

energy

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**The Growing Market for Hybrid Solar Wind
Energy Storage**
p.19

Renewable Energy

Joint Task Force – Red Hill
Finishes Defueling Surge
Tanks

p.08

Oil & Gas

Leading Innovators In
Turret Buoy Mooring
System For The Shipping
Industry

p. 10

Nuclear

Alleima Wins Order for
Steam Generator Tubes for
Smrs

p. 13

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Harvesting the Elements: The Ascending Realm of Hybrid Solar-Wind Energy Storage



In recent years, the world has witnessed a remarkable shift towards sustainable and renewable energy sources. Solar and wind energy have emerged as frontrunners in the race to replace conventional fossil fuels. However, the intermittent nature of these sources has led researchers and engineers to explore innovative solutions that combine the strengths of both solar and wind power, resulting in the rapid growth of the hybrid solar-wind energy storage market.

The concept behind hybrid solar-wind energy is simple yet powerful. By combining solar panels and wind turbines in a single energy generation system, the inherent drawbacks of each individual technology can be mitigated. Solar power generation is most effective during the daytime, whereas wind power can produce energy both day and night. This complementary nature ensures a more consistent energy output, addressing the challenge of intermittency.

One of the key drivers behind the surge in hybrid solar-wind installations is the advancement in energy storage technologies. Energy storage systems, such as lithium-ion batteries, have evolved significantly in terms of efficiency, capacity, and cost-effectiveness. These advancements have enabled the seamless integration of solar and wind power generation, allowing excess energy to be stored during periods of high production and released during periods of low production.

The benefits of hybrid solar-wind energy systems extend beyond their ability to provide a more reliable energy supply. Environmental sustainability remains a major global concern, and these systems offer a significant reduction in greenhouse gas emissions. By harnessing clean, renewable sources, hybrid systems contribute to mitigating climate change and reducing dependence on finite fossil fuels.

Moreover, the economic advantages of hybrid systems are becoming increasingly evident. As technology matures and economies of scale come into play, the costs associated with implementing hybrid solar-wind projects are steadily declining. This has opened doors for both developed and developing nations to invest in cleaner energy alternatives. Additionally, these projects often create local job opportunities, stimulate regional economies, and promote research and innovation in the renewable energy sector.

In conclusion, the hybrid solar-wind energy storage market is experiencing rapid growth due to its potential to overcome the limitations of individual renewable energy sources. By combining the strengths of solar and wind power with advanced energy storage technologies, these systems offer a more reliable, sustainable, and economically viable solution to our energy needs. As technology continues to advance and global efforts to combat climate change intensify, hybrid systems are poised to play a pivotal role in shaping the future of clean energy generation.

In This Issue!

energyHQ's July 2023 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. The article on page 8 talks about Surge Tanks, the article on page 13 Sheds the light on Pressure Vessel & Tubes, and the article on page 19 focuses on Solar Wind Energy. 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 for your business, and welcome receiving your comments, suggestions, or feedback. Please send them to h.mourtada@1world.xyz.

Best wishes,
Hassan Mourtada
Editor-in-Chief / Content & Research Officer.
h.mourtada@1world.xyz

Issue Contents

Introduction

- 01 Opening Letter
- 02 Issue Contents
- 04 World Energy Digest



Renewable Energy

Surge Tanks

- 08 Joint Task Force - Red Hill Finishes Defueling Surge Tanks

Oil & Gas

Mooring & Anchoring System

- 10 Leading Innovators In Turret Buoy Mooring System For The Shipping Industry



Nuclear

Pressure Vessels & Tubes

- 13 Alleima Wins Order for Steam Generator Tubes for Smrs

Electric

Electrical Boxes

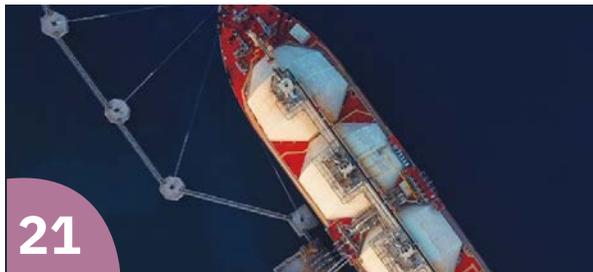
- 15 Lowe's Partners With Hubbell



Issue Contents

Cover Story

- 19 *Solar Wind Energy*
The Growing Market For Hybrid Solar Wind Energy Storage



Products

- 21 *Liquified Petroleum Gases(LPG)*
Westport Fuel Systems Inc. Awarded Global OEM Supplier Agreement for Liquefied Petroleum Gas (LPG) Systems

Services

- Motive Power*
23 **Next-Gen Motive Power**



Technology

- Bioenergy*
25 **Study Reveals Insightful Facts About The Bioenergy Market**

Country Reports

Australia, India, Kuwait

- 27 **Australia's Energy Transition Stalled By Stubbornly High Demand**
28 **Can India Be A Global Manufacturing Hub For Green Hydrogen Electrolyzers**
29 **Kuwait Energy Profile: Holds 6% of World's Proved Oil Reserves**



Services

- 30 **Coming Events**

Info

- 31 **General Info**
32 **Closing Letter**

World Energy Digest



Brazil



Ethiopia



Why are renewable energy projects in Brazil being delayed?

Amid the ESG wave, the renewable energy market is attracting increasing numbers of insurers and reinsurers.

Brazil is one of the global standouts in the sector, but it is going through a difficult period, with many projects being postponed.

In an interview with BNamericas, Pedro Farne (pictured, left) and Paul Conolly (right), CEO and director, respectively, of the brokerage firms Guy Carpenter and Carpenter Marsh Fac, analyze the current panorama for Brazil's energy sector.

BNamericas: How do you see the current outlook for the energy sector in Brazil?

Farne: We're in an environment that's been made harder by the economic outlook – that's across the board, not just in the energy market. When there's a rise in interest rates and inflation in the core economies, that reduces capacity because the cost of capital goes up and that affects all markets.

In the energy market specifically, many global insurers and reinsurers have joined the pact to reduce or restrict support, especially to the most carbon-intensive industries. On the other hand, the drive for innovation is great. Today, when we put an ESG flag on a reinsurance program, it brings more attractiveness, facilitating access to new pools of capital.

BNamericas: Is it more difficult to get, for example, access to financing for the construction of FPSOs than it was a few years ago?

Ethiopia Energy Infrastructure Industry Analysis

Ethiopia, a country of vast potential and diverse resources, is poised to become a major player in the African energy sector. With its abundant hydropower resources and a government committed to increasing access to electricity, Ethiopia offers significant opportunities for investment and development in oil and gas, and power projects industries. In this engaging analysis, we will explore the current landscape, major drivers, and the industry outlook for Ethiopia's energy sector.

Current Scenario:

Ethiopia's energy sector is dominated by hydropower, which accounts for a significant portion of the country's electricity generation. However, Ethiopia also has untapped oil and natural gas reserves, offering opportunities for growth in the oil and gas industry. Despite its vast resources, Ethiopia faces challenges in meeting the energy needs of its rapidly growing population and expanding economy.

Major Drivers:

Abundant Hydropower Resources:

Ethiopia's significant hydropower resources, primarily in the form of the Blue Nile River, offer tremendous potential for the country's energy sector. The ongoing development of the Grand Ethiopian Renaissance Dam (GERD) is a testament to the country's commitment to harnessing its hydropower potential.

Government Support and Initiatives:

The Ethiopian government has been proactive in promoting the growth of the energy sector, offering incentives and support for both local and international investors. The Ministry of Water, Irrigation, and Energy, along with other relevant agencies, has facilitated the development of a clear regulatory framework and provided an attractive environment for investment.



Norway

Norway approves connection of Western Europe's largest LNG plant to grid

Norway has approved a plan to connect Equinor's (EQNR.OL) Hammerfest liquefied natural gas (LNG) plant to the national power grid in a bid to cut greenhouse gas emissions, despite local opposition, the government said on Tuesday.

The plan includes shutting down a gas power plant, Norway's largest single source of carbon dioxide, by 2030 and replacing it with power supply from the grid where renewable energy dominates.

"This is an important day for building industry and creating jobs in northern Norway, and for the climate," Norway's Prime Minister Jonas Gahr Støre told a news conference held in front of the LNG plant in Arctic Norway.

Equinor estimates the measure at Western Europe's largest LNG plant could save around 850,000 tonnes of CO₂ emissions per year, or about 2% of Norway's total annual emissions.

The plan, however, has been contentious with locals due to its perceived clash with green industry development, rising power prices as well as the rights of Indigenous Sami reindeer herders.

To ease voters' concerns ahead of local elections in September, the centre-left government has pledged to support the development of new renewable power sources in its northernmost region and the building of new power lines to offer more grid connections.

The planned power switch at the Hammerfest plant would also have to take place in 2030, two years later than previously planned, the government said.

Iran



The significance of Iran-Iraq energy swaps

Baghdad and Tehran earlier this month signed a deal to swap Iranian natural gas for Iraqi crude and fuel oil. If implemented, the July 17 accord will facilitate Iran's energy exports to its western neighbor—but may also introduce new complications caused by US sanctions.

History of agreements and exports

Iran and Iraq first began negotiations on gas trade in 2010. An initial agreement on supplying Baghdad's Bismaya power plant with Iranian natural gas was reached in 2013. Two years later, in 2015, it was agreed that an electric power plant in the southern city of Basra would also be fed with Iranian gas.

After extensive delays, Iran initiated exports for the Baghdad plant in 2017 and to Basra in 2018.

As an informed senior source in Baghdad previously explained to Amwaj.media, assuming 50 million cubic meters (mcm) a day of natural gas imports, such a volume could be used to generate up to 7 GW, or just over a third of Iraq's supply. Of note, Iran also feeds the Iraqi power grid with electricity exports, though the latter constitutes only 5-10% of national supply.

In other words, Iranian gas is so indispensable for Iraq's power generation that even during former US president Donald Trump's (2017-21) "maximum pressure" campaign against the Islamic Republic, Washington regularly issued sanctions waivers to facilitate Iraq receiving energy from its eastern neighbor. This practice has been continued under the incumbent Joe Biden administration (2021-). The most recent such waiver—the 20th in total, and valid for 120 days—was issued on July 18.

Spain



Tunisia

Tunisia: Overall electricity production dips 8% end of June

Peak demand also posted a 22% drop to 3,566 MW at end of June against 4,563 MW during the same period last year.

Total electricity production dropped 8% at the end of June to 8,470 Gigawatt hours (GWh)- excluding self-generated power- against 9,179 GWh at the end of June 2022.

Likewise, production intended for the local market edged down 5%, the National Observatory of Energy and Mines (Ministry of Industry, Mines and Energy) said in a report on the energy situation in June published Monday.

Thus, electricity purchases from Algeria and Libya covered 12% of local market needs at the end of June.

National power utility company STEG still has the lion's share with 99% of national production by late June.

Natural gas-fired power generation dropped 8%, while electricity production from renewables accounted for 2.5% of total production.

Actually, 182 MW of photovoltaic roofs were installed in the residential sector and 304 licenses were granted for an overall capacity of 79 MW in industrial and tertiary sectors and agriculture.

Peak demand also posted a 22% drop to 3,566 MW at end of June against 4,563 MW during the same period last year.

Electricity sales fell 1% between late June 2022 and late June 2023. High and medium voltage customer sales also fell 5% and 3%, respectively.

Low-voltage sales, mainly for the residential sector (nearly 75% on average), do not provide an accurate view of the actual consumption.

Spain, a benchmark in renewable energies, is in the throes of far-reaching reforms to lead the green transition in the EU

A benchmark in renewable energies, Spain owes part of its success in this sector to its privileged geostrategic position at the crossroads of three continents, and to the natural wealth of its territory.

It is not rich in oil, gas or gold deposits, but it has more hours of sunlight than any other EU member state, one of the continent's largest lithium deposits and optimal conditions for harnessing wind and water power.

This has made Spain the European country with the third highest renewable energy generation capacity. Furthermore, it is 11th in terms of the lowest CO₂ emissions per inhabitant and the 14th most sustainable country in the world, according to the latest Environmental Performance Index released by Yale University.

However, throughout the 20th century, like most developed countries, Spain adopted a pattern of economic growth based on the abusive and linear use ("extract, produce, consume and throw away") of natural resources, which has caused significant environmental degradation in its territory and contributed to the climate crisis.

In response, it has made a commitment to become a circular, carbon-neutral economy by 2050, to take measures to minimise the impacts of climate change and to transform the way we relate to nature.

This means, among other things, radically changing the way the country generates energy, harnessing its wealth of renewable energy sources and doing so in record time, without reducing the competitiveness of its economy.

Renewable Energy

08 Surge Tanks



water HQ

www.waterHQ.world

40,069

Total Brand
Readership

84%

of readers are
decision makers
or influence
purchasing
decisions.

16,379

Print Readership
(Multiplier 3.17)

23,690

Digital
Circulation

Joint Task Force – Red Hill Finishes Defueling Surge Tanks



Civilian personnel assigned to Joint Task Force-Red Hill (JTF-RH) secure a fuel pump in preparation for draining the surge tanks at the Red Hill Bulk Fuel Storage Facility (RHBFSF) on Joint Base Pearl Harbor-Hickam, Honolulu, Hawaii, July 25, 2023. US Marine Corps Photos

Joint Task Force – Red Hill finished removing fuel from surge tanks Friday, the task force announced in a Friday news release.

Removing the 480,000 gallons of fuel from the underground surge tanks is one of the steps needed in order to completely defuel the Red Hill Bulk Fuel Storage Facility. The surge tanks were service tanks, which means they were not involved in the process of defueling the facility's main tanks, USNI News previously reported.

The fuel removed from the surge tanks will be stored in above-ground tanks at Joint Base Pearl Harbor-Hickam, where it can continue to be used for military operations, according to the release.

“The successful removal of fuel from the surge tanks gives us confidence that our training and enhanced safety precautions and protocols are working,” Vice Adm. John Wade said in the release. “We remain on plan to begin gravity defueling of the main storage tanks in October 2023.”

The joint task force will next repack the fuel lines, a step to defueling the main tanks, slated to begin in August, according to the release.

While the Joint Task Force defueled the surge tanks, it also hosted a number of legislators from Hawaii and Congress's special committee on Red Hill, according to a news release last week.

The Joint Task Force is still in the process of getting a the remainder of repairs validated by a third party, according to the defueling dashboard. So far, 246 out of 253 repairs have been validated and submitted to the Hawaii Department of Health for approval.

By: Heather Mongilio
<https://news.usni.org/>

Oil & Gas

10 Mooring & Anchoring System



Leading Innovators In Turret Buoy Mooring System For The Shipping Industry

The shipping industry continues to be a hotbed of innovation, with activity driven by increasing global trade and commerce and the need for efficient, cost-effective, and environmentally sustainable sea transportation solutions, as well as growing importance of technologies such as the Internet of Things (IoT), artificial and augmented intelligence, advanced vessel operation monitoring systems, and hydrogen fuel cells. In the last three years alone, there have been over 67,000 patents filed and granted in the shipping industry, according to GlobalData's report on Innovation in Ship: Turret buoy mooring system.

However, not all innovations are equal and nor do they follow a constant upward trend. Instead, their evolution takes the form of an S-shaped curve that reflects their typical lifecycle from early emergence to accelerating adoption, before finally stabilising and reaching maturity.

Identifying where a particular innovation is on this journey, especially those that are in the emerging and accelerating stages, is essential for understanding their current level of adoption and the likely future trajectory and impact they will have.

30+ innovations will shape the shipping industry

According to GlobalData's Technology Foresights, which plots the S-curve for the shipping industry using innovation intensity models built on over 25,000 patents, there are 30+ innovation areas that will shape the future of the industry.

Vessel propulsion systems, gas turbine-propelled vessels, and vessel internal combustion engine are some of the accelerating innovation areas, where adoption has been steadily increasing. Among maturing innovation areas are underwater drilling support systems and anti-fouling ship hull coatings, which are now well established in the industry.



Source: GlobalData Patent Analytics

Turret buoy mooring system is a key innovation area in shipping

The turret buoy mooring system comprises a buoy permanently moored to the seabed by means of multiple anchor lines. The buoy contains a roller bearing system that allows a part of it to rotate around the fixed turret column. A tanker moored to this rotating section can freely rotate around the geostatic element of the buoy, facilitating near-shore and offshore loading/offloading operations.

GlobalData's analysis also uncovers the companies at the forefront of each innovation area and assesses

the potential reach and impact of their patenting activity across different applications and geographies. According to GlobalData, there are 10 companies, spanning technology vendors, established shipping companies, and up-and-coming start-ups engaged in the development and application of turret buoy mooring system.

By GlobalData

<https://www.ship-technology.com/>



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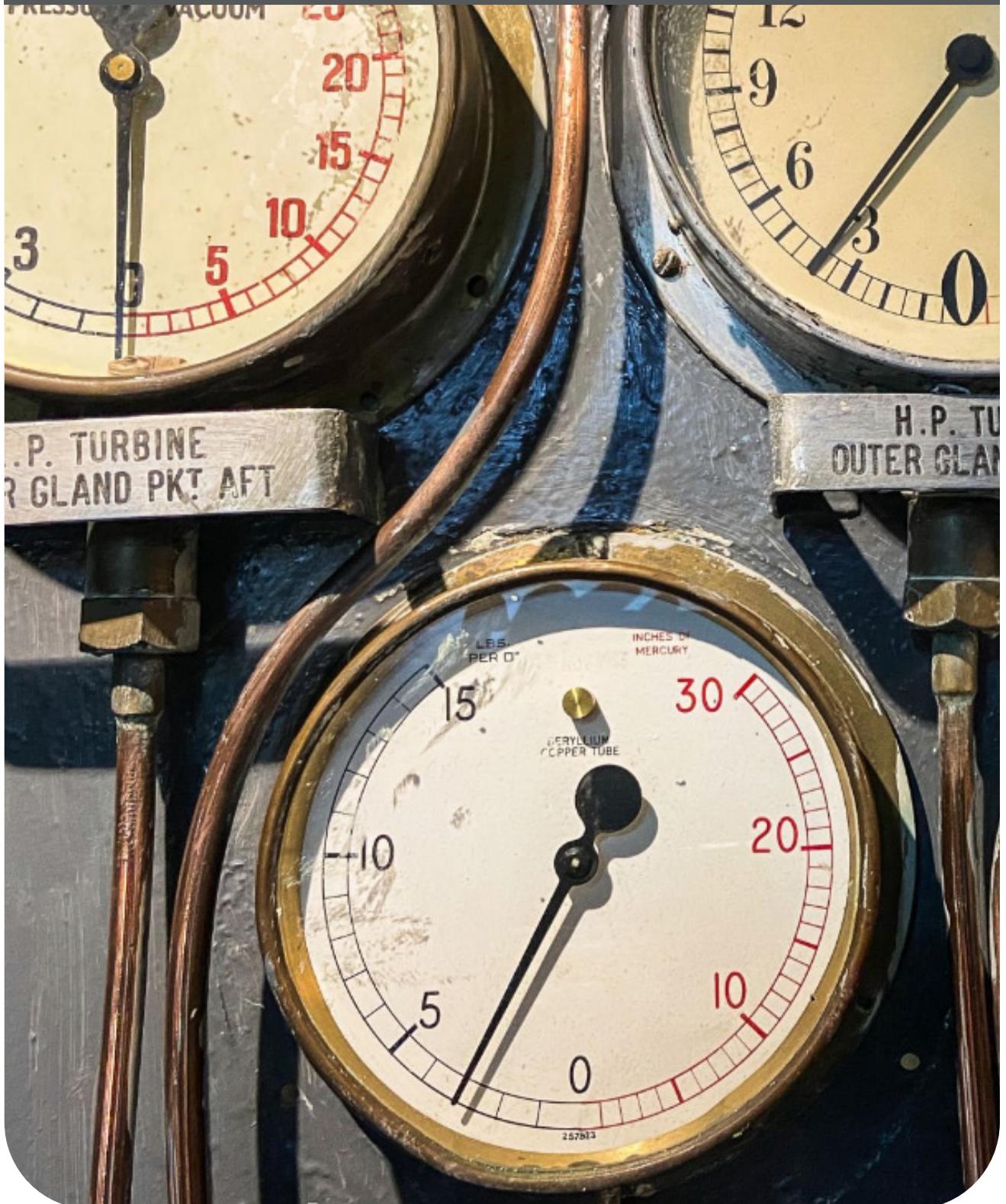
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Nuclear

13 Pressure Vessels & Tubes



Alleima Wins Order for Steam Generator Tubes for Smrs

The Swedish firm Alleima says it has been awarded an order from South Korea's Doosan for approximately 200 kilometres of steam generator tubes for NuScale's small modular reactors (SMRs).

The tubes will be installed in one of the first of the NuScale VOYGR SMR power plants. Deliveries are scheduled during 2024 and the NuScale Power Modules «are expected to be operational in 2029», Alleima said. Nigel Haworth, acting president of Alleima's tube division, said: «We are thrilled this is finally happening and are proud to announce this breakthrough order for SMRs. As this technique, based on pressurised water-cooled reactor (PWR) technology, is closely linked to current nuclear technology, we see a great potential for significant growth in the coming years. Intensity in discussions regarding the supply of steam generator tubes for SMRs is increasing globally, and as a front runner in this field, we are in a good position for these future power projects.»

Jongdo Kim, CEO of Doosan Enerbility's Nuclear Business Group, said: «We are delighted to be embarking on our journey towards successful deployment of the first commercial SMR with Alleima, as we highly value Alleima's extensive experience and market-proven products and solution in steam generator tubes.»

The NuScale Power Module is a pressurised water reactor with all the components for steam generation and heat exchange incorporated into a single unit, generating 77 MWe, which in September 2020 became the first SMR design to receive approval from the US Nuclear Regulatory Commission. NuScale offers the units as VOYGR plants: a VOYGR-12 power plant comprising 12 modules is capable of generating 924 MWe. The company also offers four-module and six-module plants and other configurations based on customer needs.



NuScale's SMR is based on PWR technology where Alleima's current steam generator tubing alloys are used. Alleima was previously Sandvik Materials Technology. The name change coincided with it beginning trading on Nasdaq Stockholm in August 2022.

Last month NuScale announced that South Korea's Doosan Enerbility had begun the forging production process for the first module that will be deployed as part of a NuScale VOYGR-6 SMR power plant for the Carbon Free Power Project (CFPP) in the USA. NuScale placed its first upper reactor pressure vessel long-lead material production order with Doosan Enerbility at the end of 2022.

The CFPP is to be built at the US Department of Energy's Idaho National Laboratory site near Idaho Falls and will use six of NuScale's 77 MWe power modules to generate 462 MWe of electricity. The plant could begin operations as soon as 2029, and Utah Associated Municipal Power Systems, a political subdivision of the state of Utah, is working to submit an application for a construction and operation licence to the US Nuclear Regulatory Commission in January 2024.

<https://www.world-nuclear-news.org/>

Saving energy up to 21 % with Solar High Efficiency borehole pumping systems

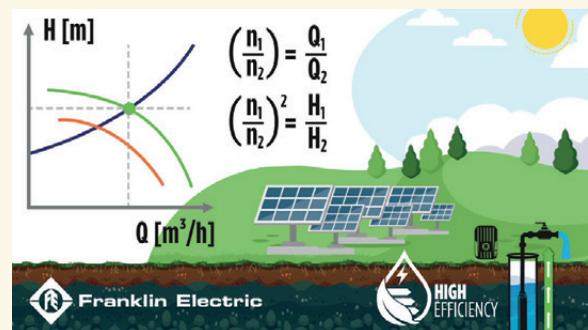
Superior efficiency through permanent magnet technology

In times of rising energy costs, new systems put more and more emphasis on the best possible efficiency. Here, Franklin Electric has set a new benchmark with its High Efficiency borehole systems (HES). Compared to standard asynchronous motors, energy savings of up to 21 % have been achieved in numerous systems installed worldwide. The key factor for energy savings and superior efficiency is the permanent magnet technology of the motor. Instead of a short-circuit induction type rotor, the high efficiency motor contains a permanent magnet rotor design with buried magnets. The system can be operated with grid or solar supply. The variable frequency drive (VFD) offered by Franklin Electric can be controlled remotely by using the Franklin Electric mobile app and a smart device. This not only allows operator monitoring, but also assistance from the Franklin Electric Service team to support the customer during commissioning, system setup, readjustment of parameters and application settings, or troubleshooting.

Voltage Speed Head

When operating a pump with solar energy, it is important to generate sufficient electrical power, but even more important is sufficient voltage. The pump speed and thus the system performance is determined by the electrical voltage. To generate enough voltage, you need to connect enough solar panels in series. This will generate the voltage level needed to operate at full speed. But if weather conditions change, the voltage can drop, causing the system to immediately reduce pump speed to keep running. This reduces the amount of water pumped, but not just linearly. Due to pump affinity laws, the pump head or pressure is reduced squared, which then leads to a further reduction in water flow as you run at a different pump operating point. If the solar system has not sized carefully, or if less efficient components are used, then the risk of running the pump in a dead-head situation increases. In such case, the pump is still operating, but it's not generating

enough head to overcome a certain level, and the result is that water flow stops. With the lower energy consumption of the High Efficiency System, you have an additional safety reserve that allows you to pump more water, or longer.



Advanced Solar Voltage boost

Franklin Electric has further enhanced its Solar systems and provides an advanced voltage boost function. The voltage boost feature makes it possible to size your system based on power rather than voltage, saving you up to 50% on solar panels compared to a standard system without the voltage boost feature. This further reduces the required number of solar pv-panel, initial investment and installation cost.

So the High Efficiency Borehole system has superior efficiencies to save energy and reduce operating costs by up to 21%. For solar applications, you can also significantly reduce the number of solar panels. You save even more money and have more water available for a longer time period.

Read more success stories of Solar applications on franklinwater.eu.

Electric

15 Electrical Boxes



Lowe's Partners with Hubbell



Big retailer teams with Hubbell to market the firm's electrical solutions brands.

Lowe's, a prominent home improvement retailer, has recently unveiled a sweeping nationwide collaboration that will feature a comprehensive array of top-tier professional electrical box brands from Hubbell Incorporated's renowned electrical solutions segment. This strategic alliance will see an integration of Hubbell's cutting-edge offerings both within Lowe's brick-and-mortar stores and on its widely accessed online platform, Lowes.com.

In an insightful statement, Bill Boltz, an esteemed figure as Lowe's Executive Vice President of Merchandising, emphasized the company's unwavering commitment to curating a meticulously tailored portfolio of brands and products that perfectly align with the preferences and requirements of professionals in the industry. This dedication has culminated in a formidable partnership with Hubbell, which has firmly solidified Lowe's position as the go-to national destination for an assortment of esteemed brands, including Bell, Raco, and TayMac, all within Hubbell's domain.

This collaborative effort ushers in a transformative phase for Lowe's as it takes on the mantle of being the preeminent national home improvement retailer chosen to showcase Hubbell's distinctive range of brands. Foremost among these is Bell, which stands as a trailblazer in the creation of both commercial and residential weatherproof electrical products. With a sweeping assortment comprising an extensive selection of boxes, covers, and outdoor lighting solutions, Bell empowers customers to address their electrical needs with utmost efficiency and innovation.

Equally noteworthy is RACO, an illustrious name that boasts over a century of experience in the manufacturing of steel electrical boxes, covers, and commercial fittings. This legacy of excellence has firmly established RACO as a trusted authority in the industry, revered for its enduring commitment to quality and precision.

TayMac, yet another cornerstone of this partnership, stands as a pioneer in the realm of outdoor electrical weatherproof covers. Famed for inventing the pioneering «In-Use» cover solution, TayMac has consistently set the gold standard for the secure installation of electrical wiring and equipment within outdoor environments. This dedication to safety and reliability has firmly entrenched TayMac as a go-to choice for professionals seeking top-tier solutions.

Moreover, this partnership extends beyond the confines of these aforementioned brands, as it also encompasses Wiegmann, an industry leader in manufacturing customized enclosure solutions. Boasting an expansive range of materials suitable for both indoor and outdoor applications, Wiegmann caters to the diverse needs of professionals seeking robust and tailor-made enclosure solutions.

Bill Boltz further emphasizes the significance of this collaboration, highlighting the industry-leading stature of these brands within Hubbell's repertoire. Professionals across the spectrum can unequivocally place their trust in these brands, confident in their capacity to deliver unparalleled quality and innovative solutions to a myriad of electrical challenges.

Founded in the year 1888, Hubbell Incorporated is headquartered in Shelton, Connecticut, and has emerged as a powerhouse in the realm of utility and electrical solutions. The company prides itself on providing customers with the tools and systems needed to operate critical infrastructure in a manner that is both secure and efficient. As a testament to its prowess, Hubbell reported a substantial revenue figure of \$4.9 billion in the year 2022, underlining its prominence and enduring relevance within the industry.

<https://www.hbsdealer.com/>

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- High trapping efficiency
 - HT & HTO --> > 95%
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Cover Story

19 Solar Wind Energy



The Growing Market for Hybrid Solar Wind Energy Storage



The global market for hybrid solar wind energy storage is expected to experience significant growth in the coming years. This growth is driven by the increasing demand for renewable energy sources, as governments and consumers alike recognize the importance of transitioning to cleaner forms of power.

Hybrid solar wind energy storage systems have the unique ability to store energy from both solar and wind sources, providing a reliable source of electricity even when the sun is not shining or the wind is not blowing. This makes them an attractive option for areas with unreliable or intermittent access to traditional power grids.

The market for hybrid solar wind energy storage is expanding rapidly, with key players such as Siemens, ABB, General Electric, and Hitachi driving the industry forward. These companies are developing innovative products and technologies to meet the growing demand for renewable energy solutions.

In addition to the major players, there are also numerous smaller manufacturers and suppliers entering the market, further fueling its growth. The market is becoming increasingly competitive, with companies vying for market share and striving to develop products with superior performance and efficiency.

Segmentation analysis of the market reveals the various applications for hybrid solar wind energy storage, including residential energy storage, commercial and industrial energy storage, grid stabilization and peak shaving, remote and off-grid energy solutions, renewable energy integration, and microgrid applications. Each of these segments represents a unique opportunity for growth and innovation within the industry.

Geographically, the market is experiencing growth across all regions, including North America, Europe, Asia Pacific, South America, and the Middle East and Africa. Each region presents its own set of opportunities and challenges, with governments taking different approaches to incentivize the adoption of renewable energy sources.

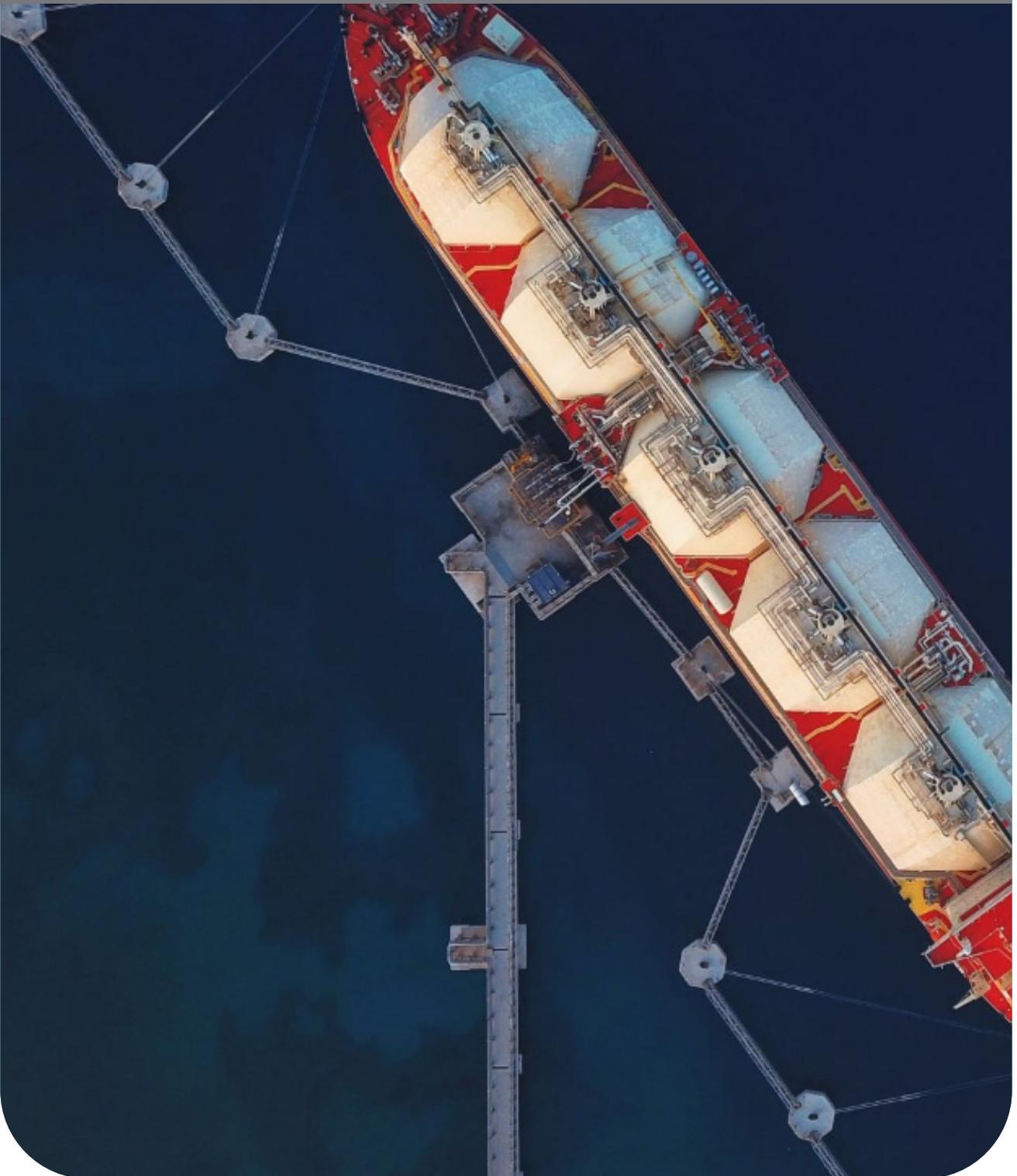
Overall, the hybrid solar wind energy storage market is thriving, driven by the need for clean, reliable, and sustainable energy solutions. As the market continues to mature, we can expect to see further advancements in technology and increased adoption of hybrid solar wind energy storage systems.

By Terence West

<https://www.energyportal.eu/>

Products

21 Liquefied Petroleum Gases (LPG)



Westport Fuel Systems Inc. Awarded Global OEM Supplier Agreement for Liquefied Petroleum Gas (LPG) Systems



Westport Fuel Systems Inc., a leading provider of alternative fuel systems and components for the global transportation industry, has been designated as the supplier of liquefied petroleum gas (LPG) systems for a global original equipment manufacturer (OEM). This agreement complements the previously announced production supply agreement, adding new Euro 7 vehicle platforms that will be produced by the OEM. The total expected revenue from this agreement is €63 million between 2025 and 2028, bringing the total revenue generated by the LPG fuel system supply agreements for Euro 6 and 7 programs with this OEM to approximately €255 million.

Westport Fuel Systems is pleased to become the exclusive supplier of LPG systems for this leading OEM customer and looks forward to continuing its commitment to providing LPG systems for its LPG-powered vehicle platforms, said David M. Johnson, CEO of Westport Fuel Systems. LPG is a cost-competitive alternative fuel solution that helps achieve sustainability goals, especially in markets like Europe where refueling infrastructure is well-established.

Westport will provide its LPG system solutions for the OEM's Euro 6 vehicles starting in the fourth quarter of 2023. LPG and bio-LPG, also known as propane or autogas, are clean alternative fuels used for light, medium, and heavy-duty vehicles. LPG-powered vehicles offer a competitive and low-emission alternative to gasoline or diesel vehicles, and this technology meets stringent emission reduction regulations. These vehicles are allowed to operate in low-emission zones in Europe.

Westport Fuel Systems is a leading provider of advanced fuel delivery system components for clean and low-carbon fuels such as natural gas, renewable natural gas, propane, and hydrogen for the global transportation industry. With headquarters in Vancouver, Canada, the company serves customers in over 70 countries.

By Terence West

<https://www.energyportal.eu/>

Services

23 Motive Power



Next-Gen Motive Power



Progress Rail EMD® GT38H hybrid, SD40JR Joule battery-electric, and GT38JC Joule. Progress Rail photo

Transitioning from steam to diesel took more than 20 years. Moving to zero emissions will probably take much longer.

Be it battery-electric, hybrid, biofuel, hydrogen fuel cells, or improvements to the tried-and-true diesel-electric, the motive power market is glowing with clean, green technologies. The most widely used terms are “decarbonization” and “zero emissions.”

“Railroads are working diligently to develop lower and ultimately zero-emission technologies that deliver an even more sustainable future,” the Association of American Railroads notes. “Railroads are taking active steps to further reduce emissions associated with current locomotive technology and move toward lower and zero-emission technologies that are still in research, development and demonstration phases. Numerous railroads have active demonstration programs for alternative fuel locomotives that hold great promise as tomorrow’s lower or even zero-emission solutions.”

All of this will take time—lots of it. The railroad industry has been around for nearly 200 years (167 of them documented in the pages, print or electronic, of *Railway Age*). The diesel-electric locomotive, which will remain the industry’s primary source of motive power for many years to come, first appeared in 1920. Will railroad historians in the 22nd century consider 2023 (or thereabouts) a milestone year, the beginning of a major move away from the diesel-electric? Or will another 10 to 20 years of development and testing, followed by 10 to 20 transitional years, push back that date in history?

Progress Rail

Progress Rail, a Caterpillar company, is embracing all forms of alternative propulsion technologies. The brand that got its start as Electro-Motive Corporation in 1922, and as EMD (Electro-Motive Division of General Motors), jump-started dieselization in 1941 with the FT. Today, Progress Rail sees an evolving market for its EMD® product line, including battery-electric, hybrid and HFC (hydrogen fuel cell) propulsion, as well as diesel-electric locomotives fueled with bio-diesel blends, renewable diesel, a hydrogen/diesel blend, or even straight hydrogen. The possibilities are vast, and there is no “one size fits all” solution.

“We are proactively developing cutting edge solutions—focusing on our customers’ interests and their ability to obtain funding for additional investments,” says Senior Vice President of International Sales, Technology & Marketing Paul Denton. “There are several options along the path of emissions reduction that are emissions-friendly and do not require railroads to replace their investment in diesel engines.”

By William C. Vantuono, Editor-in-Chief

<https://www.railwayage.com/>

Technology

25 Bioenergy



Study Reveals Insightful Facts About The Bioenergy Market



A recent study has provided detailed insights into the growth and development of the bioenergy market. The report offers predictions on various factors such as revenue size, production, consumption, and market trends. It also analyzes the key driving and restraining forces for the market and explores the role of leading market players.

The report aims to provide a comprehensive understanding of the current market situation, historical data, and future trends. It also examines the impact of the economic slowdown and COVID-19 on the industry. The research report was compiled using both static and dynamic viewpoints on business.

The bioenergy market study covers important research data that can be a valuable resource for managers, analysts, and industry experts. It provides ready-to-access and self-analyzed information to help understand market opportunities and challenges. The report includes market segments based on types such as ethanol, biodiesel, and hydrocarbon fuels, as well as applications including transportation, off-grid electricity, and cooking.

The report highlights current and future industry trends and offers business strategies to help stakeholders make informed decisions.

It covers regions such as North America, Europe, Asia Pacific, South America, and the Middle East & Africa.

Key topics covered in the report include market drivers and barriers, competition among manufacturers, the impact of COVID-19 on the market, production and consumption analysis, and profiles of key market players. The report also analyzes market strategies, standardization, regulatory initiatives, and industry value chain.

The objectives of the report are to estimate the market size, analyze market segments, study micro-markets, and provide details on factors affecting market growth. It also assesses crucial business strategies used by leading companies and analyzes recent trends in the regional market.

In conclusion, the study provides valuable insights into the bioenergy market and its future prospects. It offers a comprehensive analysis of market trends and key players' strategies, making it a useful resource for industry professionals.

By Alan Caldwell
<https://www.energyportal.eu/>

Country Reports

27 Australia

28 India

29 Kuwait



Australia's Energy Transition Stalled By Stubbornly High Demand

July 24 (Reuters) - A more than 200% increase in installed solar power generation capacity since 2018 helped Australia rank sixth globally in terms of solar capacity last year and emerge as one of the world's fastest-growing major renewable energy producers.

However, to realise its goal of becoming a net-zero carbon emitter by 2050, Australia must reverse the trajectory of its energy use, which remains on a rising path in contrast with several peers that have curbed energy use in recent years.

Australia's total electricity consumption has grown nearly 8% over the past decade, compared with contractions over the same period of more than 7% in France, Germany and Japan, and a 14% drop in the United Kingdom, data from Ember shows.

Sustained growth in Australia's electricity demand has in turn meant that power producers must continue to heavily rely on coal for electricity generation on top of recent additions in supply of renewable energy sources.

Australia has sharply boosted clean energy capacity in recent years, but remains heavily reliant on coal & natural gas for electricity generation

To accomplish emissions reduction targets on time, Australia's energy use must decline while clean energy supplies climb further, as that would give power producers the scope to shut high-polluting fossil-powered energy generation systems ahead of the 2050 deadline.

Demand Drivers

Reducing overall electricity and energy use is a major challenge in all countries, but will be especially tough in Australia which is a relative laggard in terms of the electrification of transport systems and is prone to sustained heat waves that trigger heavy use of air conditioners.

The transport sector uses more energy than any other part of the Australian economy, including industry, and accounted for roughly 40% of total final energy use as of 2020, according to the International Energy Agency (IEA.)

Transport energy demand has also expanded more quickly than other sectors, growing by over 5% from 2010 to 2020 compared to industry's 1.3% growth over the same period.



Power lines and storm clouds can be seen above the Bayswater coal-powered thermal power station located near the central New South Wales town of Muswellbrook, Australia March 14, 2017. REUTERS/David Gray/File Photo

To reduce energy use, and cut the country's fuel import bill which topped AUD \$65 billion in 2022 alone, according to the Australian Bureau of Statistics, the Australian government is keen to electrify car fleets and is offering large incentives for electric vehicle purchases.

Even so, electric vehicles accounted for only 5.1% of total Australian car sales in 2022, according to the International Energy Agency (IEA).

That compares to 13% in New Zealand, 21% in the European Union, and a global average of 14%.

More incentives for EV purchases are expected, but any rapid adoption of EVs would only serve to increase overall electricity demand and place further pressure on power producers to increase electricity supplies.

Heating and cooling for homes and businesses is another major energy demand driver in Australia, and accounts for roughly 40% of total electricity use in the country.

Australia is exposed to harsh weather conditions, especially heat waves which are expected to increase in frequency, intensity and duration over the coming decades due to climate change, according to the New South Wales government.

To cope, Australians are expected to resort to increased use of air conditioners during the hottest times of the year, adding yet more strain to electricity systems.

Gavin Maguire
<https://www.reuters.com/>

Can India be a Global Manufacturing Hub for Green Hydrogen Electrolyzers?



Hydrogen is considered a potential solution to achieve global Net Zero goals. The demand for hydrogen is expected to reach 130 MT by 2030, presenting a significant opportunity for the production of green hydrogen electrolyzers.

India, with its favorable cost structure and the prevailing sentiment of shifting away from dependence on China, is well positioned to become a global manufacturing hub for electrolyzers. The Indian government has recognized the potential of green hydrogen and has launched the National Green Hydrogen Mission to promote the production, research, and development of hydrogen energy in the country.

The availability of skilled labor and a strong manufacturing base already in place for other industries gives India an advantage in attracting investments and establishing a robust electrolyzer manufacturing ecosystem. India's vast renewable energy potential, particularly solar and wind power, provides a sustainable and abundant source of energy for green hydrogen production.

By leveraging its existing infrastructure and expertise, India can establish a complete supply chain for green

hydrogen electrolyzers, including the production of critical components such as electrolyzers, compressors, and storage systems. This will not only support the domestic market but also position India as a reliable supplier of green hydrogen electrolyzers for the global market.

Furthermore, India's large domestic market for green hydrogen can drive economies of scale and lower production costs, making Indian electrolyzers globally competitive. The country can also benefit from collaborations and partnerships with international manufacturers and technology providers to enhance its manufacturing capabilities and access advanced technologies.

Overall, with its favorable cost structure, strong manufacturing base, abundant renewable energy resources, and government support, India has the potential to emerge as a global manufacturing hub for green hydrogen electrolyzers. This would not only contribute to India's energy transition but also stimulate economic growth and create employment opportunities in the clean energy sector.

By Alan Caldwell
<https://www.energyportal.eu/>

Kuwait Energy Profile: Holds 6% Of World's Proved Oil Reserves



Kuwait City

Kuwait, a long-standing member of OPEC, held 6% of the world's proved oil reserves, including half of the reserves in the Neutral Zone that is shared with Saudi Arabia, in 2022. Kuwait was the third-largest crude oil producer in OPEC and the 10th largest total petroleum liquids producer in the world.

Internal political disputes and frequent government turnovers create a high level of uncertainty in energy project investment, which has led to delayed or canceled energy projects over the past decade. The ongoing political disputes have prevented reforms necessary for Kuwait to become more energy efficient and to diversify its economy. The executive branch, which has experienced frequent turnover, has dissolved the legislature several times since Kuwait's parliament was elected in 2020. The most recent suspension occurred in April 2023, less than two months after the legislature was reinstated. In addition to political stalemates, Kuwait's limits on foreign investment and regulatory hurdles in the oil and natural gas sectors hinder upstream development and limit production increases.

Crude oil export revenues account for a large part of Kuwait's economy. According to International Monetary Fund estimates, oil and natural gas revenues accounted for an estimated 57% of the government's total revenues in fiscal year 2021 (April 2020–March 2021). Total petroleum exports

accounted for an estimated 78% of the country's total export revenues in 2021. Much like other OPEC producers, Kuwait saw the value of its net oil exports rise in 2022 after crude oil prices and production rose. In 2022, Kuwait's real value of oil exports totaled \$98 billion, up from \$68 billion (in 2022 dollars) in 2021. However, we expect that oil price decreases and production cuts in 2023 will lower Kuwait's net oil export revenues.

Kuwait's economy consumed an estimated 1.6 quadrillion British thermal units (quads) of primary energy in 2021, up from 1.5 quads in 2020, after the country began to recover from the effects of the COVID-19 pandemic. We expect energy consumption to continue growing in 2022 as the economy strengthens and as higher oil production requires more energy consumption in the oil industry. Natural gas and oil accounted for virtually all of Kuwait's total primary energy consumption, and coal and renewable energy made up a fraction of consumption. The share of natural gas in Kuwait's energy consumption rose from 32% in 2009 to 65% in 2021 because natural gas displaced some oil in the electric power and industrial sectors.

By EIA
<https://www.eurasiareview.com/>

Coming Events

Energy and Mines Australia Summit

Optus Stadium, Perth, Australia
14 - 15 Jun 2023

<https://australia.energyandmines.com/>

Now in its 7th year, the Energy and Mines Australia Summit is the annual event for miners to get the latest updates on the strategies and technologies for realizing net-zero targets and to network with mining peers and global decarbonization experts...

BlueSky-Incorep Conference

Hilton Sorrento Palace, Sorrento, Italy
12 - 16 Jun 2023

<https://www.bluesky-incorep.org/>

The first BlueSky/Incorep Polyolefin Conference will be held on 12-16 June 2023 in Sorrento (Italy), at the Hilton Sorrento Palace Conference Center. The scientific program from Monday June 12 until Friday June 16 will focus on the latest...

HRSG Forum

Renaissance Atlanta Waverly Hotel & Convention Center, Atlanta, USA
12 - 15 Jun 2023

<https://hrsgforum.com/>

Owner/Operators, Vendors, and Consultants present and discuss HRSG case studies, field trials, and best practices to ensure reliable and effective operation of your CCGT plants...

Sabah Oil, Gas & Energy Conference & Exhibition

Sabah International Convention Centre, Kota Kinabalu, Sabah, Kota Kinabalu, Malaysia
08 - 09 Jun 2023

<https://www.sabahoilandgas.com.my/>

SOGCE is the only oil, gas & energy conference and exhibition aimed at providing an industry platform for oil, gas & energy companies meet and discuss pivotal industry issues to help grow and explore...

Electrical Energy Storage South America

Expo Center Norte, São Paulo, Brazil
29 - 31 Aug 2023

<https://www.ees-southamerica.com/home>

With the well-known trade fair and conference Intersolar South America, and two new energy trade fairs, such as the ees South America, Eletrotec+EM- Power South America and the Special Exhibition Power2Drive, The smarter...

Annual International Hydrogen & Fuel Cell Event

Vancouver, Canada
05 - 07 Jun 2023

<https://www.globalhydrogenreview.com/>

The Annual International Hydrogen and Fuel Cell Event is Canada's premier platform for professionals to meet, discuss and promote the latest developments in technology, policy and applications of for both hydrogen and fuel cells. The intriguing...

Renewable Energy Cyber Security Forum

Schönefeld, Germany
06 - 07 Jun 2023

<https://www.leadventgrp.com/>

The Renewable Energy Cyber Security Forum aims to prepare utilities and other energy providers for coping with cyber security risks in the real world. Critical precautions and supporting technology are thoroughly studied in order to better prepare energy...

Solar Energy Systems Conference

University of Texas A & M at Qatar, Doha, Qatar
22 - 24 May 2023

<https://www.aiche.org/cei/conferences/>

AICHE invites representatives from academia, industry, and policy making and government organizations to participate. The conference will provide a forum for the exposure & exchange of ideas and methods & results in solar energy...

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From Brawn to Brains: How AI Advances The Energy Industry



The World Artificial Intelligence Conference 2023 (WAIC 2023) is held from July 6 to 8 in Shanghai, China. The conference continually plays the roles of «technology leader, application showcase, industry accelerator and governance council» to facilitate worldwide cooperation in artificial intelligence technology. AI is the simulation of human intelligence using various machines to create intelligent software and hardware which can replicate human behavior. By combining computer science and robust datasets, AI has improved operational efficiency and performance in many industries.

According to Statista, AI has the potential to support organizations to achieve 11 to 45 percent of their Economic Emissions Intensity (EEI) reduction by 2030. As called for in the Paris Agreement, net zero need to be reached by 2050, which drives the energy industry to enhance efficiency. And the International Energy Agency (IEA)'s Sustainable Development Scenario (SDS) forecasts that energy efficiency will be responsible for delivering more than 40 percent of the reduction in energy-related greenhouse gas emissions by 2040. Consequently, AI is critical to improving energy efficiency under the blueprint for achieving international climate and energy goals.

AI has been paving the way to energy efficiency improvement through the optimization of renewable energy forecasting and grid operations, coordination of distributed energy assets and demand-side management, and materials innovation and discovery. Take peak time load prediction as an example. It is a critical part of maintaining power network operation because surging energy demand could easily give rise to power blackouts. As one of the traditional technologies for load forecasting, historical analysis based on data on power consumption, time of day and customer behavior is widely used.

However, it has limitations as it leaves out factors that might affect power use, such as weather changes, technology improvements and unexpected power demand fluctuation. Though the traditional peak time load prediction technology has limitations, they are still applied in many energy management systems. AI opens new possibilities to optimize peak time load prediction. It enables power management systems to analyze significant volumes of data from several sources, including weather forecasts, public media and smart meters. More specifically, through examining power consumption data, AI is able to find trends in power use based on variables like temperature, day of the week, and time of day. And the future trends of some areas' power usage would be accurately anticipated by utilizing these data.

Apparently, great benefits will be brought by AI-based peak time load prediction. High accuracy is one of the main advantages. The IEA report shows that AI-based energy management systems can reduce peak demand by up to 10 percent and reduce overall energy consumption by up to 15 percent. Power management systems with AI technology can streamline energy use and avoid sudden blackouts.

By Lu Jianfei
<https://news.cgtn.com/>

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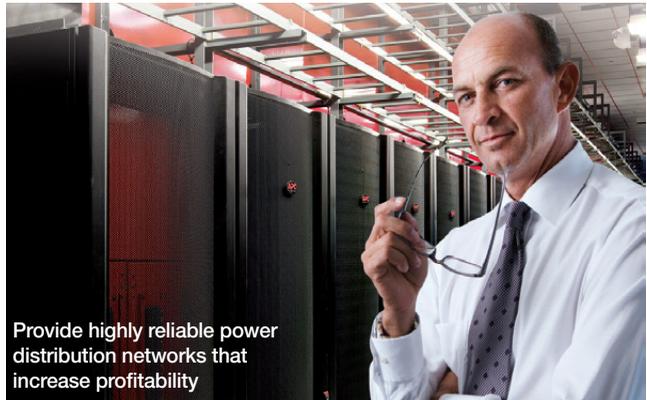
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