute the fact that coal-fired power plants have had a privileged status in each of the last 30 years, for electoral, power, and other reasons. Any attempt to restructure or close coal-fired power plants has resulted in strikes, protests, threats and, finally, new subsidies from the state. The electoral



element has never been disregarded. But this time the protests or marketing investments of mining unions or some politician running in such mining areas may no longer have the expected effect, even if the closure of coal-fired power plants will result in the loss of nearly 30,000 jobs, of which 9,000 from industry and 19,000 indirect, especially in the Jiu Valley and Gorj County.

This time, the music is played from Brussels and is extremely loud. It should be noted that Romania has not yet assumed a specific date for the complete abandonment of coal, as other countries have already done. When, 10 years ago, Romania granted investors in renewable energy the most generous (i.e. with the highest costs for the population) support scheme for green energy, everyone was happy. Now, Romania is being scolded by Brussels because it has unambitious targets for green energy. Instead of 34% as recommended by Brussels, Romania assumed in the first phase 27.9%, and then, following the pressures, promised 30.7%, which means investments in new renewable energy production capacities of about 7,000 MW. But it's still not enough.

The volume of investments in mining areas and coal-fired power plants, which we are told are so necessary, differs from year to year. For example, in 2019, we were told that Romanian coal-fired power plants, whose age exceeds, in the case of 85% of them, 30 years, must invest EUR 1.9 billion to become less polluting. Which obviously did not happen. Although, periodically, they were ordered from Brussels to make another investment in desulphurization, to be able to operate for another three or four years.

Election years give the opportunity for promises that often borderline SF or directly fables. The example of the suspension bridge over Bucharest, with which Sorin Oprescu won two terms as mayor of Bucharest, is impossible to forget. Habit shows us that in Romania there is money for everything, except for what is really needed. Or for what was promised. In essence, when we talk about the restructuring of coal-fired power plants we are talking about the restructuring of CE Oltenia, one of the two largest producers of electricity in Romania, along with Hidroelectrica and Nuclearelectrica.

Blood sucked for years from all parts of the political sphere, CE Oltenia should invest RON 7 billion in the coming years in order to continue to function. After receiving RON 1.2 billion in rescue aid earlier this year, the government says the company will begin a process of modernizing and developing new production capacities, diversifying its resources, and become the largest gas consumer in the country as it replaces its coal-fired power plants with new gas-fired ones. All these investments would be made between 2021 and 2026 and the company will continue coal-fired production, but in a proportion that will gradually decrease, beyond 2030, which involves investments of about RON 2 billion. It is not known where gas will come from. As it is not known either the source for gas that will fill the future distribution networks, which the Government announced that it planned to expand in as many localities as possible. It is not known yet when or if Black Sea gas is extracted.

Regarding gas, thermal power plants in Bucharest, which ensure the thermal energy for the 2 or 3 million Bucharest inhabitants, 600,000 connected apartments and 9,000 institutions, hospitals, schools, kindergartens, they are also targeted by the new energy plans. The company says it has plans to invest in gas-fired power plants in high-efficiency cogeneration, but it is not the first time when this statement is made.

The fact is that something must be changed in the entire Romanian energy system, as the unfulfilled promises fully show their effects. For example, Romania has not had for a long time or maybe never had 24,000 MW available to produce electricity, as politicians have always boasted. The available capacity is 8,000 MW lower, somewhere around 16,000 MW. That is why, for over a year now, Romania has become a net importer of electricity. Because it cannot ensure its own consumption.

## POWER

# International Energy **Agency: The** Pandemic **Will Reduce Demand on** the Energy Market

Energy demand will drop this year by 5% and CO<sub>2</sub> emissions by 7%, as a result of the crisis caused by the COVID-19 pandemic, which will have lasting effects and change the trends for the following decade, estimates the International Energy Agency (IEA) in its report published on October 13. IEA considers four scenarios in the context of multiple uncertainties related to economic recovery and the possibility to develop policies to accelerate energy transition.

by Adrian Stoica

n the scenario for this year in which investments in the energy sector are estimated to fall by 18%, IEA estimates that oil consumption will drop by 8% globally, coal consumption by 7% and natural gas consumption by 3%, while renewable energy will register a slight advance.

The smaller contribution of fossil fuels will reduce carbon dioxide (CO2) emissions, which will return to the level from a decade ago, although pollution will not decrease to the same extent in the case of methane, another greenhouse gas. In the second scenario, IEA estimates an increase in energy demand by 9% for the interval until 2030, while before the crisis it estimated a 12% increase.

This forecast will be valid if the global economy recovers in 2021 to the level before the crisis. If this does not happen by 2023, then the increase in energy demand would be limited to 4%.

## Renewable sources to gain ground

In both scenarios, growth will be focused on electricity production from renewable sources (80% of the total by 2030) and, especially, on solar power, whose generation costs are now already lower in many countries than those of coal- and gas-fired power plants.

On the other hand, coal will enter a downward slope and its contribution to energy production in the 2040 horizon will fall below 20%, for the first time since the start of the Industrial Revolution.

#### 275 GW on coal to disappear

IEA estimates that by 2025 coal-fired units of 275 GW will be closed at global level, which accounts for 13% of the existing capacities in 2019, and this will happen especially in the US (100 GW) and in the EU (75 GW). New coal-fired power plants will be opened in developing Asian countries, but at a much lower pace and they will not make up for the closures. Therefore, coal share in electricity production will fall from 37% in 2019 to 28% in 2030 if the current policies are maintained



#### Global coal demand by scenario, 2010-2040

and to 15% if a change takes place towards sustainable development and the fulfilment of the Paris Agreement's provisions to limit global warming to less than 2 degrees Celsius.

#### **Plunging oil demand**

As far as oil is concerned, the report shows that there are several elements of uncertainty. Experts believe that by 2030 consumption will cease to advance, but they also highlight that, if economic recovery is delayed, the difference could be of over four million barrels per day, with a demand of less than 100 million barrels per day, the level in 2019.

"The volume of oil used for car fuels will decrease, because the engines are more efficient and because the sales of electric cars are advancing. The demand for oil will come more and more from the petrochemical sector," the IEA mentions in its report.

#### Gas consumption to grow globally

As for natural gas, if energy policies are maintained, global

consumption will increase by 30% by 2040, due to use in South and East Asia, where it is often a substitute for coal-fired power plants to reduce pollution.

The International Energy Agency warns that although the crisis has reduced greenhouse gas emissions, there is also a risk (due to lower investment) that many decisions and policies will be delayed for an energy transition to a more sustainable future.

Thus, for example, it calculated that if the existing energy infrastructure (power plants and cars in traffic) continues to function as in the past, it will contribute to an additional increase in global temperature of 1.65 degrees.

The International Energy Agency insists in its Sustainable Recovery Plan that, with additional investments of one trillion dollars annually between 2021 and 2023 in power grids, low-emission electricity and energy efficiency, 2019 will remain the year with the highest level of CO2 emissions in history.

## RENEWABLES

# RWEA Becomes a Member of the European Clean Hydrogen Alliance



European Clean Hydrogen Alliance



WEA – Romania Wind Energy Association, together with its members, actively supports the implementation of renewable hydrogen

production projects in Romania, to allow the sustainable transformation of the energy sector and the integration of a greater renewable energy capacity. "In these moments of planning the sustainable economic recovery, we believe that renewable hydrogen must be an essential part of the solution to reaching carbon neutrality by 2050 and we are prepared to promote its role, as well as synergies with the renewable energy sector," said RWEA representatives.

Hydrogen is a key enabler to achieve the objectives of the European Green Deal and Europe's clean energy transition. Hydrogen has several energy and non-energy uses, from storing renewable energy to fuelling heavy transport, and as energy and feedstock in energy-intensive industry, such as in the steel or chemical sectors.

Most importantly, hydrogen is climate friendly as it does not emit any carbon dioxide when used. It thus offers a solution to decarbonise industrial processes and economic sectors where reducing carbon emissions is both urgent and hard to achieve.

The European Clean Hydrogen Alliance brings together industry, national and local

The European Clean Hydrogen Alliance aims at an ambitious development of hydrogen-based technologies by 2030, bringing together the renewable sector, low-carbon hydrogen production, industrial consumers, mobility, and other sectors, as well as hydrogen transmission and distribution. Through this alliance, the European Union aims to strengthen its position as global leader in this field, to support the EU target of reaching carbon neutrality by 2050. public authorities, civil society, and other stakeholders. It is strongly anchored in the hydrogen value chain, covering renewable and lowcarbon hydrogen from production via transmission to mobility, industry, energy, and heating applications.

The alliance is open to all public and private actors with activities for renewable or low-carbon hydrogen that are ready to actively contribute to the objectives set out in the declaration of the alliance. To join the alliance, an organisation must sign the declaration, committing it to the alliance's shared vision and to contributing to its operational work.

As investment cycles in the clean energy sector run for about 25 years, the time to act is now. The European Clean Hydrogen Alliance will help build up a robust pipeline of investments.

The alliance will establish an investment agenda and support the scaling up of the hydrogen value chain across Europe. The alliance will play a crucial role in facilitating and implementing the actions of the new European hydrogen strategy and in particular its investment agenda. An industry blueprint estimates investments of EUR 430 billion until 2030. It will also be important in the context of the new energy system integration strategy.

The alliance should support scaling up production and demand for renewable and low-carbon hydrogen, coordinate action, and provide a broad forum to engage civil society.

Hydrogen accounts for less than 1% of Europe's present energy consumption and is mainly produced through highly carbonemitting pathways, known as 'grey' hydrogen, and used as feedstock in sectors, such as fertilisers and refineries.

However, clean hydrogen is expected to play a key role in the decarbonisation of sectors where other alternatives might not be feasible or be more expensive. This includes heavy-duty and long-range transport and energy-intensive industrial processes.

#### **Renewable hydrogen and decarbonisation**

Renewable hydrogen, produced through electrolysis from water using renewable electricity, can provide the mobility sector and industry with emission-free energy and feedstock.

It can also provide long-term and large-scale storage, and flexibility to the energy system. Significantly, renewable hydrogen supports the integration of renewable electricity generation, as it decouples energy production from usage in both location and time and can balance electricity demand and supply. This in turn is also important for electricity grid management, for isolated or stand-alone regions of the EU, or for specific and local uses, concentrated in a city or restricted area.

#### EU hydrogen strategy

The Commission adopted on 8 July 2020 a new dedicated strategy on hydrogen in Europe, in parallel with the strategy on energy system integration. It brings together different strands of action, from research and innovation over production and infrastructure to the international dimension. The new hydrogen strategy explores the potential of clean hydrogen to help the process of decarbonising the EU economy in a cost-effective way, in line with the 2050 climate-neutrality goal, set out in the European Green Deal. It should also contribute to the recovery from the economic effects of COVID-19.

The strategy explores actions to support the production and use of clean hydrogen, focusing in particular on the mainstreaming of renewable hydrogen.

#### **Storage potential**

Certain sectors are likely to remain reliant on combustible fuels for various purposes in future. This means that the EU's carbon-neutral ambition is unlikely to be achieved alone by the greater use of electrification. One potential solution is to convert renewable energy sources into hydrogen, as the processed hydrogen provides high-grade heat that can be used in transport as fuels, in industries as material and in agriculture for fertilisers.

The storage potential of hydrogen is particularly beneficial for power grids, as hydrogen allows for renewable energy sources to be kept, not only in large quantities, but also for long periods. Significantly, this means that hydrogen can help improve the flexibility of energy systems by balancing out supply and demand when there is either too much or not enough power generation. This will also help boost energy efficiency throughout Europe.

The European Commission published, in April 2020, a study on the Impact of the use of the biomethane and hydrogen potential on trans-European infrastructure showing that biomethane and hydrogen will play a greater role in the EU energy system, given the continuing decarbonisation. A dedicated regulatory framework, including the Trans-European Networks for Energy (TEN-E) and the Connection Europe Facility (CEF) will spur their development.

#### Background

The European Clean Hydrogen Alliance was announced as part of the new industrial strategy for Europe in March 2020. It is part of efforts to accelerate the decarbonisation of industry and maintain industrial leadership in Europe. Hydrogen was also among the key strategic value chains identified by the Strategic Forum for Important Projects of Common European Interest.

## ТЕСН

# NFC Technology Applied in Oil & Gas

## FIRST SEAL OF EXCELLENCE IN ROMANIA

Keep IT Mobile (KIM), a 100% Romanian company, established in 2012 by Vicentiu Corbu, who left a job in multinational companies to become an entrepreneur, in 2015 launched the first global demonstration of the NFC (Near Field Communication) technology applied in the oil & gas sector. It was implemented subsequently, for the first time in our country, within a refinery in Romania.

#### by Daniel Lazar

eep IT Mobile, which currently develops software solutions that help companies streamline their technological flows and, implicitly, digitize, has obtained the Seal of Excellence distinction within the Horizon 2020 program of the European Commission, phase 2, being the first company in Romania to obtain

this quality label for the development of the NFC technology.

"We can provide any company on the territory of Romania with digitization solutions like those produced by giants in the field, with the advantage that we customize them, and they have lower prices. As background, we come from multinational companies where most of the experience was gained with international software companies focused on aviation, meteorology, logistics etc. We are now using a new technology for the traceability of activities, human resources, and physical items in general. The technology is called NFC and we all have it integrated in the mobile phones, being known for the mobile parts, except we applied it for other purposes. Basically, we attach such NFC chips on equipment, tools, locations, following that with a simple touch with the mobile phone we have all the information in that place. We provide personalized solutions for companies, as you go to the tailor for a custommade suit," says Vicentiu Corbu, founder and CEO of Keep IT Mobile.

In the last seven years, Keep IT Mobile has developed (with a team consisting of 10 employees plus collaborators) a number of software solutions covering the need for digitization for a large part of industries, having clients such as Electroalfa Botosani, Comelf Bistrita, Pyronova (from Slovakia, with subsidiaries in the Czech Republic, Hungary, Germany, Poland, Russia), Severnav and Vard shipyards, 24 Ianuarie Ploiesti or Daas International.

<sup>4</sup>We are currently delivering these solutions at a minimum cost for any company on the territory of Romania that wants digitization of operational flows but does not afford major investments in this moment of crisis. Therefore, we come up with a cost starting with EUR 100/month, aimed only at covering the operational expenses with the implementation/support of the mentioned technical solution. In this way, any company can be digitized at a minimum cost," mentions Vicentiu Corbu.

#### **Field Maintenance System**

Keep IT Mobile has introduced, as a national premiere, a management system for firefighting equipment in a refinery, in collaboration with another company, the solution being named Field Maintenance System. Its aim is to register interventions made at the existing firefighting equipment in the field, with the help of mobile technologies.

The operation is carried out in three steps. First, the firefighting equipment is identified, then an NFC tag is placed on this equipment, the association of information necessary for the system taking place: extinguisher type, expiration date, location, and responsible person.

In the third stage, the following interventions take place: entering operations (verification, upload), entering the parts/consumables used, counting the duration of the intervention, extension of the validity period, taking over electronic





signatures to validate the intervention, finalizing and updating data in the system.

The advantages consist of: performing real-time checks on refinery equipment; traceability for used spare parts; automatic generation of estimates/ reports and (optionally) their printing using mobile printers; collecting data from the field, in a mobile manner, respectively centralizing in a relational database; eliminating human error through the use of NFC communication technologies as well as barcode reading technologies.

#### **Problem worth solving**

Good maintenance management is important for the companies' cost control. As companies go in for automation to become more competitive, they increasingly rely on equipment to produce a greater percentage of their output. Equipment must be kept in reliable condition without costly work stoppage and down time due to repairs if the company is to remain productive and competitive. Beyond the cost of idle equipment and idle labor that can result from a breakdown, there is a danger of permanently losing market share to companies that are more reliable. Maintenance function can help prevent such as occurrence.

Organizations like airlines and oil refineries have huge investments in equipment. Equipment failure would be disastrous for such companies and ineffective maintenance practices can also result in unscheduled downtime with huge costs; for instance, for global petroleum refiners such unscheduled downtime costs on average an additional USD 60 billion per year in operating costs.



They need proper preventive maintenance to keep the equipment in good condition.

Today's maintenance management systems offer the possibility to introduce in real-time the data collected from the field, but the way of doing that is sometimes too slow for the operative technicians.

#### **Keep IT Mobile solution**

KIM CMMS uses the Near Field Communications (NFC) technology to identify and track field operations of industrial assets through NFC tags/microchips.

By tapping a smartphone against the NFC tag, users are taken directly to the asset record in the CMMS, where they can log their issue. Moreover, KIM CMMS uses NFC technology to provide proof of presence for safety-related work orders. The tapping motion is recorded digitally, proving the technician was physically at the asset when the work order was completed. An important by-product is that NFC is already available in the majority of mobile phones which makes KIM CMMS less expensive than competing solutions, such as RFID readers or barcode scanners and fully benefiting from the user friendly and intuitive interface smartphones offer.

KIM CMMS therefore responds to the need for a mobile tool to manage in a lucrative and costeffective way the equipment maintenance operations in a wide range of industries, by providing an affordable and exceptionally reliable/secure software solution.

Bellow you may see the advantages and disadvantages of the NFC technology.
### **Target market**

After the first trials with OMV Petrom in 2014, a feasibility study was performed to research the market needs and the market potential of the KIM CMMS technology. KIM's team has made the following realistic conclusions, reflecting the user/market needs:

## 1. Intuitive and easy to use mobile solution to cope with the operational flow in industry

CMMS Software tools for industrial maintenance already exist, but KIM CMMS provides a mobile solution which focuses on usability in combination with NFC technology benefits.

KIM CMMS meets users' needs thanks to the native app solution built for Android OS, which is easy to use, especially by non-tech savvy users. Secondly, the team behind KIM CMMS has successfully detected the need for a mobile tool to collect and register data on-the-go.

KIM CMMS provides the first mobile tool to keep track of industrial assets from the "palm of your hand", built to be used also in isolated areas (such as offshore platforms).

#### 2. Flexible and fully customizable solution

KIM learned from the feasibility analysis that users need a fully customizable solution, which can be easily integrated with existing ERP platforms, and therefore they built it into the KIM CMMS' architecture.

Their product can work either autonomously or integrated with other existing products like Maximo Mobile Asset Manager or SAP Enterprise Asset Management. Additionally, the application allows self-generation of interfaces to meet the needs of the operators in the field. With KIM's system a wide number of variations can be made to respond to companies' needs in 5 industrial sectors: Manufacturing, Energy, Oil & Gas, HVAC, Facility management.

KIM also learned that customizable end result has enormous commercial value. Other competitors such as SAP or IBM are using proprietary development platforms, limiting the possibilities of customizations by other companies outside their scope.

#### 3. NFC technology

NFC is currently rated in top 5 digital market trends for its application in digital payments ('mobile wallets') but hardly exploited for its potential in the industrial sectors. KIM concluded feasibility study that B2B users intend to experience the benefits provided by the NFC technology (accuracy, speed, affordability) in tracking assets management. In conclusion, KIM has set up its Unique Selling Proposition as follows:

- KIM CMMS is a 100% customizable and affordable mobile solution for industrial use, integrating the benefits of the NFC technologies.
- KIM CMMS is introduced as an extremely cost-effective solution (considering its superior features), able to disrupt the digital ICT market, and its sales costs are more than 50% lower than competing solutions, which, in addition to the innovative technology and unique features, is one of KIM CMMS's Unique Selling Points (USP) that differentiates the solution from its competitors. USP help consumers by saving them time when they are considering buying a product. By stating clearly why KIM CMMS is novel and different, it stands out from competitors by being Better, Smarter and Cost-effective.
- KIM CMMS targets mainly 2 different market segments and rolls out a strategy that addresses the needs of these segments. KIM CMMS targets business users (B2B) such as large stateowned or independent industrial companies, service providers and SMEs in the industrial supply chain with more customized solutions, while trying to reach as many individual users of the application as possible: professionals in industry (maintenance managers, operators, field coordinators, operations directors etc.).

Fortune Business Insights in a new study, titled 'GLOBAL INTERNET OF THINGS MARKET: GLOBAL INDUSTRY ANALYSIS, INSIGHTS AND FORECAST, 2019-2026' provides key insights into trends prevailing in the market. IoT technology helps exchange information between machines and devices. It plays a crucial role for some organizations by offering digital transformations and upgrading their existing processes to create new business models.

### **Key facts**

Keep IT Mobile company is based in Ploiesti, one of the most important industrial cities in Romania, which concentrates 70% of the national Oil & Gas industry.

The strategic location of the company and the partnerships with the biggest O&G operators in the area allows the company to develop and integrate its business flows with the O&G industry maintenance flows and deliver successful software products for environments with explosion risk (refineries & filling stations). It is worth mentioning that KIM has successfully performed a pilot field trial of the KIM CMMS in the facilities of OMV Petrom in Ploiești, which was also the world's first application of NFC technology in an oil refinery.

The company has been working closely with companies in several Industrial sectors for the last five years, developing innovative solutions to solve operational problems and increase efficiency. KIM's track record for successful software product development is

TECH



evident from more than 7 internationally marketed products that use the company's proprietary technologies for the following market sectors: Energy, Oil & Gas, Manufacturing, Retail and Logistics.

### **Innovative smart solution**

KIM CMMS, the innovative smart solution developed by Keep It Mobile, responds to the current global need for a mobile and affordable tool to manage in a safe and efficient way the equipment maintenance operations in industrial sectors.

KIM CMMS's central objective is to disrupt existing traditional solutions for asset maintenance in industry and build smart, connected Industry 4.0 by the industry-wide adoption of IoT technology.

KIM CMMS uses Near Field Communications (NFC) technology to identify and track field operations of industrial assets through NFC tags/microchips and provide proof of presence

for safety-related work orders. By tapping a smartphone against the NFC tag, the technicians are taken directly to the asset record in the CMMS where they can log their issue.

NFC is becoming increasingly important within asset tracking, primarily because it offers greater value for money through the availability of low-cost NFC enabled phones and software development. On the other hand, one of the main trends in global mobile app development nowadays is the focus on mobile apps with sensor and processing capabilities.

KIM intends to avail of this business opportunity and introduce into the world's market a product which integrates NFC technologies in the development of a mobile solution for industrial maintenance.

# Romanian Robot to Kill Coronavirus with UV-C Radiation

### **EBRD AND EU HELP START-UP ACCELERATE PRODUCTION**

n autonomous robot called Victor, which kills pathogenic microorganisms including coronavirus using UV-C radiation, is fighting the coronavirus pandemic at a major hospital in Bucharest.

More robots like Victor are on their way to local healthcare institutions, as the manufacturer, Modulab, is scaling up production.

Thanks to an advisory project backed by the EBRD and the European Union EU), robot assembly now takes only one day compared to almost 14 days previously.

The Modulab team has been experimenting with advanced technology for over 15 years, and more than 60 unique prototypes have come to life in the company's laboratory. In the past four years, brothers Paul and Matei Popescu focused their technological creativity on robotics, developing a wide range of industrial, humanoid, and collaborative (swarm) robots.

They initially designed an autonomous robot for more mundane, industrial scenarios – its capacity to navigate complex environments and avoid obstacles makes it perfect for cleaning or carrying spare parts. However, 2020 gave the robot and its makers a new and heroic purpose in life.

"We knew we had to act fast," says Ioana Calen-Popescu, Modulab Co-owner and CEO. "The world was heading towards a crisis the likes of which we had never seen before, and we had a secret weapon which could make the difference, quite literally, between life and death."

As the coronavirus pandemic gripped the world in March, Modulab redesigned the robot and accelerated its development to give hospitals in Romania a much-needed weapon against the virus. By adding powerful ultraviolet C-lamps to the robotic platform, the company created a device that can disinfect an area of 20 m2 in around 10 minutes, including clothing and equipment – everything that the ultraviolet light can reach. Due to its 5-hour autonomy and remote-control feature, the robot has the advantage of being able to move around without involving hospital personnel, thereby protecting human life.

The first robot at the Bucharest University Hospital was named Victor, after Romanian bacteriologist Victor Babes, one of the founders of modern microbiology. A major local bank bought Victor from Modulab at production cost and donated it to the hospital. Soon, other robots will be arriving in hospitals across the country and beyond, as well as in office buildings, hotels and other establishments that need help fighting the coronavirus.

With support from the European Union under Horizon 2020, Modulab can now get involved faster and better in the fight against the pandemic. The EBRD helped the company work with a Romanian consultant, Advanced Thinking, to optimise operations, standardise processes and scale-up production. By the end of the advisory project, the company had achieved an impressive reduction in robot assembly time. The production area was also reduced from 1,000 m2 to 105 m2, after optimising the space, equipment, and assembly stages.

"When you work in R&D, it's very difficult to standardise processes," says Ioana Calen-Popescu. "We are a tech-focused, free-style team, so this project was exactly what we needed to get organised at such a crucial time. The coronavirus is still a global threat, but our robot has received the CE marking, and now we need to streamline production to meet increasing demand all around the world."

This is only the first step in Modulab's scale-up journey. The company and the EBRD aim to build on their successful collaboration with a second advisory project and any other opportunities that a long-term partnership can bring.

ТЕСН

# Developping Carbonneutral Facilities for Upstream Facilities

## MCDERMOTT, SCHNEIDER ELECTRIC AND IO CONSULTING ALLIANCE

cDermott International, Schneider Electric and io consulting started a collaboration to advance research and design of carbon-neutral facilities for the upstream oil and natural gas market. The three companies will combine their capabilities and resources to explore and develop a proof of concept based on an offshore platform reference case. The result of the collaboration will be published in a joint study on Net Zero Upstream Facilities before the end of the year.

The study defines a hierarchy of emissions-reduction technologies, ranked by maturity, investment, and impact to enable operators to make informed decisions when prioritizing areas for emissions reduction.

"This unique venture demonstrates the valuable intersection of thought leadership, digital innovation and project excellence to advance the energy transition across the globe," said Samik Mukherjee, McDermott's Group Senior Vice President, Projects. "By combining our individual strengths, we will deliver solutions that enable our customers to accelerate the industry-shared goal of reducing carbon impact throughout the production chain."

The program directly supports a significant carbon footprint reduction within the production and transformation of oil and gas, which, according to the International Energy Agency, is about fifteen percent of the entire oil and gas carbon footprint.

"We are in an energy transition and while hydrocarbons will be required for decades, it is incumbent upon us to decarbonise their production," said Richard Dyson, CEO of io consulting. "This study will show what can be achieved when we leverage the technical data and expertise of our parent companies, Baker Hughes and McDermott, and come together with the best minds in the industry to address this challenge. I look forward to working with our customers to deploy new standard practices for net zero facilities and transferring our learnings to other industries striving to reduce their carbon footprint."

The companies expect the collaboration to demonstrate what is achievable with current technology, what new technologies are required and identify break-even carbon pricing to make the net zero facilities viable now and in the future. The team will adapt this proof of concept to any geographical region and project, considering local infrastructure and environmental policies regarding carbon pricing.

"This partnership aligns with Schneider Electric's objectives around sustainability and energy transition," said Chris Dartnell, President of Oil & Gas and Petrochemicals at Schneider Electric. "We bring our expertise in both energy and process efficiency to the industry. Our goal is to help customers ensure their future systems support remote operations, optimized asset performance and breakthrough micro-grid management. We believe our partnership facilitates overall digital transformation for our clients—making their operations more sustainable."

The study applies a decision-quality framework to identify credible and achievable methods for achieving carbon neutrality including: power import and electrification; renewable micro-grids; integration with hydrogen networks; integrated energy storage; reduction of fugitive emissions; removal of flare systems; facility de-manning and access method; facility monitoring and control – remote operation; engineered offsetting methods (excluding nature-based offsetting); and digital transformation of design and operations.

# Remote Platform-based Inspection to Reduce Number of Personnel Required Offshore

ROVOP has delivered its first remote platformbased inspection, repair, and maintenance workscope, effectively reducing the number of personnel required offshore.

he leading independent provider of cutting-edge subsea remotely operated vehicles (ROVs) successfully carried out remote visual and NDT inspections of hull sections, flowlines, umbilicals and risers, along with chain inspection, measurement and cleaning, on the Balmoral floating production vessel for Premier Oil.

Using the latest communications and modelling technology, ROVOP worked closely with Premier Oil to develop a robust live video streaming service back to shore. Two-way open communications allowed the inspection and data recording engineers to run the workscope remotely from onshore, resulting in three less people on board the vessel, where accommodation is limited due to the COVID-imposed restrictions.

The cloud-based viewing platform allowed those working from home to view the inspection work as it unfolded. They were able to see exactly what the ROV and inspection engineers were seeing in real-time. Data, which would once have taken weeks to return from offshore to be analysed, was captured as those watching onshore were able to influence the operation live, making the campaign much more efficient.

Subsea mooring inspection and integrity engineering specialists Welaptega, an Ashtead Technology company, was selected by ROVOP to support the project. Their mooring inspection and 3D modelling photogrammetry equipment was integrated into the ROV to enable accurate and repeatable chain measurement and 3D modelling of the subsea template. The point cloud data produced will be used to assist planning of the template removal.

"At ROVOP we are always looking to push the operational envelope by deploying the latest technology and the best people to solve problems and deliver results. Reducing numbers of people offshore has clear benefits in terms of risk, cost, and overall efficiency and, of course, it is particularly relevant when dealing with the challenges presented to the offshore industry by the coronavirus pandemic. This project underlines how digitalisation and collaboration can address some of our most pressing industry challenges," Paul Hudson, ROVOP's sales and marketing director, said.

"This is a fantastic achievement for both ROVOP and Premier Oil. Through a lot of hard work and collaboration with respective network technology companies, we managed to de-risk personnel travelling to an offshore installation during the COVID-19 pandemic," David Robertson, diving & ROV engineer with Premier Oil, added. "Executing work of this nature from an installation is always challenging due to bed space requirements. We have proven that inspection activities can be done with a significant reduction in manpower offshore, which potentially paves the way for cost and greenhouse gas reductions across our other assets in the future".

## ТЕСН

# StrataBlade Concave Diamond Element Bit to Reduce Drilling Costs and Improve Performance

Smith Bits, a Schlumberger company, just introduced the StrataBlade concave diamond element bit that improves the rate of penetration (ROP) in a wide range of rock types, while withstanding impact damage often associated with drilling interbedded formations.

he StrataBlade bit is the latest addition to our threedimensional cutting elements portfolio, which expands our holistic drilling solutions offering and enables operators to enhance overall drilling performance in challenging formations," said Jesus Lamas, president, Well Construction, Schlumberger. "With the introduction of this new technology operators can improve ROP, increase overall drilling efficiency and reduce well construction costs."

The StrataBlade bit incorporates new geometry Strata concave diamond elements across the bit face, which increases cutting efficiency and results in higher instantaneous ROP with the same operating parameters. In deep lateral wells where weight transfer to the bit is a challenge, the StrataBlade bit drills with higher ROP when compared with traditional PDC bits with flat cutters. Improved cutting efficiency also means a better torque response at the bit for conformance to directional plans. The StrataBlade bit has undergone field testing in North America, specifically in the Haynesville Shale and the Appalachian Basin. In the East Texas Travis Peak and Cotton Valley formations, the StrataBlade bit enabled an operator to eliminate two bit runs while drilling to 10,000-ft measured depth with an average ROP increase of 28% compared to direct offset wells.

In the Marcellus Formation in northeastern Pennsylvania, the StrataBlade bit drilled an 8 <sup>3</sup>/<sub>4</sub>-in section with a measured depth of 3,149 ft in under 12 drilling hours.

The operator achieved an on-bottom ROP of 264 ft/h, resulting in a 15% improvement compared with average offset runs with other PDC bits.

## Increased cutting efficiency for instant ROP improvement

The StrataBlade concave diamond element bit saves rig time and costs by delivering faster instantaneous ROP.

It withstands impact damage in interbedded drilling through medium-strength formations with unconfined compressive strengths (UCS), ranging from 5,000 to 20,000 psi [35 to 140 MPa].

# mosaic-H, Accurate Positioning and Heading in a Single Compact Module

The new mosaic-HTM dual antenna GPS/ GNSS module opens the door to smallerthan-ever navigation and control solutions for automated machines and robots.

> eptentrio, a leader in high-precision GNSS\* positioning solutions, expands its GNSS module portfolio with mosaic-H heading receiver. With dual antenna capabilities, this surface mount module delivers reliable heading & pitch or heading & roll

information on top of centimetre-level positioning. mosaic-H is the new addition to Septentrio's existing mosaic module family, which already includes high-performance RTK and timing modules as well as modules with integrated GNSS corrections. Having a single standard footprint across multiple specialized receiver modules enables integrators to create multiple application-specific products based on a single design.

"The mosaic GNSS receivers have set a new performance standard among high precision GNSS modules. Adding a second antenna input into the single form factor of mosaic demonstrates Septentrio's leading position in the high-precision module market," said Francois Freulon, Head of Product Management at Septentrio. "Thanks to its ultra-small dimensions and low power consumption, mosaic-H is the ideal navigation and control solution for robotics, UAVs and autonomous applications which require ultra-robust and secure positioning and heading."

mosaic-HTM delivers orientation angles immediately from the start, helping initialize inertial systems which otherwise would require movement before they can measure 3D orientation. INS initialization with GNSS attitude from power-up allows machine trajectory path optimization and fully informed navigation of robotic systems immediately from mission start.

The mosaic-H receiver will be available for integrator testing and customer evaluation by end of December 2020. The full product production is expected by spring 2021.

\*Global Navigation Satellite System including the American GPS, European Galileo, Russian GLONASS, Chinese BeiDou, Japan's QZSS and India's NavIC. These satellite constellations broadcast positioning information to receivers which use it to calculate their absolute position.

### **About Septentrio**

Septentrio designs and manufactures multi-frequency multi-constellation GPS/ GNSS positioning technology for demanding applications. Reliable centimetre-level positioning enables machine automation improving efficiency and safety. Septentrio provides positioning solutions for industrial applications such as robotics, construction, survey, and mapping, maritime, logistics and unmanned aerial vehicles (UAVs).

Septentrio has its headquarters in Leuven, Belgium and has a world-wide presence with offices in Los Angeles, Shanghai, Seoul and Yokohama as well as numerous partners around the world.



# Tesla's Gauntlet Has Been Thrown Down

# WILL THE PROPHECY BE FULFILLED?

by Evgenios Zogopoulos



## ANALYSIS

At this point, and it's admittedly a pretty early one, readers might be wandering what this article is about or whether they should be even spending time on a fairly incomprehensible title, about a fairly incomprehensible company led by a man who seems to be resorting to incomprehensible actions (tweets included). Well, bear with me for a second, because I will try to decipher a man's vision, which manifested through a company and that company went on to cause waves in our realm of reality; what many people, stock analysts and other Wall Street gurus do not comprehend about Elon Musk, his vision and his company is that they are becoming a cult-like phenomenon, mostly due to the fact that they have been achieving things that seemed unreal up until recently. This article will attempt to predict whether Elon's prophecy will be fulfilled or not.

By the way, the title is about Elon's latest controversial tweet: "The gauntlet has been thrown down! The prophecy will be fulfilled. Model S price changes to \$69,420 tonight!".

And this is the point where the average reader might ask: "why is that weird?", right?

Well, Elon felt the need to lower the price of Tesla's high-end S model, probably to compete with a rival company, but he did it by quoting '69' and '420'; 69 being a sex position and 420 - an internet slang for weed. Yes, this happened and yes, he lowered the car's price to \$69,420.

Now that I got you attention, let's get deeper into the rabbit hole.

"Tesla's mission is to accelerate the world's transition to sustainable energy. We hire the world's best and brightest people to help make this future a reality. Every Tesla is designed to be the safest, quickest car in its class—with industry-leading safety, range, and performance. Our global network of Superchargers and Destination Chargers provide convenient locations to stay charged, anywhere you go. Tesla energy products work together to power your home and charge your electric car. Solar produces clean energy during the day and Powerwall stores energy to power your home at night or during an



When Elon revealed the Cybertruck model, he didn't just talk about the new idea, he physically presented it.

outage."

The above 'verses' come directly from the company's website; they seem to reveal a very disruptive wave of innovation. Tesla started this innovation wave of the automotive industry as a niche competitor, offering totally disruptive items in the form of luxury electric vehicles. Those models have been extremely performing but also environmentally friendly. After their initial onslaught, Tesla has been decisively transitioning from a niche competitor to a broadmarket differentiator through the implementation of lithium batteries and the incorporation of SolarCity. The company's almost compulsive obsession on automation and R&D were a major 'liability' in early days burning vast amounts of cash; however, they ended up bearing fruits in the form of Tesla's current competitive moat, offering immense and sustainable competitive advantages.

The main product of this extensive research and development process came in the form of a technological product and services ecosystem: software, cars, batteries, solar components, a supercharging network, and self-driving features. Marketing is not even needed, as Elon Musk's twitter accounts for the most of their media capital, with zero investment and much fun controversy.

The company today is valued around \$393 billion, almost double than Toyota, one of the most prominent giants of the ICE (internal combustion engine) era.

### **Elon Musk**

Elon Musk, aka 'the Prophet' or 'God-Emperor Musk' or 'the Illuminaughty', or 'Papa-Elon' (these are some of the nicknames attributed to him online) is the man behind the phenomenon; maybe he is a phenomenon himself. It is impossible to fully comprehend what Tesla stands for today, without examining its controversial CEO; his memes have been a major driver of controversy and enthusiasm alike.

Elon got himself into trouble, being investigated by the SEC (the US Securities and Exchange Commission) back in 2018 due to his tweet that he had secured financial commitments to Tesla private. It was determined, after the investigation, that it was not the case. The SEC pursued to ban Elon Musk from leading Tesla or any other company; they failed. They reached a common agreement that forced him to temporarily quit his position as chairman and get every future

# Tesla 4680

**Battery Cell** 



80 MM



+16%

public statement checked and approved by the legal department. That episode sparked a legendary rant of Elon against the SEC ever since. Back in July 2020, he tweeted that he would "make fabulous short shorts in radiant red satin with gold trim," and that he would also "send some to the Shortseller Enrichment Commission (allegedly referring to the SEC - smooth right?) to comfort them through these difficult times."

In a similar fashion, Musk tweeted to his 29 million followers that the "Roadster will include 10 small rocket thrusters," and "Maybe they will even allow a Tesla to fly"; these comments are apparently comical but they do include some level of absolute seriousness. Elon Musk is actively indicating that hyper-advanced technology is being shared among his different companies (like SpaceX), which is true as they engineering teams are transversally involved in projects. This is obviously enough to galvanize the Tesla fanatics but also polarize the 'conventional' analysts against him, quoting 'childish behaviours'. Elon Musk has proven to be a master of creating and using innovation capital to create publicity leverage. When Elon revealed the Cybertruck model, he didn't just talk about the new idea, he physically presented it; he did the same thing when he parked a Space X rocket in front of the National Air and Space Museum. Is there a need for a PR or Marketing department if your CEO can handle publicity like

#### that?

It is today presumed that Tesla disbanded its Marketing department recently; we can take this as a big 'YES'. It seems like a bold move but we are used to expect such stuff from Tesla by now; it's hardly questionable whether it will have any negative impact, as Elon seems to be driving marketing on his own and the products sell themselves. At the end of the day, Tesla isn't just a pioneer in Electric Vehicle (EV) technology but also a digital-tech company like Alphabet, Facebook and Amazon. It has always been highly disruptive on every level, including the direct and dealer-free sales model. Their marketing & sales strategy was disruptive at its core (for example, they do not use dealerships) and the modern capabilities of social media for viral spread of news and immense, global reach can be a superweapon.

This pattern has been creating a wave of publicity; controversy from the side of the analysts and absolute devotion from the Tesla faith militants. There's indeed no need for press releases when every tiny detail, is leaked and analysed by numerous social media channels, pages and YouTube channels, dedicated to Tesla. The fans seek to discover and spread the news themselves; the non-believers act the same. Tesla did not have to officially announce a significant update in Model 3 as it was already been online by fans. The same happened with the Octovalve pump for Model Y, which presumably increased range by 10. Similar was the fashion that the new 4860 battery design was announced at Battery Day 2020; Elon Musk just confirmed the rumours by answering with a simple 'Yeah' to a fan's inquiry on Tweeter. It is worthy to mention that the 4860 battery was being promoted by fans as the 'million-mile battery'.

Few companies have attracted as much scorn and adoration

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as Tesla. When Tesla launches a product like the Cybertruck, the reception tends to be divisive: critics see it as further evidence that founder Elon Musk is out of touch and doomed to fail, while supporters buy in hard. One thing is certain: this controversy is organic, and it works for the bottom line; when Cybertruck was presented, it divided the audience but still pushed 200,000 preorders for the within the first months. There is no question that Tesla is transforming the automaker industry globally; this might be increasingly applying pressure to the traditional automakers to either pivot or go extinct. This 'madness' or 'childish' strategy might be deadly serious for the industry after all.

### Tesla's strategy and business components

As we already established, one of the major challenges of understanding Tesla's strategy is the veil of cult-like support and hatred. This can range from traditional automaker CEOs proclaiming Tesla to be a doomed start-up company and traders short-selling the stock, all the way to Robinhood traders buying Tesla stock with every penny they can spare and even meme-worshipping.

On the flipside of the same coin though, there lies the very real challenge of interpreting Tesla's business strategy. Even before Tesla could establish the company's foothold in the EV market they heavily invested in R&D for batteries, solar energy and AI trying to connect seemingly non-connectable dots. On the surface, it would make no sense and it put the company in existential risk, as R&D drained the available cash fast and furiously. What the world did not see back then, and probably does not even today realize, is that Tesla was very clear about what they wanted to do from the beginning and what they have accomplished so far is to dig an immense competitive moat to withstand competition's advancements for many years to come.

Elon Musk himself in 2006 declared that: "Tesla is to enter at the high end of the market, where customers are prepared to pay a premium, and then drive down market as fast as possible to high unit volume and lower prices with each successive model". Tesla was in for the long game, focusing on R&D continuously so they could generate a unique and innovative ecosystem and grow it to profit from economies of scale.

Tesla cannot be reviewed as a car company because it is not just a car company. It is a tech, energy, AI, transportation services and products company that focuses heavily on future technology. Elon Musk lives in the future and the awesome part is that he has the means and capacity to pull us all forward, today. He pursued a totally different level of business organization, hardware, and software architecture. The level of quality delivered and the meticulous effort for excellence and innovation are almost incomparable to anything else in the market right now.

Early electric vehicles produced by competitors, based on internal combustion engine architectures could not reach the level of quality of Tesla in terms of hardware or software. Other manufacturers must resort to multiple software systems to run their cars rather than a single integrated system like Tesla's, which also has significant performance advantages. Tesla on a high and lower level is pursuing an ecosystem architecture; everything is connected in a harmonious system providing competitive advantages throughout the system's channels. If we analyse how those systems operate and what is their bigger challenge, it will come down to bottlenecks; that would be the 'choking' point of the system's optimal performance. Until now, for the EV component, it has been battery performance and costs. If someone could enhance battery performance, scale up production and drive costs down, they would control the universe of EVs; well, Tesla seems to be doing exactly that, as we speak. They recently confirmed that in the next coming years battery cost would dramatically decrease while the performance would dramatically increase. That kind of bottleneck will be here to stay which means Tesla is far ahead from anyone in the competition pool and thus has access to an immense profit potential.

Tesla is going along with R&D, focusing on Software, Hardware, Automation, Material Costs, and ecosystem architecture. Christine Rowland in her Tesla report for the Panmore Institute said that: "We believe that an approach based on advanced AI for vision and planning, supported by efficient use of inference hardware is the only way to achieve a general solution to full self-driving; one of the company's strategic objectives is to increase investment in research and development (R&D) to develop new products that satisfy market demand for enhanced renewable energy solutions, such as batteries for various purposes".

This innovative ecosystem is putting Tesla in the pole position across multiple segments: Electric Vehicles, Energy and Batteries, AI, and software. For example, part of the ecosystem approach was the SolarCity merging with Tesla, Inc. to facilitate synergies. Elon Musk said that "we believe quite that Solar city's technology on the Silevo Front added to Panasonic's cell technology will make it the most efficient and ultimately the cheapest solar cell in the world".

### **Electric Vehicles component**

Tesla has been increasing their R&D budget over the last years: "Tesla's R&D Expenses grew from \$0.7 billion in 2015 to about \$1.5 billion in 2018. We expect R&D spending to fall to about \$1.4 billion over the next 2 years." That can maybe provide a glimpse of the magnitude of investment and part of why Tesla was showing to be non-profitable all the way until these past fiscal quarters.

### **Revolution In Body + Battery Engineering**

**10% MASS REDUCTION** 

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In addition to bolstering the car's frame, Tesla plans to drastically improve the design of its vehicles using a new battery architecture. With the new form factor, Tesla is able to minimize negative mass, thus increasing the density of the battery pack. The battery is then able to be positioned more efficiently, further reducing redundant structures within the packaging itself.

The innovation level of how Tesla cars are being assembled is staggering, both on a software and hardware level. Even though traditional cars do have software to operate, it is simple and with multiple limitations; Tesla's software architecture is far more advanced, and it allows constant and significant updates for performance optimization. Even though the comparison is not direct, and it is potentially oversimplistic, imagine comparing a Nokia 3210 (and its software) with an iPhone 11 (and its iOS software). But we will dive deeper into that later.

Hardware is a whole different dimension; EVs, by definition, have immensely less parts compared to an IC vehicle, which makes them automatically simpler to produce, cheaper, lighter etc. For example, Tesla's base flat pack of batteries, the two electric engines (front and rear), and the no-transmission equipment create an advantage over competing electric vehicles built on traditional vehicle architectures; that can be a lower centre of gravity (and thus safer), better energy density and battery management. Simply, this engineering approach beats by far any other attempt of competitors to fit EV technology in the old IC frame; this happens because it was designed and adapted to the EV realities. It might seem easy to just 'reinvent' the car architecture but it actually requires a lot of time and effort for anyone since it will require scrapping already existing knowhow, your specialized (and potentially outdated) personnel, your manufacturing equipment and your workflows. As senior engineers of the traditional automotive industry proclaim: "It's just hard for us because historically we have been great mechanical engineers, not great software engineers. But we need to become software engineers."

Production capacity has been another significant 'bottleneck' for Tesla and they have indeed focused on scaling up dramatically; Even if most of the production has been coming from Fremont, California, they recently started operating the

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Gigafactory in Shanghai, they started building the Berlin Gigafactory and same goes for their upcoming Texas factory.

Another challenge has always been the capacity of their suppliers to continue delivering scarce raw materials. Tesla's has found ways to overcome this, either through manufacturing their own customized in-house parts or through negotiating hard to secure resources. For example, they produce in-house the electric motors, battery packs, and the chargers. In terms of negotiating, they ensure hedging through buying resources from many different suppliers; they buy lithium from China and Australia for example. An interesting fact is that since the EV demand has been steadily increasing, the need for lithium followed, increasing prices accordingly. Tesla maintains their competitive price advantage through their secured relationship their early suppliers, which is not the case for newer players in the market.

Regardless of any personal opinions, Tesla's revolutionary approach has proven so far capable of disrupting a multibillion-dollar industry; they revolutionized the core product, put it in the core of an entire ecosystem and managed to discover solutions to resolve bottlenecks through technology that seemed to be decades ahead of our time. Elon Musk proven to be more than able to multiply and leverage the ecosystem's innovation capital so Tesla can win the resources and support to execute the vision.

### **Energy and battery component**

Almost all the circulating EV batteries today are lithium-ion and are warrantied to last up to 10 years or 100,000 miles. Some automakers claim that the battery will not lose more 30% of its capacity, even after

that point. Indeed, data suggests that EV batteries can last longer with less degradation.

When Tesla announced battery technology breakthroughs, the news created ripples in another billion-dollar industry; that of batteries and energy. To be more specific, cars employing lithium-ion batteries, the same ones as in cell phones, were already expected to be replaced by lithium-iron phosphate and other chemistry combinations. This move only would slash costs and extend range up to 400 miles between charges; this is the basis of the 'million-mile battery'. The basic differentiation with the lithium-iron phosphate is that they do not require cobalt, which is extremely scarce and thus a major driver of expensive EV prices. Cobalt prices have dropped during the pandemic, declining from as much as \$95,000 per ton in 2018 to \$30,000 in 202, but it remains immensely expensive and hard to find. The new chemistry composition could slash prices of batteries as low as \$80/kWh.

The industry average battery costs declined from \$288 to \$176 between 2016 and 2018. There are estimations that Tesla's battery costs have been lower by about 20% as the company is negotiating hard based on higher volumes and they also leverage their cutting-edge technology. If battery costs are to drop by about 50%-60%, as per Tesla's announcement during this year's Battery Day, it could mean that the battery pack would cost \$3,500 per vehicle, down from an \$8,000 estimation. That could mean immense spikes in profit margins for Tesla, or price decreases for end customers, making Tesla cars even more affordable (and potentially killing off the competitors).

Simon Lambert, a senior executive at the Recycling of Lithium-Ion Batteries project at the UK's Faraday Institution, notes: "What they're talking about with million-mile batteries is not so much that an average consumer would put a million miles on the clock, but that you'd potentially be able to use the battery multiple times, either in vehicular energy storage or grid-connected stuff." Such a million-mile battery could be used in cycles starting from performance cars and then an electric taxi, before finally being ending up to less demanding applications like grid energy storage or backup power systems. Repurposing batteries is another emerging industry moving millions for now. Dan Ives, a prominent analyst from Wedbush securities, stated: "If you're talking about batteries that can last twice as long for the same price, it completely changes the math for the consumer. Iron phosphate batteries are safer, and they can have second or third

lives as electricity storage."

Practically, the longer life of batteries could mean that the batteries could outlast the cars themselves, offering much more value for the long run. They could possibly even be used for storing solar electricity for homes, another part of the Tesla ecosystem. This could also mean a game-changing factor for another immense market, the ridesharing business.

Regarding the Energy component, it is part of the ecosystem, but Tesla has consciously chosen to divert resources away from it. It is imperative to understand why, and thus illustrate a bit Elon Musk's thinking process; he has stated: "For about 18 months, almost two years, we had to divert a tremendous amount of resources. We had to basically take resources from everywhere else in the company and apply them to the Model 3 production, fixing the Model 3 production ramp and simplifying the design of the Model 3. For about a year and a half, we unfortunately stripped Tesla Energy of engineering and other resources and even took the cell production lines that were meant for Powerwall and Powerpack and redirected them to the car because we didn't have enough cells. If we didn't solve Model 3, Tesla wouldn't survive. So, unfortunately, that shorted pretty much the other parts of the company. But it would be difficult for me to overstate the degree to which I think Tesla Energy is going to be a major part of Tesla's activity in the future."

It is also interesting to highlight his rational on the 'clean energy' ecosystem: "I think you'll see that we're producing about the same or comparable amounts of sustainable energy as are consumed in the car. For the longest time, the rebuttal against electric cars is, like, don't they use dirty power from coal? Tesla's overarching strategy here is effectively to become a giant distributor global utility," Elon Musk stated.

Analysts are accepting these claims with some grains (or megaliths) of salt, countering that Elon musk is very prone to exaggeration. Analysts covering the rooftop solar sector estimate that it can grow from a low-end estimate of 10% annually to as high as 20%, based on the performance of the leading companies, such as Sunrun, SunPower and Vivint Solar.

KeyBanc Capital Markets analyst Sophie Karp stated that: "Part of what maybe Musk thinks is they can come back and take market share and it would seem to me the EV business growing in the midteens as well, so maybe he thinks they can grow more quickly in solar because they can take share. We'll see. They are an amazing company and they've done some amazing things, but they really mismanaged that business." She also claims that this is not going to be a walk in the park: "Solar is a product that is a push, not a pull; it is sold not bought. You can't just snap your fingers and have an overnight sales channel allowing you to grow 20% to 30% growth. It is difficult to generate explosive growth in this space. A Tesla car is like a Chanel bag. Rooftop solar is electricity... a complete commodity competing on price. Most people have zero idea whose panels are on their roof. Who cares? I'm not sure a charismatic leader can help sell that product. Maybe they can fix it, but they have not so far demonstrated that, and it requires a lot of management and attention. Sunrun has kicked their butts."

Tesla Energy supplies power to homes, businesses, and utilities by selling solar panels, solar roofing and battery storage packs called the Powerwall, Powerpack and Megapack. In 2018, Tesla installed more than 1 GWh of storage capacity around the world. This year the company aims to double that capacity to 2 GWh. "I think there is generally a lack of understanding or appreciation for the growth of Tesla Energy," Musk stated during the last earnings call. "In the long term I expect Tesla Energy to be of the same or roughly the same size as Tesla's automotive sector or business."

Gene Munster, CEO at Loup Ventures, claims that Tesla's energy business is not a stand-alone component but rather a 'plug-in' for the ecosystem: "Energy is currently 10% of the revenue, and most investors believe the energy business will remain 10% of revenue". He does not see this segment going over 20% of Tesla's overall busines, which is significantly below Musk's 50% target.

## Software, AI, and autonomous vehicle component

Last, but not least is the Software aspect; it was Tesla's absolute dedication to R&D and software development that really gave them the edge they have today over their competition. Instead of following the traditional lifecycles for software product development, they have positioned 'agile' at the very heart of how they work.

They employ agile principles and SCRUM<sup>1</sup> to develop and improve the core software. This approach not only minimized errors but created breakthroughs for innovation capital.

The meticulous effort to develop and refine their software has provided significant advancements for the Tesla Autopilot technology, which pretty much could control the car without much human intervention; it is supposed to be able to steer, accelerate, brake and navigate autonomously. Elon Musk insists that Tesla is far ahead from competitors and is getting very close to fully autonomous selfdriving; he said that: "I personally tested the latest alpha build of the full self-driving software when I drive my car. And it is really, I think, profoundly

1 According to agilealliance.com, SCRUM is a process framework used to manage product development and other knowledge work. Scrum is empirical in that it provides a means for teams to establish a hypothesis of how they think something works, try it out, reflect on the experience, and make the appropriate adjustments. better than people realize," Musk said on the earnings call. "It's almost getting to a point where I can go from my house to work with no interventions, despite going through construction and widely varying situations." That capability, if described accurately, is impressive, but a wide range of automotive and tech companies are working on similar technology. Tesla has come under government scrutiny in the past for making over-the-top claims about the capability of its self-driving systems. We'll see if the company can deliver the goods, which would likely help boost profits due to the premium customers are expected to pay for autonomous technology.

Neural Networks and AI algorithms, which has been a major investment, are enhancing Tesla's autopilot which seems to be years ahead of anything similar. The constant software iterations and updates lower the 'age' of the cars and offer an unparallel used experience, with customizable UX interfaces and even features like self-parking. When it comes to batteries and software interaction, the constant software updates boosted battery performance, which comes on top of the ongoing hardware breakthroughs Tesla is achieving with batteries.

### The stock market frenzy

"Number one rule of Wall Street. Nobody... and I don't care if you're Warren Buffet or if you're Jimmy Buffet. Nobody knows if a stock is going to go up, down, sideways or in circles. You know what a fugazi is?"

These were some of the wise words of Mark Hanna, a fictional (but based on a multitude of true stories, I guess) character in the movie "The Wolf of Wall Street". The real Warren Buffet through, the legendary investor, seems to agree with the notion.

So, what about the Tesla (TSLA) stock?

The incredible rise in Tesla's stock price started since the beginning of 2020, with a small interruption in March, when the stock market collapsed due to COVID-19. The company managed to accelerate Model 3 output, launched Model Y, reduced unnecessary costs and it was about that time when the leadership skills of Elon Musk were becoming undeniable. All this happened during the global crisis and by the way, these were some of Tesla's first profitable fiscal quarters.

The company had been historically erratic when it came to earnings performance, reporting mostly earnings per share (EPS) declines or straight losses all the way to Q2 2019. Tesla then produced four straight profitable quarters initiating an enthusiasm frenzy and sparking rumours about an inclusion in the S&P500 index; that would increase the company's status in Wall Street. Shares plunged in September, after the relevant committee passed them over, but the stock price has recovered since. This is part of the Tesla story; these waves of enthusiasm and controversy do drive the stock price up and down; Tesla however did manage to profit even from that, as they released new shares while the price was at record high levels, securing 'free money' of around 5 billion dollars.

The major underlining driver of the stock price boils down to vehicle production capacity; for any other company, it would be

profitability, brand awareness, quality of products but Tesla seems to have mastered these aspects. They sell every single car they make, and they just can't make enough of them, for now. The new gigafactories will change the game and the company seems even now to be pushing forward; rumours circulate that Tesla is in discussions for a new battery factory in Indonesia. They are decisively scaling up manufacturing capacity with the new factories (Shanghai, upcoming Berlin, and Texas) and new models even before competition can catch a breath. As Tesla releases quarterly car production figures ahead of its earnings reports (which are also soon to be released), it is becoming evident that they will beat expectations again. In Q3 FY 2020, Tesla produced 145,036 vehicles, ahead of the predicted 143,400 vehicles. Tesla's Q3 2020 production capacity was almost triple compared with three years ago; nevertheless, it seems that they might reach Elon Musk's half-million units target, which was set before the pandemic's effects were clear.

Either way, do not invest in Tesla stock without really doing your own due diligence and researching the subject on your own; this article does not intent, under any circumstances, to provide any investing or trading advice.

### Will the prophecy be fulfilled?

As with every prophecy, the outcome cannot be certain and the prophecy itself is usually ambiguous, unclear, or just gibberish. In this case, the stars seem to be aligned, not because of fate or luck but because of Elon Musk. He seems to be a capable leader and a man with a vision and the means to materialize it.

I personally believe in the vision for a cleaner, more sustainable future and I'm pretty much convinced that the era of Electric Vehicles and clean Energy is about to begin. I also believe that Tesla is going to dominate for the years to come, until the competition finally comes closer. Tesla has been a pioneer and it seems that they will continue to do so. That being said, it is not going to be a walk in the park whatsoever.

We are talking about a company that, through its innovative disruption, seems able to change the world we live in, making it better and more exciting. It has attracted immense interest along with hardcore fans and sworn enemies, all absolutely convinced about their views on company.

Maybe it was about time for such an exciting company to emerge in our days; maybe that was the prophecy all about.

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EVENT

# Siemens Romania Modernized a Laboratory within the Faculty of Energy with State-of-theart Equipment







o celebrate the 70th anniversary of the founding of the Faculty of Energy, within the Polytechnic University of Bucharest, Siemens Romania had the honour to contribute to the

endowment of the Laboratory for the Electrical Part of Power Plants and Stations 'Constantin Dinculescu' (head of laboratory: prof.dr. eng. Sorina Costinas), with the following state-of-theart equipment for education and advanced research in the field of maintenance of power stations and quality assurance of electricity supply.

The inauguration event of the new equipment was attended by UPB representatives: prof.dr.ing. Horia Necula, Vice-Rector of UPB, prof.dr.ing. Lacramioara Diana Robescu, Dean of the Faculty of Energy, prof.dr.eng. Cristian Florian Dinca, Director of the Energy Production and Use Department, prof. dr.ing. Sorina Costinas, Head of Laboratory of the Electrical Part of Power Plants and Stations 'C-tin Dinculescu', Prof. Dr. George Darie, Former Vice-Rector of UPB. On behalf of Siemens Romania, the representatives who attended at the ceremony were Mr. Cristian Secosan, CEO of Siemens Romania and the Republic of Moldova and Mr. Vasile Cristea, Head of Distribution Systems - Smart Infrastructure, Siemens Romania. "The ability to inspire, to encourage students to develop their skills and become successful is the essence of quality education. For this, we need laboratories equipped at the level of current technology. The collaboration with Siemens is a confirmation of UPB's openness to the economic environment and a continuation of our actions to modernize the laboratories. The training of the young generation of engineers cannot and must not be just the responsibility of universities because it is in the interest of society as a whole," said prof.dr.ing. Horia Necula, vice-rector of UPB.

"People are the most important resource, in which we must constantly invest so that they can develop both personally and professionally. Caring for the preparation of young people, from the point of view of dual education, is one of Siemens' objectives. Thus, by equipping the laboratory with state-of-the-art equipment, but also by offering internship and training programs at the company level, we want students to take a first step towards the career they want," stated Cristian Secosan.

The laboratory was designed, built and put into operation in 1971 by teachers who were part of the team of Electrical Installations for Power Plants and Stations - Department of Power Plants (today, Department of Energy Production and Use), under the guidance of Professor Emeritus Constantin Dinculescu, former rector of the Polytechnic and one of the realizers of Romania's electrification plan. As a sign of appreciation, room EH008 bears the name of its founder.

The laboratory in EH008 is a dynamic model of electric power system, it was made on an industrial scale and has teaching facilities, being the only one of its kind in Europe. It is a real work polygon for

## EVENT



students, it allows manoeuvres in identical conditions to those in operation, both in older stations and in modern stations equipped with vacuum switching switches and digital protections or a fully digitized cell.

Siemens Romania has equipped the laboratory with the following equipment:

8DJH panels for secondary distribution up to 24kV are compact panels, gas-insulated, maintenance free and ensure high operation safety. For these reasons 8DJH panels are frequently utilized in applications such as: public utilities, solar parks, wind parks, e-houses, railway and subway substations, office buildings.

By introducing students to this type of panels, Siemens wanted to highlight dimension differences, at the same technical characteristics, between the old existing panels in Romania's National Grid and the new generation of equipment.

In addition, plexiglass walls allow students to see what actually happens inside the panels during different manoeuvres.

- Retrofit components
- 1. Sion Vacuum Circuit Breaker

An essential equipment for switching operations in distribution systems. Vacuum switching chamber, high number of maintenance-free operations and large variety of accessories make this product perfect for installation in both new medium voltage panels and in retrofit projects.

2. Current measurement transformer

This equipment is cast resin insulated. It can have from 1 to 4 secondary windings and a wide range of precision classes.

3. Voltage measurement transformer

This equipment is cast resin insulated. It can have from 1 to 3 secondary windings and a wide range of precision classes.

In Romanian National Grid there are many retrofit project – medium voltage panels modernization, by replacing old components with new ones. Siemens Romania emphasizes on the importance that students are familiar with cuttingedge technology available for such projects.

Siemens Romania has been involved in education and research also by giving lectures. Vasile Cristea, Head of Distribution Systems - Smart Infrastructure, Siemens Romania, presented to the fourth-year students the latest solutions for equipping the power stations in Siemens' portfolio.

Siemens AG (Berlin and Munich) is a global technology powerhouse that has stood for excellence, innovation, engineering quality, reliability, and internationality for more than 170 years. Active around the world, the company focuses on intelligent infrastructure for buildings and distributed energy systems and on automation and digitalization in the process and manufacturing industries. Siemens brings together the digital and physical worlds to benefit customers and society. Through Mobility, a leading supplier of intelligent mobility solutions for rail and road transport, Siemens is helping to shape the world market for passenger and freight services. Via its majority stake in the publicly listed company Siemens Healthineers, Siemens is also a world-leading supplier of medical technology and digital health services. In addition, Siemens holds a minority stake in Siemens Energy, a global leader in the transmission and generation of electrical power that has been listed on the stock exchange since September 28, 2020.

In fiscal 2019, which ended on September 30, 2019, the Siemens Group generated revenue of EUR 58.5 billion and net income of EUR 5.6 billion. As of September 30, 2019, the company had around 295,000 employees worldwide on the basis of continuing operations.

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EVENT

# First SCADA Laboratory within Politehnica University of Bucharest Inaugurated





n the opening of the fifth edition of the International Conference 'Regional South-East European Conference - RSEEC 2020', which took place on October 12, in the

presence of Mr. Antonel Tanase, Secretary General of the Government of Romania - with the rank of Minister, the first SCADA Laboratory within the Politehnica University of Bucharest was inaugurated. The endowment of the laboratory was provided by CNTEE Transelectrica SA, with the contribution of SIEMENS Energy Romania, but also of other companies operating in the energy field, such as Siemens Romania and Eneroptim SRL in partnership with the Politehnica University of Bucharest.

The SCADA Laboratory reproduce a small size 220/110 kV substations and was designed with command - control - protection equipment, similar with the most modern substations currently in operation within CNTEE Transelectrica SA portfolio, to ensure the energy transport function in safe conditions. SCADA Laboratory, coordinated by Prof.dr.eng. Constantin Bulac, Prof.dr.eng. Ion Tristiu and Conf.dr.eng. Mihai Sanduleac, is the result of collaboration between companies from the energy sector and the university environment to ensure a solid training of future power systems engineers in Romania.

Mr. Antonel Tanase delivered Prime Minister Ludovic Oban's message saying that the Romanian Government is a partner for investment, clean energy, and a sustainable and decent life in Romania. Also, he encouraged Romanian Transmission and System Operator Transelectrica SA - whose actions are administered by the General Secretariat of the Government on behalf of the Romanian state - to continue to get involved in the university area, as it has already done by investing in this SCADA laboratory.

"I want to thank Transelectrica SA for its involvement in the university research and development area, both by equipping this laboratory and in the following projects it wants to develop in partnership with the University Politehnica of Bucharest. I encourage such steps. I myself, when I was student, I've had the benefit of the state support, and the young people in Romania must understand that here we have opportunities for development - opportunities to lead a decent life and to develop professionally," Mr. Tanase stated.

"SCADA systems (Supervisory Control and Data Acquisition) have proven their efficiency in operation, through the appropriate allocation of resources and low energy consumption, regardless of the economic field in which they were implemented. Thus, the initiative to setting up a SCADA laboratory in the University Politehnica of Bucharest is extremely welcome, these automation systems being necessary wherever there is a technological process, because there is the only solution that offers the possibility of efficient process operation at reasonable operating costs. Although the trend of energy efficiency is presently increasingly all over the world, the digitalization



of the energy sector is a priority today, and students education in this direction is essential for the development of their skills as future power systems engineers," Mr. Mihnea Costoiu, Rector of University Politehnica of Bucharest, said.

"The endowment of the SCADA laboratory, within University Politehnica of Bucharest, Faculty of Power Engineering, marks a success of our Company in terms of actions to promote and support specialized education. The SCADA laboratory represents a consistent investment of our company in the training of the future power system engineers and for our employees' training as well. Our vision for establishing and developing a SCADA Laboratory capability is to accelerate the understanding and adoption of technologies that will make the transition from energy systems to intelligent systems. It is our duty to come to the aid of the university environment for the training of the engineers of the future, so that they will keep up with the technological progress registered in energy sector. Therefore, a consistent collaboration between utility operators, such Transelectrica and the university environment is mandatory. In this sense, during this period we are perfecting a protocol with the University Politehnica of Bucharest, through which we intend to extend the collaboration directions for 2020 - 2024," Mr. Catalin Nitu, Directorate Chairman of CNTEE Transelectrica SA, mentioned.

"For Siemens Energy Romania, technology is important, but the people are making the difference. Therefore, the training of the next generation of energy specialists is one of our main objectives. We thank the management of the University Politehnica of Bucharest, CNTEE Transelectrica SA and our business partners for offering us the opportunity to get involved in this project and contribute to the development of students' practical skills," Mr. Petru Ruset, Managing Director of Siemens Energy Romania, added. The SCADA laboratory was equipped with monitoring and control equipment related to a command-control-protection system, used in 400/220/110 kV substations, covering various functions: monitoring and control; distance protection; transformer differential protection; overcurrent protection; differential busbar protection.

The laboratory devices are identically to the ones in service within CNTEE Transelectrica SA substations, like Stuparei 220/110kV, Targoviste 220/110 kV, Turnu Magurele 220/110kV, Roman Nord 400/220 /110 kV.

By developing application in this SCADA Laboratory, through the present state-of-art implementation the students will have the opportunity to get familiar with a modern distributed control system for high voltage substations, being able, as for real, to operate and monitor in real time the modelled 220/110 kV substation. In this way, upon completion of studies, future professionals will adapt more quickly to the management of current technological processes.

The concept and design were made by Prof.dr.eng. Constantin Bulac, dr.eng. Florin Balasiu and eng. Danut Adrian Postovei, Siemens Energy Romania. Specialists with experience in SCADA systems were responsible for the implementation and testing of the command-control-protection system related to the SCADA laboratory: eng. Danuţ Adrian Postovei, eng. Viorel Patrascu and eng. Razvan Serbanescu.





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## <sup>/</sup> NOVEMBER'S READING

# World Energy Outlook 2020

Amid deep disruption and uncertainty caused by the pandemic, a surge in well-designed energy policies is needed to put the world on track for a resilient energy system that can meet climate goals.

t has been a tumultuous year for the global energy system. The Covid-19 crisis has caused more disruption than any other event in recent history, leaving scars that will last for years to come. But whether this upheaval ultimately helps or hinders efforts to accelerate clean energy transitions and reach international energy and climate goals will depend on how governments respond to today's challenges.

The World Energy Outlook, the IEA's flagship publication, provides a comprehensive view of how the global energy system could develop in the coming decades.

This year's exceptional circumstances require an exceptional approach. The usual long-term modelling horizons are kept but the focus for the World Energy Outlook 2020 is firmly on the next 10 years, exploring in detail the impacts of the Covid-19 pandemic on the energy sector, and the near-term actions that could accelerate clean energy transitions.



Only available in pdf format (No print edition available)

www.webstore.iea.org/worldenergy-outlook-2020 The analysis targets the key uncertainties facing the energy sector in relation to the duration of the pandemic and its implications, while mapping out the choices that would pave the way towards a sustainable recovery.

The strategic insights from the WEO-2020 are based on detailed modelling of different potential pathways out of the crisis, covering all regions, fuels and technologies and using the latest data on energy markets, policies, and costs.

This year's edition also includes access to detailed scenario data.

In the Stated Policies Scenario, which reflects today's announced policy intentions and targets, global energy demand rebounds to its pre-crisis level in early 2023. However, this does not happen until 2025 in the event of a prolonged pandemic and deeper slump, as shown in the Delayed Recovery Scenario. Slower demand growth lowers the outlook for oil and gas prices compared with pre-crisis trends. But large falls in investment increase the risk of future market volatility.



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