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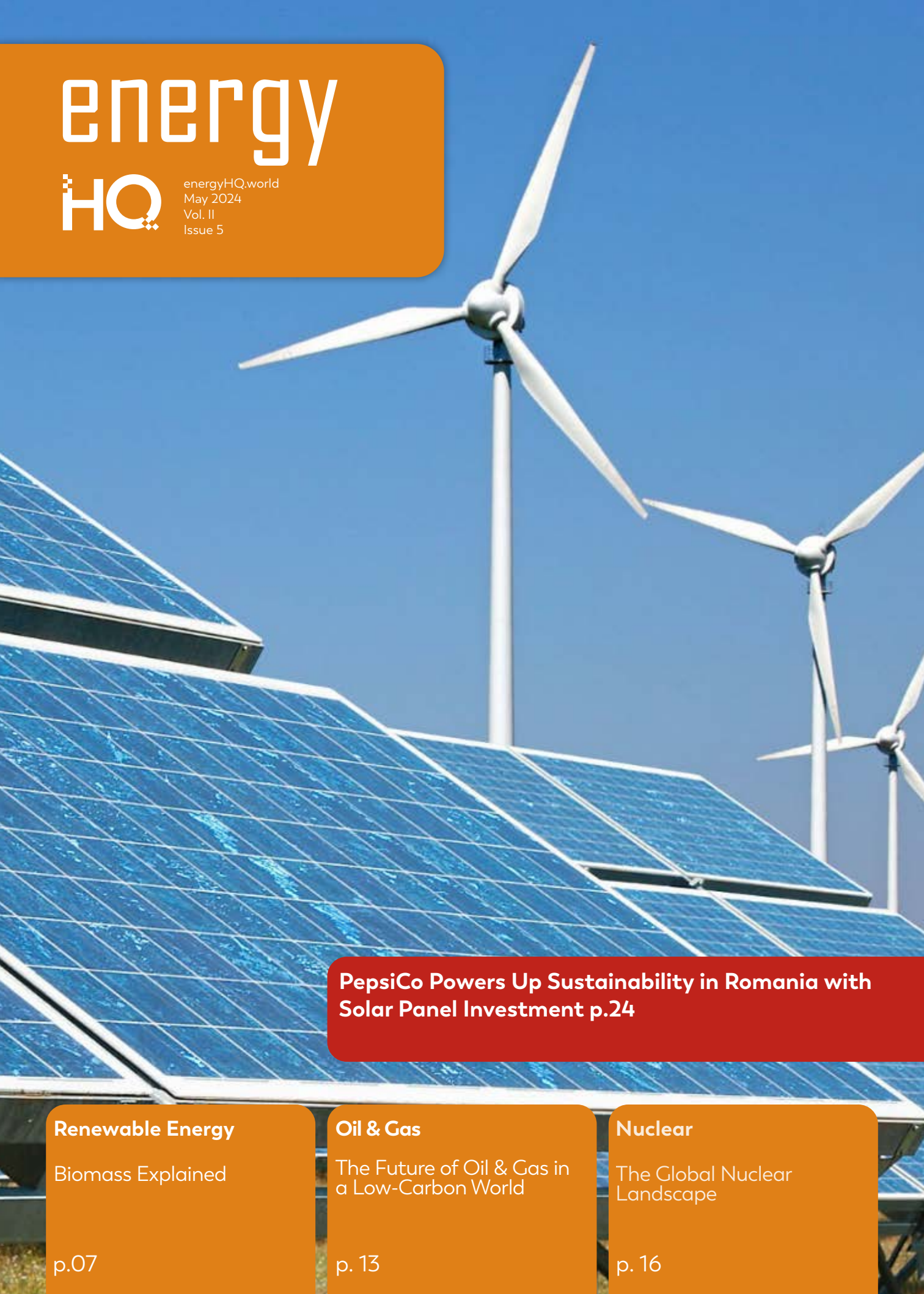
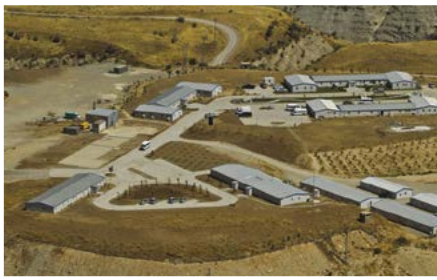


PepsiCo Powers Up Sustainability in Romania with Solar Panel Investment p.24

“WORLD IS TOO SMALL... FOR US” SINCE 1977



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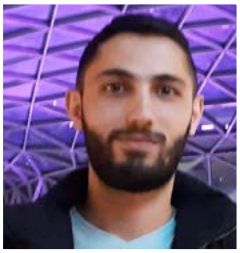
Harnessing the Power of the Sun: A Guide to Photovolta-



In today's business landscape, sustainability and energy efficiency are no longer just buzzwords; they're strategic imperatives. Companies are increasingly seeking ways to reduce their environmental footprint and operating costs. Photovoltaic (PV) panels, which convert sunlight into electricity, offer a compelling solution.

The Advantages of Solar Power for Businesses

• Cost Savings: Solar panels generate clean, renewable energy, significantly reducing reliance on the traditional grid. This translates to lower electricity bills and greater predictability in energy costs over time.

- Increased ROI: The upfront investment in PV panels is balanced by substantial long-term financial benefits. Government incentives, tax credits, and accelerated depreciation schedules further enhance the return on investment (ROI) of solar power.
- Enhanced Brand Image: Consumers are increasingly drawn to companies that demonstrate a commitment to sustainability. Investing in solar energy allows businesses to showcase their environmental responsibility and attract environmentally conscious customers.

Advancements in PV Technology

The field of photovoltaic technology is constantly evolving, offering businesses even greater efficiency and cost-effectiveness:

- **Increased Efficiency**: Modern PV panels are more efficient at converting sunlight into electricity, maximizing energy output per square meter of installation.
- **Thinner, Lighter Panels:** Technological advancements have led to the development of thinner and lighter panels, making them easier to integrate into existing roof structures.
- **Bifacial Panels:** These innovative panels capture sunlight from both sides, generating additional electricity, particularly when installed in open spaces.

Photovoltaic panels offer businesses a compelling path towards energy independence, cost savings, and environmental responsibility. With advancements in technology and attractive financial incentives, solar power is a viable and sustainable solution for businesses of all sizes. By carefully evaluating your needs and partnering with a solar professional, your company can harness the power of the sun and illuminate a brighter future.

In This Issue!

energyHQ's May 2024 issue covers the most recent developments and events pertaining to the energy industry, as well as including valuable insights, details and spec sheets / peer reviews related to latest technologies, innovations, products, services, and projects of relevance to the industry and its audience.

- Article on page 10 talks about Green Finance & Sustainable Investment
- Article on page 16 focuses on The Global Nuclear Landscape
- Article on page 24 sheds the light on Photovoltaic Panels

Additional content is also available covering the latest activities of manufacturers, importers, and exporters – worldwide!

We hope you benefit from this issue's content and find it useful & actionable for your business. For any comments, suggestions, or feedback please don't hesitate to contact me.

Best wishes,
Hassan Mourtada
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Energy World Digest

France

France awaits key climate legislation, government keeps focus on nuclear

Despite a set of fresh new decarbonization goals published last year, starting with the progressive phaseout of fossil fuels, France seems more focused on deploying new nuclear reactors – which will likely cost more than expected – than making up for the gap between the development of its clean energy sources and those of other countries in the European Union. Whether the development pace is too slow for some or the targets not ambitious enough for others, the EU executive is keeping France under close watch. The government pledged to pursue its efforts in adapting to climate change with a series of proposals set to be adopted mid-2024. This regularly updated factsheet provides an overview of France's efforts to reach carbon neutrality by 2050.

The French government is expected to adopt mid-2024 a set of new laws that will constitute its roadmap to reach carbon neutrality and adapt to climate change. It however came under fire when it said that it would postpone the inclusion of renewable energy goals in its proposals, while experts found that France's renewable deployment pace was too slow to meet EU rules. EU energy commissioner Kadri Simson urged France in February to "significantly raise its ambition on renewable energy sources to at least 44 percent" regarding gross final energy consumption by 2030 and specify clear targets in its National Climate and Energy Plan.

Ireland

Corre hires Rothschild to advise on investment interest in energy storage developer

Renewable energy storage developer's shares have lost almost 75% of their value over the past 12 months

Corre Energy, the Dublin-listed renewable energy storage developer, said it has hired investment bank Rothschild & Co to advise it on approaches it has had "from multiple parties" to invest in the company.

"A process with these investors is ongoing to provide additional funding for capital expenditure for the various projects and working capital," Corre said on Wednesday. "There is no certainty that any investment will be made nor on the size and structure of such an investment."

The company first disclosed that it had received investment interest from a number of parties on March 25th.

Shares in Corre, which floated on Euronext Dublin in September 2021, rose 5.5 per cent to 85 cents in Dublin. However, they remain down 71 per cent over the past 12 months.

This has been partly down to a slump across the wider green energy sector amid a decline in energy prices and the weight of higher interest rates on this capital-intensive sector.

However, according to observers, it is also down to concerns about Corre having failed to sufficiently spell out the financial details of its various projects to allow investors assess their potential for profit.

Germany

Energy industry calls for quick adoption of EU renewables rules in Germany to keep track

The Federation of German Energy and Water Industries (BDEW) has warned the German government not to further delay a raft of legislation on renewable power to keep the country on track toward its ambitious expansion goals. Since October last year, the government has planned to implement the EU's Renewable Energy Directive (RED II) in its so-called Solar Package, which covers solar power and other renewable technologies.

However, internal debates within the government coalition have held up the legislation for months and now pose the risk that the country misses crucial deadlines for the directive's adaptation, lobby group BDEW said. "A cornerstone RED II's implementation are the rules for transforming existing wind power inventory areas into acceleration areas" in which licensing decisions are made much faster BDEW head Kerstin Andreae said. A decision on these areas is still needed this week to comply with the EU's 21 May deadline to register new installations under a limited suspension of environmental checks that ends in 2025.

About 40 percent of the areas needed for wind power expansion are currently designated as regular construction areas. Missing the deadline for turning these into acceleration areas would slow down the construction of new turbines and put the climate targets in risk, Andreae added.

Spain

Saudi Arabia and Spain strengthen collaboration in urban infrastructure and renewable energy sector

Saudi-Spanish collaboration is set to flourish in the fields of urban infrastructure development, renewable energy, and engineering technology after a high-level meeting in Madrid.

During a three-day visit from April 15-17, Saudi Arabia's Minister of Municipal, Rural Affairs, and Housing, Majed Al-Hogail, met with executives from leading Spanish companies to explore collaboration opportunities.

The tour is part of the Kingdom's broader initiative to foster international partnerships that enhance its urban and infrastructure capabilities, the Saudi Press Agency reported.

Al-Hogail's engagements included a discussion with Pablo Bueno, CEO of TYPSA, focusing on potential collaboration in the fields of infrastructure solutions, energy efficiency, and sustainable urban development.

They discussed activating a circular economy in buildings and infrastructure and creating new asset management platforms and engineering value solutions.

Additionally, the minister met with José Vicente, CEO of Indra, one of the leading engineering technology and consulting firms, to discuss digital transformation in municipal services.

This collaboration aims to enhance the quality of services provided to Saudi citizens and residents and foster innovation.

United Kingdom

The UK energy sector faces an expanding OT threat landscape

Critical infrastructure is under attack in almost every country, but especially in the United Kingdom. The UK was the most attacked country in Europe, which is already the region most impacted by cyber incidents. The energy industry is taking the brunt of those cyberattacks, according to IBM's X-Force Threat Intelligence Index 2024.

The energy sector is a favorite target for threat actors. The complexity of systems and the reliance on legacy OT systems make them easy prey. Because of the critical nature of these systems, threat actors know that ransoms will be paid to keep downtime to a minimum.

A changing threat landscape

Ransomware is the top threat to the UK's critical infrastructure, according to the National Cyber Security Centre (NCSC). While some companies are hit with malware attacks directly, there is increasing risk to the OT supply chain, as suppliers and smaller companies that support energy and utilities are more likely to be victims of a cyberattack. These suppliers often lack good cybersecurity programs, making them an easy target for infiltrating larger critical infrastructure organizations.

The war in Ukraine has elevated the risk to the UK's energy industry. The conflict has emboldened state-related threat actors, and the NCSC warned that the most significant threat to the critical infrastructure is malware launched by nation-state groups.

Indonesia

Carbon Leakage, Leaking Policies: How the EU's CBAM Is Impacting Indonesia and Taiwan

The European Union's (EU) Carbon Border Adjustment Mechanism (CBAM) is a tariff that targets "carbon-leakage" in offshore production of imported goods to the 27-member bloc. Embedded in the European Green Deal (EGD) and the Fit for 55 Package, this policy tool hopes to align global carbon pricing and is vital to the success of the EU's decarbonisation ambitions.

It is currently in its transitional phase (2023-2026), with only selected industries – cement, iron and steel, aluminium, fertilisers, electricity and hydrogen – subject to the tariff. After 2026, all imported goods will be subject to the tariff, which is estimated to capture more than 50% of emissions in the EU's Emissions Trading System (ETS) covered sectors. Based on the ETS model, EU importers are required to purchase CBAM certificates that correspond to the carbon price that would be paid in the EU.

The CBAM is expected to generate an estimated US$9 billion a year by 2030, where part of that revenue will be redistributed to EU member states and other parts to lower-income EU trading partners to "incentivise decarbonisation initiatives." The CBAM ultimately hopes to both curtail the amount of European companies moving their production offshore and to encourage non-EU countries to invest in green energy and create their own carbon pricing mechanisms.

Renewable Energy

07 Biomass

Biomass Explained

Switchgrass growing on a test plot for biomass production

Biomass and biofuels offer a promising alternative to fossil fuels, but their impact on the environment is complex. This article explores the benefits and drawbacks of using biomass for energy production, delving deeper into specific types of biomass and their environmental considerations.

The Carbon Cycle and Biomass Neutrality

One significant benefit of biomass is its potential for carbon neutrality. Plants capture atmospheric carbon dioxide (CO2) through photosynthesis, storing it as they grow. When biomass is burned, CO2 is released back into the atmosphere. However, if the source plants are replenished through sustainable practices, the released CO2 is balanced by the CO2 captured by new plant growth, creating a closed carbon loop. This theoretical carbon neutrality makes biomass an attractive option for mitigating climate change.

Burning Wood: Benefits and Concerns

Wood is a traditional biomass source for heating and cooking. Compared to fossil fuels, burning wood can result in lower net CO2 emissions, especially if harvested from sustainably managed forests. Wood waste from forestry and construction can also be utilized for energy production. However, wood smoke poses environmental challenges. It contains harmful pollutants like carbon monoxide and particulate matter (PM) that contribute to air pollution, particularly when burned in inefficient stoves or open fires. Modern wood-burning technologies like pellet stoves and fireplace inserts significantly reduce PM emissions.

A crucial aspect of sustainable wood biomass utilization is responsible forest management. Unsustainable harvesting practices lead to deforestation, which disrupts ecosystems, reduces biodiversity, and diminishes the capacity of forests to act as carbon sinks. Planting fast-growing trees specifically for fuelwood production and promoting the use of fuel-efficient cookstoves are crucial strategies for mitigating deforestation and its environmental consequences.

Waste-to-Energy: Turning Trash into Power, But Not Without Challenges

Municipal solid waste (MSW) or garbage can be burned in waste-to-energy plants to generate electricity. This approach offers a potential benefit by diverting waste from landfills and reducing methane emissions, a potent greenhouse gas

produced by decomposing organic matter. However, burning waste also releases air pollutants, including nitrogen oxides, sulfur oxides, and volatile organic compounds (VOCs). These can contribute to smog formation and respiratory problems.

The U.S. Environmental Protection Agency (EPA) enforces strict regulations on waste-to-energy plants, mandating the use of air pollution control devices like scrubbers, fabric filters, and electrostatic precipitators to capture and remove pollutants before they are released into the atmosphere. Additionally, proper waste sorting and pre-processing can minimize the amount of harmful materials entering waste-to-energy facilities.

Another concern associated with waste-to-energy plants is the ash produced during combustion. This ash can contain high concentrations of heavy metals like lead and mercury, potentially leaching into groundwater if not managed properly. The EPA establishes guidelines for ash disposal, ensuring it is treated or disposed of in a safe and environmentally responsible manner. Some ash can be used as a construction material like concrete blocks, while the EPA deems safe ash suitable as landfill cover.

Biogas: Capturing Energy from Waste

Biogas, also known as renewable natural gas, is a methane-rich gas produced by the decomposition of organic matter in anaerobic environments like landfills, sewage treatment plants, and animal manure digesters. Biogas capture and utilization offer a compelling environmental solution. Capturing methane, a potent greenhouse gas, prevents its release into the atmosphere and provides a clean-burning fuel source for electricity generation or heat production. Biogas-fueled electricity contributes to meeting renewable energy targets and can displace electricity generated from fossil fuels, resulting in a net reduction in greenhouse gas emissions.

Biofuels: Cleaner Burning but with Sustainability Concerns

Biofuels derived from plants like corn (ethanol), soybeans (biodiesel), and jatropha represent another renewable alternative to fossil fuels. Biofuels generally burn cleaner than gasoline or diesel, releasing fewer pollutants and contributing less to smog formation. However, biofuel production raises environmental concerns, particularly regarding land-use change.

Large-scale biofuel production can incentivize conversion of land traditionally used for food production or natural habitats into cropland for biofuel feedstock. This can lead to deforestation, soil erosion, and biodiversity loss. Additionally, intensive biofuel crop production often relies on fertilizers and pesticides, potentially causing water pollution.

Moving Towards Sustainable Biomass Utilization

The future of biomass as a renewable energy source hinges on sustainable practices throughout the supply chain. Here are some key considerations:

• Sustainable Forestry: Implementing sustainable forest management practices that ensure long-term forest health and carbon sequestration capabilities.

• Advanced Biofuels: Researching and developing second-generation biofuels derived from non-food sources like agricultural residues, algae, and waste wood, minimizing competition with food production.

• Waste Reduction and Recycling: Prioritizing waste reduction and recycling initiatives to minimize the amount of waste requiring disposal or conversion to energy.

• Improved Biogas Capture and Utilization: Expanding biogas capture infrastructure at landfills, wastewater treatment plants, and agricultural facilities to maximize the potential of this renewable energy source.

Technological Advancements

Technological advancements play a critical role in maximizing the environmental benefits of biomass. Research and development in areas like:

• High-efficiency biomass conversion: Technologies that convert biomass into energy with greater efficiency can minimize the amount of feedstock needed and reduce overall emissions.

• Advanced waste sorting and processing: Improved waste sorting and pre-treatment processes can minimize contamination in waste-to-energy facilities, leading to cleaner energy production and reduced environmental impact.

• Anaerobic digestion innovations: Developing more efficient and cost-effective anaerobic digestion technologies can accelerate the adoption of biogas capture and utilization from various waste streams.

Biomass has the potential to be a significant contributor to a sustainable energy future. However, its environmental impact depends on responsible management practices throughout its lifecycle. By prioritizing sustainability, utilizing advanced technologies, and implementing effective policies, biomass can become a valuable tool in the fight against climate change and the transition towards a cleaner energy future.

Source: https://www.eia.gov/

Sustainability & Decarbonization

10 Green Finance & Sustainable Investments

Advancing Sustainable Investments: The Role of Green Finance and AI Integration

The Dawn of a Sustainable Future

In the wake of escalating environmental concerns and the pressing need for sustainable development, the fusion of green finance and artificial intelligence (AI) emerges as a critical strategy. This symbiotic relationship holds the potential to revolutionize how we approach investment decisions, particularly in renewable energy projects. By leveraging AI-powered tools and techniques, financial institutions can optimize resource allocation, mitigate risks, and drive innovation in the transition towards a more sustainable future.

Context and Motivation: A World in Need

The 21st century is witnessing a profound shift in how we perceive and address environmental challenges. Climate change, biodiversity loss, and resource depletion are no longer distant threats but urgent crises demanding immediate action. At the same time, there is growing recognition of the pivotal role that finance plays in shaping the trajectory of sustainability efforts. Traditional investment models are being scrutinized for their failure to account for environmental externalities and long-term risks.

In response to these challenges, green finance has emerged as a powerful mechanism for channeling capital towards environmentally sustainable projects. From green bonds to sustainable investment funds, financial instruments are being tailored to promote the transition to a low-carbon economy. However, the effectiveness of these initiatives hinges on the ability to accurately assess risks, identify opportunities, and allocate resources efficiently – a task for which AI holds immense promise.

The Significance of AI-Powered Green Finance: A New Frontier

Artificial intelligence is revolutionizing the financial industry, offering unprecedented capabilities in data analysis, pattern recognition, and predictive modeling. When applied to green finance, AI has the potential to enhance decision-making processes and drive greater alignment between financial objectives and environmental goals. By analyzing vast amounts of data from diverse sources, such as satellite imagery, weather patterns, and energy consumption trends, AI algorithms can unlock valuable insights for investors.

Unveiling Hidden Potential: AI-Driven Risk Management

One of the key advantages of AI-powered green finance is its ability to enhance risk management. Traditional financial models often struggle to account for complex environmental factors, such as the impact

of climate change on infrastructure or the potential for regulatory shifts towards renewable energy. AI algorithms, however, can process large datasets in real-time, allowing financial institutions to identify emerging environmental risks and adjust investment strategies accordingly. This proactive approach to risk management is essential in a rapidly changing climate landscape where traditional risk assessment methods may no longer suffice.

Beyond the Bottom Line: Integrating ESG with AI

Furthermore, AI can facilitate the integration of environmental, social, and governance (ESG) criteria into investment decisions. By analyzing non-financial data such as carbon emissions reports, water usage data, and social impact indicators, AI-powered tools can help investors evaluate the sustainability performance of companies and projects. This enables investors to allocate capital towards businesses that demonstrate strong environmental stewardship and social responsibility, thereby driving positive change across industries.

Powering the Future: AI and Renewable Energy Investments

Renewable energy represents a cornerstone of sustainable development efforts, offering clean, abundant sources of power with minimal environmental impact. However, the transition to renewable energy requires substantial investment in infrastructure, technology, and innovation. This is where AI can play a transformative role by optimizing investment decisions and accelerating the deployment of renewable energy projects.

Optimizing the Flow: AI and Energy Forecasting

One area where AI is particularly impactful is in energy forecasting and optimization. By analyzing historical data, weather patterns, and energy consumption trends, AI algorithms can predict future energy demand and optimize the operation of renewable energy assets such as solar and wind farms. This enables more efficient energy production and grid management, reducing costs and improving reliability.

Building a Smarter Grid: AI and Smart Grid Technologies

AI can also facilitate the development of smart grid technologies, which are essential for integrating renewable energy sources into existing energy systems. Smart grids leverage AI algorithms to monitor energy flows in real-time, balance supply and demand, and detect and respond to grid disturbances. This enhances the stability and resilience of the grid while maximizing the utilization of renewable energy resources.

Challenges and the Road Ahead: Building a Sustainable Future Together

In conclusion, the integration of AI into green finance has the potential to revolutionize sustainable investments and accelerate the transition to a low-carbon economy. By leveraging AI-powered tools and techniques, financial institutions can enhance risk management, integrate ESG criteria into investment decisions, and drive innovation in renewable energy projects. However, realizing the full potential of AI in green finance will require collaboration between policymakers, financial institutions, and technology developers to address challenges such as data privacy, algorithmic bias, and regulatory compliance.

A Beacon of Hope: Embracing the Future of Sustainable Finance

The financial world, once focused solely on profit margins, is undergoing a seismic shift. The pressing issues of climate change and environmental degradation have ignited a movement towards sustainable finance. This new approach prioritizes not just economic returns, but also the environmental and social impact of investments. However, the sheer scale of the challenge can feel daunting. Here, the promise of AI-powered green finance offers a beacon of hope.

By harnessing the power of artificial intelligence, sustainable finance can be propelled to new heights. AI can analyze vast amounts of environmental data, identifying hidden patterns and predicting future risks and opportunities. This allows investors to make informed decisions that not only deliver financial returns, but also contribute to a healthier planet. Imagine AI algorithms sifting through data to uncover promising clean energy startups or pinpointing areas most vulnerable to climate change, enabling

Edited By Hassan Mourtada
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Oil & Gas

13 The Future of Oil & Gas in a Low-Carbon World

Oil & Gas Trends 2024: Making Sustainable Business More Sustainable

Oil and gas companies have reset sustainable business plans to pragmatic net-zero goals that are grounded in secure, affordable, and resilient energy

In popular culture, decarbonization to address climate change typically centers on replacing fossil fuels with renewable energy—as fast as possible. Oil and gas industry experts know better. In fact, fossil fuels are expected to drive 48 percent of the global energy mix by 2050. Which is why companies and investors are regrouping to find realistic paths to a sustainable future.

Some financial firms are rebranding ESG commitments and investor rewards and penalties. Meanwhile, oil and gas leaders like ExxonMobil and Occidental Petroleum (Oxy) are investing in carbon capture technologies and facilities to offset emissions as they explore renewables.

Co-innovation with partners is another cleaner energy strategy. Chevron is codeveloping renewable-power projects with Algonquin Power & Utilities Corporation and has plans to invest $250 million by 2025.

Intelligent asset management powers sustainability

Adding renewables to the already complicated energy supply chain has oil and gas organizations in search of efficiencies. The idea is to save costs near term so they can increase investments in clean energy down the road.

"Companies need to produce reliable, cost-effective, lower carbon energy while maximizing profits and shareholder return," said Peter Reynolds, industry analyst at ARC Advisory Group. "It's more than just an energy transition. They are managing an evolving infrastructure comprised of modern and legacy systems within the company and across partners. A digital technology advantage plays a key role in maintaining this balance, and the speed of adopting new processes is a new measure of progress. For industry leaders, information technology (IT) and operational technology (OT) are coming together more holistically using agile frameworks for operational excellence from intelligent asset management."

Digitalization powers business resilience

Like all industrial resource-intensive sectors, the oil and gas industry has digitalized to better manage the drill rigs, mud pumps, tanks and vessels, pipelines, and other equipment that produces energy across complex and volatile supply chains. Sustainability comes down to corralling insights from extensive networks of connected data that span thousands of

internal and partner-run operations from land lease exploration and extraction to distribution. This is far more nuanced and complicated than swapping out gas-powered cars for electric vehicles (EVs) or deciding where to park our 401k funds.

"Digital provides companies with end-to-end visibility across systems, helping them build resiliency and flexibility for growth in the low carbon world," said Stephane Lauzon, head of oil, gas, and energy at SAP. "Our customers are interested in mobile inventory, warehousing, and logistics that capture real-time data in the field for efficient resource management and cost control. For example, SAP's field to logistics solutions help customers track rented and owned equipment through the entire lifecycle. Companies know where equipment is in the field and the best next steps including redeployment, rental return, or recycling."

Intelligent asset management saves energy in numerous ways. With preventative maintenance that provides real-time data alerts before equipment failures, companies can avoid carbon-intensive measures like overnight air shipments or idle production lines as workers wait for parts. People can diagnose and support operations remotely minus time-consuming and expensive long drives or plane rides to far flung locations.

With the emergence of generative AI, oil and gas companies are expected to transcend earlier sensor-based tools that monitor equipment performance by pressure, flow, temperature, and other variables.

"Companies can use large language models to institutionalize the intelligence that's in every document," said Reynolds. "Generative AI changes how people learn and understand what's happening in any environment. Reliability systems could use models to show when for example, pipes or vessels will be available. Precise 3D systems could prevent equipment clashes between assets during design and even onsite vehicles and other equipment in motion in operations"

Realistic investments towards net-zero

Oil and gas leaders aren't standing still when it comes to renewables. ExxonMobil has broken ground for a lithium production operation in Arkansas and aims to become a leading producer of lithium, an important component of EV batteries. Sustainable aviation fuel has joined ethanol, biodiesel, and low-carbon hydrogen as lower carbon emissions options. Companies are also making significant advancements at the molecular level to manufacture reusable plastics and recyclable products.

That said, the transition to clean energy will be a much longer process than originally predicted.

"Companies have reset to pragmatic net-zero goals that are grounded in secure, affordable, and resilient energy," said Lauzon. "EVs are only a small slice of the sustainability challenge. The oil and gas industry, along with consumers, needs to factor in non-combustion usage of hydrocarbons that touches just about every material we use in our daily lives."

The oil and gas industry is not without its critics. Environmental groups argue that the industry is not moving fast enough to reduce emissions and that its investments in renewables are a smokescreen for continued reliance on fossil fuels. However, the industry maintains that it is committed to a sustainable future and that its expertise is essential to the transition to a low-carbon economy.

It is important to note that consumers also have a role to play. Individual choices regarding transportation, energy consumption, and the materials we use all contribute to the overall demand for fossil fuels. Embracing energy efficiency measures in our homes and businesses, opting for electric vehicles when possible, and reducing reliance on single-use plastics are all ways consumers can contribute to a more sustainable future.

Furthermore, consumers can exert pressure on corporations and policymakers through informed purchasing decisions and advocacy efforts. Supporting companies that prioritize sustainability and holding elected officials accountable for climate action are crucial steps.

The road to net-zero emissions will necessitate a collaborative effort from industry, government, and individual consumers. Technological advancements, along with a global commitment to sustainability, offer a path towards a cleaner and more secure energy future.

Susan Galer
https://www.forbes.com/

Nuclear

16 The Global Nuclear Landscape

The Nuclear Age Has Only Just Begun

Predicting which states will become nuclear powers in the twenty-first century remains a formidable challenge.

Leaders from more than 30 countries and the European Union pose for a "family photo" at the IAEA Nuclear Energy Summit, the world's first high-level meeting focused entirely on nuclear energy, in Brussels, Belgium, on March 21, 2024. (REUTERS/Yves Herman)

Amid the persistent fragmentation of the global system, the proliferation of nuclear weapons stands out as an immense and pressing global challenge. This is particularly worrying given the accelerating decline of the authority of the United States. As American researchers Alexander Cooley and Daniel Nexon explain in their book Exit from Hegemony: The Unraveling of the American Global Order, the world is now transitioning through a global "interregnum."

In addition to existing nuclear states — Russia, the United States, China, France, Britain, Pakistan, India, Israel and North Korea — the rise of new nuclear states represents a significant shift in the global balance of power. The World Nuclear Association says some 30 countries are currently exploring conventional nuclear programs while the Institute for Science and International Security reports that several are exploring the weaponization of nuclear technology.

Predicting which states will become nuclear powers in the twenty-first century remains a formidable challenge. What is certain is that the nuclear age has only just begun. Beyond North Korea, Iran is actively seeking to develop nuclear weapons. Iran has already established a nuclear power plant and in February its Atomic Energy Organization announced it has begun construction on four more reactors with support from the Russian government. Assuming Iran eventually weaponizes its nuclear technology, Saudi Arabia has indicated in public statements that it will follow suit.

The Age of Proliferation

The sobering truth is that we are still coming to terms with the existential risks of the nuclear age. It is estimated that the world's nuclear states possess some 13,000 nuclear warheads of which 9,400 are in active military stockpiles. While this represents a significant decline from the 70,000 warheads held during the Cold War, nuclear arsenals themselves have become vastly more capable. To put this in perspective, the US-based Union of Concerned Scientists reports that the most powerful thermonuclear warheads today are 80 times more powerful than the bombs released on Hiroshima and Nagasaki.

Given the rising importance of regional powers with significant and growing technological capabilities, the potential for nuclear weapons proliferation is now becoming an enormous challenge. Efforts to prevent the spread of nuclear weapons have slowed significantly, particularly as the world's two largest nuclear powers — the United States and Russia — have withdrawn from multilateral agreements. In fact, no nuclear disarmament negotiations are currently under way. To make matters worse, the rapid evolution of nuclear technologies promises to further exacerbate the spread of nuclear weapons. As the technology advances, more states will be tempted to pursue clandestine programs.

The Dangers of Multipolarity

The Russian government currently maintains the world's largest nuclear weapons stockpile with 5,889 nuclear warheads. This is followed closely by the US government with 5,244 nuclear warheads. While the United States remains the world's largest producer of nuclear energy, Russia dominates nuclear supply chains. Moreover, both the United States and Russia have intercontinental ballistic missiles capable of striking the other in less than 30 minutes and submarine-based missiles capable of striking the other in less than 15 minutes.

This daunting reality is made all the more unnerving by the fact that any negotiations on disarmament between the United States and Russia have been suspended until the war in Ukraine is resolved. In the absence of any clear authority in the multilateral system, the risk of military conflict rises accordingly. Indeed, given the growing influence of China and the rise of a multipolar system, the established mechanisms for overseeing arms control agreements could now prove insufficient.

Renewing Global Governance

The development of nuclear weapons in 1945 marked a pivotal chapter in the evolution of military technologies, permanently altering the nature and dynamics of international conflict. The unprecedented horrors of industrial warfare and the rise of a new era typified by a delicate balance of power has permanently transformed the geopolitical landscape. As nations grapple with the spectre of nuclear proliferation and the ongoing tensions between the world's nuclear superpowers, the stakes could not be higher.

In addition to the dangers of strategic rivalry between the United States and China, the presence of new nuclear actors on the world stage could mean a constantly shifting geopolitical landscape. Diplomatic initiatives that focus on arms control and multilateral governance will be crucial to ensuring global stability. The ability of multilateral institutions such as the United Nations to effectively mitigate the risks of nuclear weapons proliferation will remain fundamental to maintaining peace and security now and into the future.

As we confront the realities of an ever-more complex and diverse nuclear landscape, international collaboration and dialogue will remain essential to avoiding thermonuclear calamity. Notwithstanding the many challenges inherent within a multipolar system, effective diplomatic engagement, conflict resolution and cooperative security frameworks will remain essential to navigating a world bristling with nuclear weapons.

The current trajectory suggests an urgent need for a renewed commitment to global nuclear governance. The erosion of trust between major powers and the decline in multilateral frameworks for arms control create a dangerous environment. Reinvigorating institutions like the Nuclear Non-Proliferation Treaty (NPT) and fostering dialogue between nuclear and non-nuclear states is crucial. Additionally, promoting transparency in nuclear programs and establishing international norms for peaceful nuclear technology cooperation can help mitigate proliferation risks.

Furthermore, fostering a culture of non-proliferation requires addressing the root causes that motivate states to pursue nuclear weapons. This includes security concerns, regional rivalries, and a perceived lack of international influence. Creating a global security architecture that offers alternative paths to security and prestige can incentivize states to forgo nuclear ambitions. Ultimately, preventing nuclear proliferation demands a multifaceted approach that combines diplomatic engagement, robust arms control measures, and a commitment to a more peaceful and just international order.

Daniel Araya
https://www.cigionline.org/

“

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May 2024
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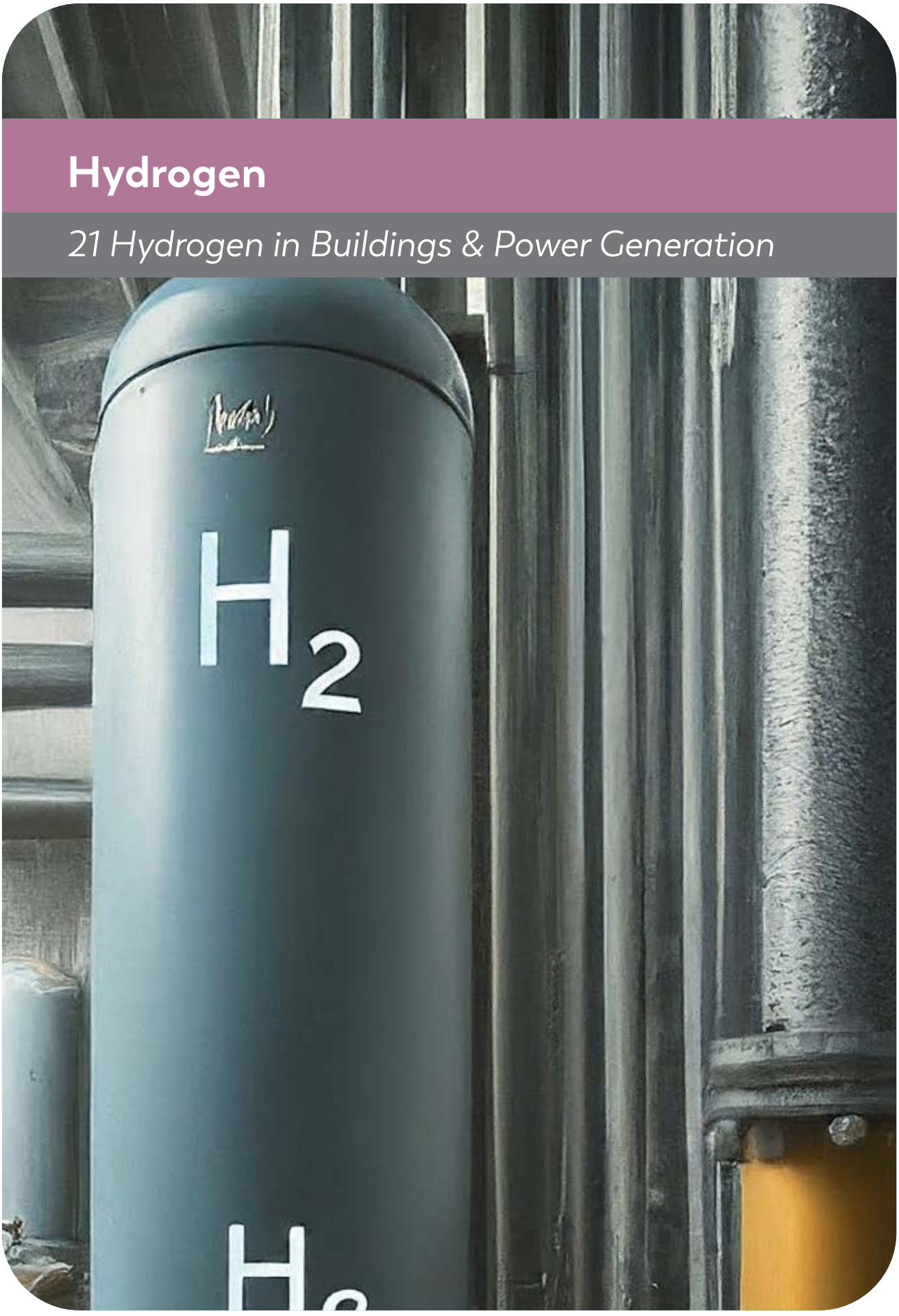
Hydrogen

21 Hydrogen in Buildings & Power Generation



The Promising Pathway of Fuel Cells in Power Generation

The global energy landscape is undergoing a profound transformation, driven by an urgent need to mitigate climate change and transition towards sustainable energy sources. Amidst this shift, fuel cell technology has emerged as a promising pathway, offering opportunities in both mobile and stationary power generation segments. With the added prospect of the widespread adoption of green hydrogen, fuel cells stand poised to help decarbonize the energy sector.

Firstly, let's look at how fuel cells work. They operate by converting chemical energy directly into electricity through electrochemical reactions. Hydrogen fuel is fed into the anode side of the fuel cell, where it is split into protons and electrons. The protons migrate through an electrolyte membrane to the cathode side, while the electrons are forced through an external circuit, generating electrical power. At the cathode, oxygen from the air combines with protons and electrons to produce

water vapor and heat as byproducts.

Studies have shown that fuel cells currently operate at between 50-60% higher efficiency than combustion engines, with zero tailpipe emissions. That said, there are conditions necessary for the reliable performance of fuel cells. Factors from operating temperatures to toxins and particles in the atmosphere can have a varying impact on fuel cell performance, so much must be done together with our OEMs to ensure a robust unit that is fit for purpose.

Unlocking the potential of fuel cells with green hydrogen

Green hydrogen, derived from electrolysis powered by renewable energy, can unleash fuel cell potential and expedite the shift towards a low-carbon economy. As the costs of renewable energy and advancing electrolysis technology go down, green hydrogen will become more competitive against traditional fossil fuels. Industrialization and broad adoption will mark a change in the energy sector, providing a clean and scalable energy carrier across various industries. In power generation, green hydrogen can power fuel cells, facilitating decentralized, efficient energy systems.

Considering these benefits and the global developments to industrialize green hydrogen, it is clear why fuel cell technology is one of the cornerstones in Volvo Penta's decarbonization strategy. Our plans encompass the adoption of renewable fuels in our combustion engine range – a parallel path utilizing green hydrogen, among others. They also extend to a battery-electric platform derived from the Volvo Group that spans off-highway electrification and battery energy storage subsystems. As industries decarbonize, Volvo Penta adopts a strong collaborative approach with its customers, working hand in hand to purpose build, engineer and trial solutions that ensure long-term affordability and viability in the energy transition.

A multi-tenet decarbonization strategy

At Volvo Penta we are fortunate to capitalize on being part of the Volvo Group to expedite the development of fuel cells. The Volvo Group's joint venture with Daimler Trucks, Cellcentric, anticipates accelerated development and enhanced speed to market, progressing in sustainable energy solutions. With ongoing trials of fuel cell deployment already in Volvo Trucks on public roads, Volvo Penta envisions its future role expanding into new energy solutions catered to stationary and mobile genset applications.

Power generation applications

With continuous electricity generation at higher efficiency and low emissions, fuel cells are ideal for various industrial applications such as:

- Primary power: where the always-on nature of fuel cells can fill intermittent gaps.
- Backup power systems: to reduce grid dependency, spanning emergency backup power (e.g. in hospitals), large-scale community events (e.g. concerts), retail establishments (e.g. cold storage warehouses and supermarkets), and municipals (e.g. police and fire stations).
- Charging support: in the form of mobile power generation to charge electric equipment and vehicles in remote areas (e.g. construction projects).

The future of power generation

The opportunities presented by fuel cells in both mobile and stationary power generation segments are immense, offering a pathway in the energy transition. By leveraging the potential of green hydrogen and embracing fuel cell technology, we can decarbonize power generation, reduce greenhouse gas emissions, and pave the way for a cleaner and more resilient energy ecosystem.

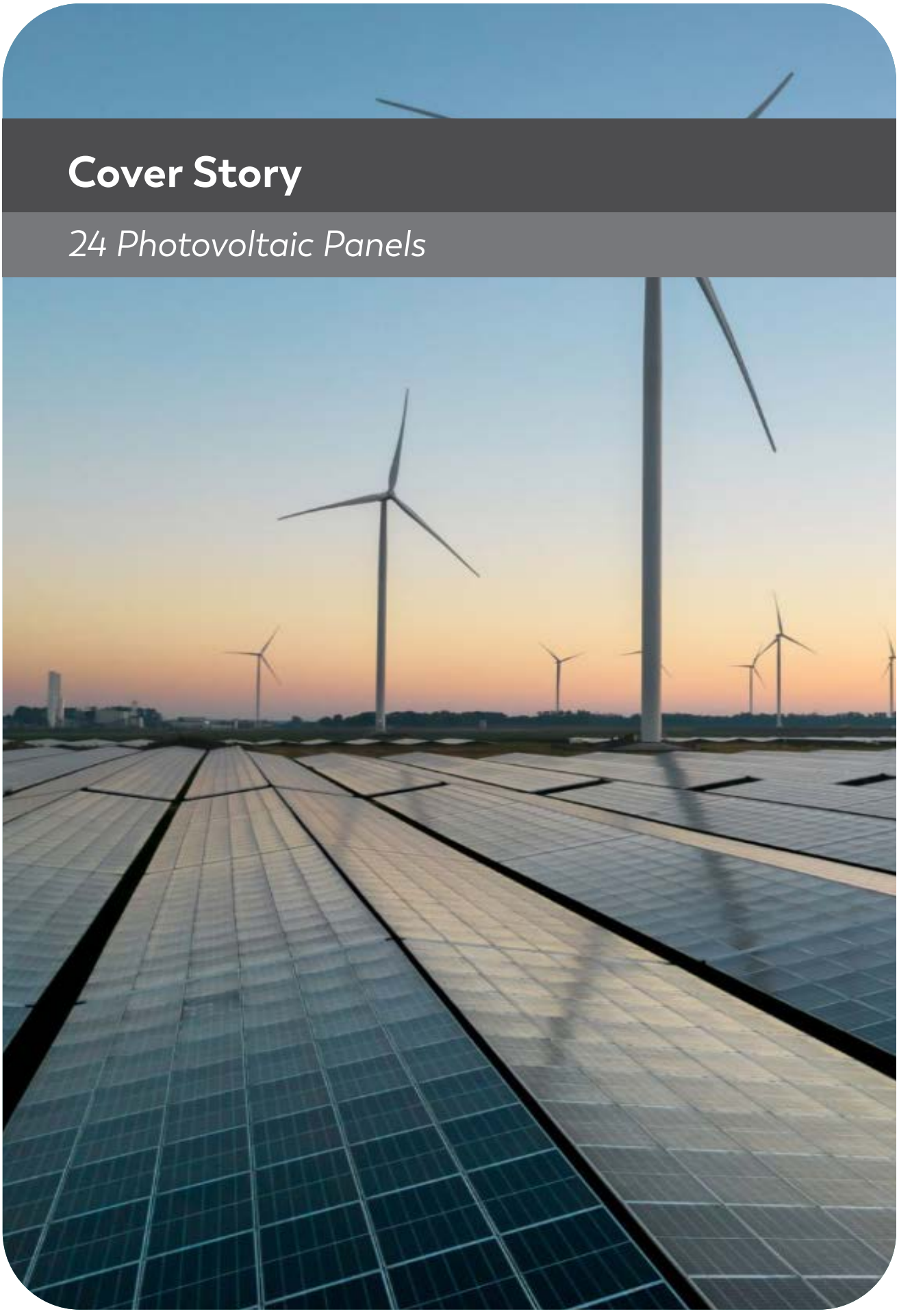
In a future powered by fuel cells, energy systems can be decentralized, resilient and sustainable, with a greater emphasis on renewable energy integration, energy storage and grid flexibility. By embracing fuel cell technology and harnessing the potential of green hydrogen, we hope to accelerate the transition towards a low-carbon future and build a more sustainable society.

Melissa Zhuo

PR and Communication Manager Industrial
https://www.volvopenta.com/

Cover Story

24 Photovoltaic Panels



PepsiCo Powers Up Sustainability in Romania with Solar Panel Investment

PepsiCo, a household name in the food and beverage industry, is making significant strides towards a more sustainable future. The company recently announced the installation of photovoltaic panels across three of its facilities in Romania, marking a major commitment to reducing their environmental impact and embracing renewable energy sources.

This investment, valued at USD 2.1 million, signifies a multi-pronged approach to sustainability. Over 3,000 photovoltaic panels were installed at PepsiCo›s sites in Dragomirești, Popești-Leordeni, and Covasna. These panels boast a combined installed capacity of 1,700 kWp, with the potential to generate a staggering 1,300 MWh of clean electricity annually. This shift to solar power directly contributes to PepsiCo›s ambitious «pep+» initiative, a comprehensive program aimed at achieving net-zero emissions by 2040.

«The installation of photovoltaic panels at our Romanian sites represents a significant step in reducing greenhouse gas emissions (GHG) as part of our pep+ goals,» stated Daniel Drăgușin, East Balkans Supply Chain Director at PepsiCo. «This initiative underscores our commitment to integrating sustainability into every facet of our operations,» he emphasized. Drăgușin›s statement highlights PepsiCo›s dedication to not just implementing eco-friendly solutions but also fostering a company culture that prioritizes environmental responsibility.

The environmental benefits of this project are far-reaching. Transitioning to solar energy significantly reduces PepsiCo carbon footprint. This not only contributes to cleaner air and a healthier planet but also aligns with the growing global movement towards combating climate change. By showcasing a proactive approach to sustainability, PepsiCo sets a positive example for other corporations operating in Romania and beyond.

PepsiCo dedication to Romania extends far beyond this recent sustainability initiative. The company boasts a strong presence in the country for over three decades, with direct investments exceeding USD 320 million over the past ten years. This commitment goes beyond just financial contributions. PepsiCo actively participates in the Romanian economy, creating jobs and contributing to the overall development of the nation.

A notable example of this dedication is the installation of a new, automated manufacturing line in the company›s beverage plant in 2023. This state-of-the-art equipment has significantly boosted production capacity, now churning out an impressive 1 million bottles per day. This investment not only increases PepsiCo›s efficiency but also strengthens its position within the Romanian market, potentially leading to the creation of new jobs and fostering economic growth.

PepsiCo investment in photovoltaic panels in Romania serves as a commendable example for other companies operating in the region. By embracing renewable energy sources and prioritizing sustainability, PepsiCo is not only reducing its environmental impact but also setting a positive precedent for others to follow. This shift towards clean energy production paves the way for a greener future for Romania and the world at large. The success of this project can potentially inspire collaboration between companies and government bodies to create a more comprehensive framework for promoting renewable energy use throughout the region.

In conclusion, PepsiCo investment in solar panels in Romania marks a significant step towards a more sustainable future.

Edited By Hassan Mourtada
www.energyHQ.world

Energy Storage & Grids

26 Smart Grid Technologies & Communication

Advancing Power Delivery Efficiency: The Role of Smart Grid Technologies

Over the decades, the traditional power grid system has been the stalwart conveyor of electricity from centralized generation facilities to residential, commercial, and industrial consumers. Yet, the conventional one-way delivery model is grappling with significant challenges in keeping pace with modern energy demands.

Issues such as frequent blackouts, voltage irregularities, and substantial power losses during transmission underscore the urgent need for a more efficient and resilient electricity infrastructure.

Innovative grid technologies have emerged as the solution to revolutionize how we generate, distribute, and consume energy. By integrating advanced communication networks, automation systems, and renewable energy sources, smart grids offer a comprehensive approach to optimize power delivery, minimize waste, and bolster grid reliability.

Challenges Tackled by Smart Grid Technologies

While the traditional power grid system has served admirably, it faces inherent limitations. One of the primary challenges is power loss during transmission, which can amount to as much as 8% of the total generated electricity.

Another significant hurdle is voltage fluctuations, leading to equipment damage, data loss, and disruptions in sensitive electronic devices. Voltage instability can result from sudden changes in load demand, transmission system faults, or inadequate reactive power support.

Furthermore, the conventional grid›s capacity must be enhanced to accommodate the integration of renewable energy sources like solar and wind power. As the demand for clean energy escalates, the rigidity of the traditional grid poses a significant barrier to achieving sustainability objectives.

Smart Grid Solutions Addressing These Challenges

Smart grid technologies offer a holistic remedy to the challenges faced by traditional power delivery systems. Intelligent grids facilitate more efficient, reliable, and sustainable energy transmission and distribution by harnessing

advanced communication networks, automation, and data analytics.

A. Advanced Metering Infrastructure (AMI)

At the core of smart grid technology lies the Advanced Metering Infrastructure (AMI), comprising smart meters, communication networks, and data management systems.

By aggregating granular data on consumption patterns, AMI empowers utilities to optimize energy generation and distribution, thereby reducing waste and managing peak demand effectively.

B. Smart Grid Communication Systems

Effective communication is pivotal for the seamless operation of smart grids. Smart grid communication systems facilitate real-time data exchange among various grid components, including power generation facilities, substations, and end-user devices.

C. Distributed Generation Integration

Smart grids facilitate the seamless integration of distributed generation sources such as rooftop solar panels, small-scale wind turbines, and combined heat and power (CHP) systems.

By enabling bidirectional power flow, smart grids empower consumers to inject surplus energy from their renewable sources into the grid, thereby reducing reliance on fossil fuels and fostering sustainable energy practices.

D. Energy Storage Solutions

Energy storage systems, such as batteries and flywheels, play a crucial role in mitigating these challenges within smart grids.

During periods of high demand or low renewable output, stored energy can be discharged into the grid, effectively supplementing the supply and reducing the need for additional generation capacity.

E. Smart Grid Analytics & Machine Learning

Smart grid analytics and machine learning algorithms can process this data to discern patterns, forecast demand, and identify anomalies or potential failures proactively.

Benefits of Optimized Power Delivery with Smart Grids

The adoption of smart grid technologies yields myriad benefits, including optimized power delivery, reduced environmental impact, and heightened consumer satisfaction.

A. Reduced Transmission Losses

Smart grids have the capacity to minimize transmission losses by enabling real-time monitoring and control of power flow.

B. Enhanced Voltage Stability and Power Quality (with STATCOM)

STATCOMs function as dynamic reactive power sources, injecting or absorbing reactive power as necessitated by real-time grid data. By incorporating STATCOM control within the smart grid communication network, utilities can achieve precise and dynamic reactive power management, thus significantly augmenting voltage stability and power quality.

C. Elevated Grid Reliability and Resilience

The advanced communication and automation capabilities of smart grids facilitate rapid fault detection and isolation, thereby minimizing outage impacts.

D. Integration of Renewable Energy Sources

Smart grids dismantle barriers to the widespread adoption of renewable energy sources such as solar and wind.

E. Cost Savings for Utilities and Consumers

Optimized power delivery through smart grid technologies translates into substantial cost savings for both utilities and consumers.

Security Considerations for Smart Grids

While smart grid technologies offer myriad advantages, heightened reliance on digital communication and control systems also introduces potential cybersecurity risks. Utilities and grid operators employ robust security measures to mitigate these threats.

The Future of Smart Grid Technology

The adoption of smart grid technologies represents an ongoing journey, with ongoing research and development efforts shaping the future of power delivery optimization.

In meeting modern energy demands, traditional grids require augmentation. Smart grids offer a solution to optimize power delivery, curtail waste, and fortify grid resilience.

The future holds immense potential for self-healing grids, microgrids, and advanced analytics, shaping a cleaner, more reliable, and efficient energy landscape.

Country Reports

Stellantis Invests $100m In Argentina's 360 Energy Solar

The automotive manufacturer has acquired a 49.5% stake in the solar developer to enhance renewable energy generation.

Building on its recent investments in renewable energy, automotive giant Stellantis has acquired a nearly-half stake in Argentine solar power producer 360 Energy Solar. This $100 million investment signifies a strategic shift towards energy independence and a greener future for Stellantis› operations.

The partnership between the two companies extends beyond just solar power generation. The focus lies on a collaborative effort to develop new solar plants, integrate large-scale battery storage systems, and explore the production of hydrogen energy. This aligns perfectly with Stellantis› commitment to carbon neutrality by 2038.

The immediate impact will be felt at Stellantis› Argentine assembly plants in Ferreyra and El Palomar. These facilities are already powered by 360 Energy›s La Rioja solar plant, and the increased investment will likely lead to further optimization and expansion of renewable energy sources.

360 Energy Solar brings a wealth of experience to the table. They are a comprehensive solar solutions provider, encompassing development, research, marketing, construction, and even operation and maintenance. Their existing portfolio boasts six operational photovoltaic plants across several Argentine provinces, generating a combined capacity of 250MW.

This Argentine play is just one piece of Stellantis› global clean energy puzzle. In October 2023, they secured a stake in Argentina Lithium & Energy, signifying their commitment to the raw materials needed for electric vehicle battery production. Additionally, Stellantis has pursued similar initiatives across the globe. In the United States, a power purchase agreement with DTE Energy guarantees 400MW of new solar power generation in Michigan. Europe has also seen significant investments, with solar power purchase agreements secured in Spain and Portugal.

Stellantis› ambitious goal is to have 70 of its manufacturing and office sites in Michigan solely powered by solar energy by 2026. This aggressive target, coupled with the Argentinian investment, demonstrates a clear focus on sustainability. By embracing renewable energy sources and exploring alternative fuels like hydrogen, Stellantis is paving the way for a greener future in the automotive industry, not just in Argentina but on a global scale. The collaboration with 360 Energy Solar is a significant step towards achieving these environmental goals.

Edited by Hassan Mourtada
https://www.power-technology.com/

China New Energy Sector Far From ‹Overcapacity› Against Massive Market Demand

New energy vehicles in the exhibition hall of the Canton Fair attract overseas buyers, April 19, 2024. /CFP

With rapid growth and continuous upgrading in its industrial structure, China has made remarkable progress in the new energy industries in recent years, such as electric vehicles (EVs), solar products and lithium batteries, which has not only met the domestic needs for high-quality development but also cater to the global market, playing a significant role in addressing challenges in climate change and global green transition.

However, the development has aroused the U.S. and Europe›s hype targeting China›s industrial production capacity.

In the «overcapacity» narrative, it has been claimed that China is dumping overseas markets with cheap goods, particularly those in new energy industries and driving output levels beyond domestic demand.

A false proposition

First of all, the misconception of «overcapacity» is contrary to economic principles and common sense.

The higher volume of exports is not overcapacity, Jin Xiandong, an official of the National Development and Reform Commission, said at a press conference on Wednesday.

In a market economy, supply-demand balance is relative and imbalance is common, said Jin, noting that having a moderate surplus in production over demand can be conducive to full market competition and promoting the survival of the fittest in the market, and «the phenomenon is very common in the world.»

A review article published by Xinhua News Agency on April 10 pointed out that as an open market integrated into globalization, Chinese businesses take into consideration the demand from both domestic and international markets, which is standard practice for businesses worldwide.

«Defining ‹overcapacity› as any production exceeding domestic demand is equating product exports with overcapacity and contradicts economic logic,» it said.

Nicholas Lardy, a senior fellow at Washington D.C.-based think tank the Peterson Institute for International Economics, said in an interview with Xinhua News Agency that «this overcapacity idea is that you shouldn›t produce more than you can sell domestically. If that was carried to an extreme, that would mean no trade globally.»

«So Boeing should cut its production? U.S. soybean farmers should limit their production to what can be sold within the United States? « questioned Lardy.

In the era of economic globalization, Jin said both supply and demand transcend national boundaries. «Countries tend to have higher production capacity in their competitive industries but lower capacity in other sectors. This is determined by their comparative advantages.»

Jin›s remarks echoed with Lin Jian, Chinese Foreign Ministry spokesperson, who stressed at a press conference on Wednesday to view the issue of capacity in line with the principles of market economy and in the context of economic globalization, global labor division and market dynamics.

The U.S. has repeatedly blamed China›s «overcapacity» for its export of high-quality, low-cost products, and now new energy products. However, this logic is untenable considering the U.S.›s significant export of products like chips and agricultural goods, said Lin.

«Overcapacity may look like an economic issue, but the truth is, the U.S. is using it to hit Chinese industries and give itself an unfair advantage in market competition. It›s another example of U.S. economic coercion and bullying,» he said.

Demands far from being met

From a global perspective, the production capacity in new energy sector is far from sufficient.

In the «Global EV Outlook 2023,» the International Energy Agency (IEA) projected that by 2030, the global demand for new energy vehicles will reach 45 million, more than triple the global sales volume in 2023 and 4.5 times that of 2022. The global demand for new photovoltaic installations will reach 820 gigawatts, about four times that of 2022.

To fight global warming, «an additional 7 terawatts of renewable energy capacity» is needed in the next five years to stay in sync with Paris Agreement commitments, Denis Depoux, global managing director at German consultancy Roland Berger, told South China Morning Post. The International Renewable Energy Agency in 2023 estimated the global renewable power capacity must grow by around 1,000 gigawatts a year through 2030 to keep the Paris targets alive.

«The current production capacity is far from meeting the market demand, especially the huge potential demand for new energy products in many developing countries,» said Chinese Vice Minister of Finance Liao Min at a press briefing on April 8.

No dumping, advantages from innovation

«From the rest of the world›s perspective, overcapacity can be felt through lower prices. China›s automobile exports, which surged last year as the country overtook Japan as the world›s top car exporter, actually became more expensive. That suggests their rising attractiveness isn›t due to price cuts,» said a Bloomberg report on April 2.

The report said Chinese companies aren›t dumping EVs on global markets at a lower cost, as leading Chinese EVs fetch roughly double on average in Europe than domestically. It attributed Chinese EVs› high efficiency and strong competitiveness to advantages in technology, supply chains and infrastructure.

Lin also stressed that China›s leading edge in new energy is gained through «strong performance, tech innovation, and full-on market competition, not government subsidies.»

China›s new energy sector is rooted in the advantages of an ultra-large scale market, a comprehensive industrial chain spanning material research and development, engineering design, manufacturing, and final assembly, as well as rich human resources. Enterprises reduce production costs through technological innovation, making their products more affordable.

https://news.cgtn.com/

Industry Leaders Discuss Innovation In South Africa's Energy Sector

Industry leaders gathered at the inaugural 'Sasol Superlead Live Leadership Conversations' event this week (April 24) at the University of Pretoria's Gordon Institute of Business Science (GIBS) to discuss innovation in the South African energy sector with industry leaders from Sasol Energy, Eskom, and the Council for Scientific and Industrial Research (CSIR).

The discussion centred around innovative plans to reduce South Africa's carbon footprint. Eskom has plans to use ash, a by-product of its coal-fired operations, to build roads. These ash roads will address infrastructure needs while reducing carbon footprint, said Mteto Nyati, Eskom Board Chairperson.

Sasol, too, is looking at its approach to minimise the amount of by-product waste generated. The energy company has found a way to reuse biosolids, a by-product usually incinerated at a significant cost. The solids are converted into sludge through a process called thermolysis, where they are reintroduced into the process because these by-products still contain carbon that can be utilised, said Thembakazi Mali, Sasol›s Senior Vice President of Research and Innovation.

Sasol is also currently repurposing its electrolysers to produce green hydrogen. Nyati added that Eskom also had plans to develop a business case for green hydrogen.

The CSIR has completed a study to understand the potential for green hydrogen exports from South Africa, said Thabo Hlalele, Energy Centre Head at the CSIR. "Hydrogen is the economy of the future. But for South Africa to be competitive, we would need to have cheap electricity and infrastructural support," he said. There is potential to oversize renewable energy plants to produce green hydrogen and feed excess electricity into the grid. At the same time, the water used can be recycled for agricultural purposes.

Other innovative plans at Eskom include remotely piloted aircraft systems to inspect power lines across the country to speed up repair and inspection times and synchronous condensers to support grid stability as renewable energy production ramps up, said Nyati.

He added that Eskom must balance the present national energy crisis with innovative plans. "You can dream for the future, but you need to eat today. Priority number one is to fix today's business, and priority two is to make Eskom relevant for the future. Renewable energy is the future, and we will participate."

By Kimberley Kersten
https://www.energize.co.za/

Services

34 Coming Events

Coming Events

China International New Energy Industry Expo 2024
Suzhou International Expo Center, Suzhou, China
29 - 31 May 2024
https://news.smm.cn/

China International New Energy Industry Expo theme will be «Inspiring Dual Carbon and Greening the Future». This event will bring together government leaders, academicians of the two academies, Chinese and International scientists, important foreign guests, and representatives of leading companies in various industries.

Solar & Storage Live UK 2024
Birmingham, UK
01 – 02 May 2024
https://www.terrapinn.com/exhibition/solar-storage-live/index.stm

Solar & Storage Live is the largest exhibition for renewable energy in the UK. With over 30,000 attendees and 250 speakers spanning over three days, the event provides a platform to discuss pressing topics in the renewables space, such as energy security, storage, and geopolitics, while networking with peers.

All-Energy 2024
Glasgow, Scotland
15 – 16 May 2024
https://www.all-energy.co.uk/en-gb.html

As the UK's largest low-carbon energy and full supply chain renewables event, All-Energy has been running since 2001 and brings together professionals from the full breadth of the renewable sector. Featuring exhibitors and speakers from around the world representing a diverse range of...

POWER TOOLEX 2024
Milan Mela, Kolkata, India
15 - 17 Mar 2024
https://powertoolex.com/

POWERTOOLEX is a pure B2B exhibition focusing on the fast-growing hand tools and power tools sector in India. The goal of the POWERTOOLEX is to bring buyers and sellers together in an interactive environment to conduct business...

SNEC International PV Power Generation and Smart Energy Conference & Exhibition
Shanghai, China
19 – 15 June 2024
https://saudi-sg.com/

The National Convention and Exhibition Center will host the 17th edition of the SNEC International Solar Photovoltaic and Smart Energy Conference and Exhibition in Shanghai (otherwise known as the SNEC Photovoltaic Conference). The SNEC Photovoltaic Conference is one of the most influential events in Asia and worldwide.

Enlit Asia
Kuala Lumpur, Malaysia
08 – 10 October 2024
https://www.enlit-asia.com/

Enlit Asia is an annual conference and exhibition comprising two events in the energy sector: POWERGEN Asia and Asian Utility Week. It attracts 12,000 attendees and 300 exhibitors worldwide to showcase their products, services, and solutions to help accelerate the green transition across Asia.

Intersolar Europe
Munich, Germany
19 – 21 June 2024
https://www.intersolar.de/home

Intersolar Europe is one of the world's leading exhibitions in the solar industry, and it has been running for over 30 years. The event's tagline is "Connecting Solar Business," as it brings together solar manufacturers, service providers, project developers, start-ups, planners, suppliers...

ASEAN Clean Energy Week
Manila, Philippines
21 – 22 November 2024
https://www.aseancleanenergyweek.com/

In November the SMX Convention Center Manila will host the 7th edition of ASEAN Clean Energy Week. 5000 attendees, of which 1,500 are C-suite executives will come together to discuss how to expedite the green transition in Southeast Asia, which includes some of the world's fastest-growing economies.

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Energy Industry Surges As Demand Rises

Demand for energy continues to increase from coast to coast, and record production continues to grow from a variety of sources.

Crude oil and natural gas, which account for 80% of the nation's energy, almost set a new record for monthly production in February, according to data released by the Energy Information Administration this week. U.S. oil production was 13.2 million barrels per day (b/d) in February just short of 13.3 million b/d record set in December 2023. Natural gas production totaled 128,058 million cubic feet per day (mmcf/d) in February also just short of the December 2023 record of 128,883 mmcf/d.

The increase in production has helped the bottom line of many companies, too. The two largest integrated petroleum companies based in the U.S., ExxonMobil and Chevron, reported healthy financials this week. ExxonMobil reported $8.2 billion in net profit, and Chevron said it had a net profit of $5.5 billion during the first quarter (January-March).

Oil prices averaged $80 per barrel, but natural gas has been fighting a large oversupply and unusually low prices just below $2 mmcf. EIA estimated natural gas consumption in February 2024 was 102.4 Bcf/d a 2.8% decrease compared with February 2023 (105.3 Bcf/d). It was the lowest daily rate of natural gas consumption for the month since 2018, according to EIA.

U.S. electricity generation from wind turbines decreased for the first time since the mid-1990s in 2023 despite the addition of 6.2 gigawatts (GW) of new wind capacity last year, according to EIA. U.S, wind generation in 2023 totaled 425,235 gigawatthours (GWh), 2.1% less than the 434,297 GWh generated in 2022.

U.S. wind capacity increased steadily over the last several years, more than tripling from 47.0 GW in 2010 to 147.5 GW at the end of 2023, EIA said.

"The 2023 decline in wind generation indicates that wind as a generation source is maturing after decades of rapid growth," EIA stated.

Nuclear power got a boost this week with the announced completion of a nuclear power reactor in Georgia. Georgia Power said Unit 4 of the reactor at Plant Vogtle has entered commercial operation, which completes the 11-year expansion project.

Vogtle Unit 3 began commercial operation in July 2023. The plant's first two reactors, with a combined 2,430 MW of nameplate capacity, began operations in 1987 and 1989. The two new reactors bring Plant Vogtle's total generating capacity to nearly 5 gigawatts (GW), surpassing the 4,210-MW Palo Verde plant in Arizona and making Vogtle's four units the largest nuclear power plant in the United States.

Construction at the two new reactor sites began in 2009. Originally expected to cost $14 billion and begin commercial operation in 2016 (Vogtle 3) and in 2017 (Vogtle 4), the project ran into significant construction delays and cost overruns.

By Alex Mills
Former President of the Texas Alliance of Energy Producers
www.thehendersonnews.com

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