Electrifying The Oil And Gas Industry Ge Energy

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Electrifying The Oil And Gas

Electrifying the oil and gas value chain A century of industry achievements and technology breakthroughs to electrify processes from upstream to downstream High-power electrical drives High-speed and integrated compression solutions Subsea electrification Energy Management Systems Intelligent control platforms Predictive power asset analytics 4 5

Electrifying the Oil and Gas Industry - GE Power Conversion

Electrification of oil and gas platforms on the UK continental shelf (UKCS) should play an important role in efforts to achieve this target, as a Rystad Energy analysis shows that UK oil and gas...

The Electrification Of UK Offshore Oil & Gas | OilPrice.com

The British government has set a goal to reach net zero emissions by 2050. Electrification of oil and gas platforms on the UK continental shelf (UKCS) should play an important role in efforts to achieve this target, as a Rystad Energy analysis shows that UK oil and gas production will remain significant for decades to come. After a small decline over the next several years, output forecast to rebound to approx. 2 million barrels of oil equivalent per day by around 2035.

UK needs to electrify its rising oil and gas output to ...

Azeez Mohammed, GE. With the recovery in oil prices, deepwater and ultra-deepwater oil and gas (O&G) projects are the focus of renewed interest. Project viability will come down to a continued focus on cost, but also productivity through high-performing assets. And electrification is set to drive a dramatic impact of these high-tech production facilities for more efficient operations.

Electrification In New Era For Oil, Gas Industry | Hart Energy

Into the deep: electrifying subsea oil and gas operations. In some of the most challenging conditions found anywhere in the world, far offshore, and deep below the waves, Saft batteries deliver safe and reliable power for the new generation of electrified subsea oil and gas projects. Even as the world pushes for renewable energy, the global demand for fossil fuels is still rising.

Into the deep: electrifying subsea oil and gas operations ...

The oil and gas industry is largely run on electricity generated on site using gas turbines and currently accounts for approximately one quarter of Norway's total carbon emissions. Troll A was the first platform on the Norwegian continental shelf to be electrified, back in 1996. The Gjøa field was electrified from the very outset.

Electrification of platforms - equinor.com

UK emissions from oil and gas production in the North Sea are the highest among the region's producers, reaching 13.1 million tonnes of CO2 in 2019, according to Rystad Energy emission data.

Top North Sea emitter UK needs to electrify its rising oil ...

Electrifying the Johan Sverdrup oil and gas field 23 July 2018 (Last Updated July 20th, 2018 16:06) In May, Norwegian oil producer Equinor, formerly known as Statoil, began laying a cable that will supply onshore power to the gigantic Johan Sverdrup field.

Electrifying the Johan Sverdrup oil and gas field

B.C. will offer incentives for natural gas producers to move onto the electricity grid and lean on the Trudeau government to fund new transmission lines as part of an aggressive plan to electrify its emissions-heavy oil and gas fields. In an interview Nov. 29, Energy Minister Bill Bennett laid out the government's new plan to slash oil and gas sector emissions an effort that would lead to a boom in transmission line construction in Northeast B.C. and have implications for independent ...

B.C. unveils aggressive plan to electrify natural gas ...

Electrification is eco-friendly and cost-effective, and hence represents a shortcut to a more sustainable and profitable oil and gas industry. ABB is of the opinion that electrification must be assessed from three

Electrification of petroleum installations Commercially ...

The British government has set a goal to reach net-zero emissions by 2050 and electrification of oil and gas platforms on the UK continental shelf (UKCS) should play an important role in efforts to achieve this target. A Rystad Energy analysis shows that UK oil and gas production will remain significant for decades to come.

UK needs to electrify oil & gas platforms to reach net ...

Solutions include electrifying oil and gas assets, reducing flaring and venting of gas during production, increased efforts to detect and stem methane leaks, and efficiency gains through digitalization.

Deep decarbonization of the world's energy system still 15 ...

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Electrifying The Oil And Gas Industry Ge Energy

Electrification of oil and gas platforms on the UK continental shelf (UKCS) should play an important role in efforts to achieve this target, as a Rystad Energy analysis shows that UK oil and gas production will remain significant for decades to come.

Top North Sea emitter UK needs to electrify its rising oil ...

Forbes reports that the world's five largest publicly owned oil and gas companies spend about $200m annually on lobbying to control, delay, or block climate-motivated policies, especially in the US.

Big Money drives transition in face of old resistance ...

In traditional wells, hydraulic fluid flows from a facility above the surface of the water into a subsea well through specialised pipes, which is used to power the well's hydraulic equipment, which pumps the oil back to the surface. By electrifying the system, high-pressure equipment such as the hydraulic pipes are removed, reducing the risk of explosions arising from faulty pipes, and eliminates the threat of a pipe leaking, and spilling hydraulic fluid into the surrounding ocean.

Electrifying the subsea industry: companies leading the way

Electrifying Oil & Gas The Industry's Future and Powering the World Escalante Power Plant Prewitt New Mexico The oil and gas industry is enemy #1 for the environmental movement and the events of 2020 will only add momentum to replace fossil fuels. Fossil fuel or hydrocarbons are not the focus of the problem, it is the emissions. Carbon ...

Electrifying Oil & Gas Post

Matching intermittent supply from renewables with growing demand in the ever-electrifying world is where the opportunity lies and where the oil majors should focus.

An optimistic--but realistic and feasible--action plan for fighting climate change while creating new jobs and a healthier environment: electrify everything. Climate change is a planetary emergency. We have to do something now but what? Saul Griffith has a plan. In Electrify, Griffith lays out a detailed blueprint optimistic but feasible for fighting climate change while creating millions of new jobs and a healthier environment. Griffith's plan can be summed up simply: electrify everything. He explains exactly what it would take to transform our infrastructure, update our grid, and adapt our households to make this possible. Billionaires may contemplate escaping our worn-out planet on a private rocket ship to Mars, but the rest of us, Griffith says, will stay and fight for the future. Griffith, an engineer and inventor, calls for grid neutrality, ensuring that households, businesses, and utilities operate as equals; we will have to rewrite regulations that were created for a fossil-fueled world, mobilize industry as we did in World War II, and offer low-interest climate loans. Griffith's plan doesn't rely on big, not-yet-invented innovations, but on thousands of little inventions and cost reductions. We can still have our cars and our houses but the cars will be electric and solar panels will cover our roofs. For a world trying to bounce back from a pandemic and economic crisis, there is no other project that would create as many jobs up to twenty-five million, according to one economic analysis. Is this politically possible? We can change politics along with everything else.

One pathway to decarbonizing global energy systems is to replace fossil fuels with renewable forms of energy such as solar and wind. However, the geo-spatially and temporally variant nature of these energy sources makes their integration into conventional electric grids a technically and economically onerous effort. By identifying processes compatible with intermittent renewable energy sources, energy-intensive industries can displace the need for fossil fuels globally while circumventing many of the barriers to integrating these energy sources into electricity grids. This dissertation assessed the techno-economic feasibility of utilizing wind and solar resources to meet the energy demands of desalination facilities, as well as electrified pneumatic control systems at oil and gas production sites. The first study in this dissertation developed a method for assessing the technical and economic viability of using these renewable forms of energy to power brackish groundwater desalination facilities. The method relies on a multi-layered, spatial model that incorporated multiple variables such as depth of water resource, salinity levels, magnitude of local renewable energy resources, distance to water infrastructure, and, for comparative purposes, the local price of water. To illustrate this method, it was applied to 1,445 site locations on state of Texas lands owned by the General Land Office that overlay brackish aquifer resources. Using this approach, 193 potentially economically viable sites were identified that have estimated renewable desalination water production costs lower than local municipal water prices. The results of this analysis showed that using wind to power a desalination facility is economically preferable to solar power at 145 of the 193 sites; solar was preferable at the remaining 48 sites. Solar and wind resources are both abundant in Texas; however, the particularly high capacity factors for wind across much of the state helps wind deliver electricity costs that are often lower than those provided by solar. The second study sought to assess the technical and economic viability of using variable renewable energy to power electrified well site pneumatic control systems. Conventional pneumatic control systems vent methane-containing well gas during their operation. Electrifying these systems can avoid the venting of methane, which is a potent greenhouse gas. Under this study, two different strategies were considered for replacing pneumatic systems powered by well gas. One option is to exchange all components controllers, actuators and pumps to equipment that is directly powered by electricity. This scheme is referred to as the electric configuration. The second option, referred to as the electro-pneumatic configuration, is to retain the pneumatic system, but power its components with instrument air, which is ambient air that has been compressed by an electrically-driven compressor. This option thus replaces the emission of methane with ambient air. First, an energy simulator was developed to serve as a screening tool to determine the temporally-varying power demands incurred by switching a standard pneumatic system to an electrified one. The tool uses a comprehensive set of user inputs to simulate site-specific single-day power loads for the electric and electro-pneumatic configurations of well site control systems based on specifications from controllers, valve actuators, and chemical pumps commonly used at well sites. To assess the viability of meeting well site power loads with intermittent renewable energy, electric and electro-pneumatic systems were modeled with solar photovoltaic (PV) power generation and electric battery storage during one year of typical conditions at sites located near Midland, Texas (Permian Basin), Nacogdoches, Texas (Haynesville Shale), and Edmonton, Canada (Kaybob-Duvernay Formation) using a time-resolved energy flow model. The electro-pneumatic model included a thermodynamic analysis to simulate storage of energy as compressed air in addition to electric battery storage. Of the two configurations, the all-electric option was found to be cheaper than the electro-pneumatic option while potentially supplying power to the system more reliably. An electric battery with a capacity of 1-2 kWh can deliver 100% reliability under typical meteorological conditions for the all-electric configuration utilizing a 200-250 W solar panel for sites located in Texas, resulting in a methane abatement cost of $190-$200 per ton of avoided methane emissions. The solar-powered electric system could potentially be employed at a well site in Alberta, Canada. However, because its solar resource is less abundant than in Texas, ensuring a high level of reliability would be 14% more costly. Other forms of on-site power generation such as geothermal energy might be more viable, or could possibly be used in conjunction with solar PV to ensure reliable operation during the winter when insolation levels are considerably lower. The higher power demands required by the electric air compressor in the electro-pneumatic design require larger PV generation capacity to achieve high levels of reliability. However, if the electro-pneumatic design is implemented, well-gas could potentially be used as a back-up to the air compressor to achieve equivalent reliability of the systems currently used in the field without the PV/battery system providing meet 100% of energy demands. While it is technically and economically feasible for electro-pneumatic systems to utilize compressed air tanks as the primary energy storage medium, electric batteries are the more viable option due to their energy density, stability and relative affordability. For new well sites, the all-electric option will be more cost-effective. However, if electrification is performed as a retrofit, the electro-pneumatic configuration might be more cost effective if installing the electric system requires more than a week of downtime. Together, these studies illustrate methods that can be used to assess the techno-economic viability of integrating variable forms of renewable energy into carbon and energy-intensive industries

At a time when climate-change deniers hold the reins of power in the United States and international greenhouse gas negotiations continue at a slow crawl, what options are available to cities, companies, and consumers around the world who seek a cleaner future? Scott Victor Valentine, Marilyn A. Brown, and Benjamin K. Sovacool explore developments and strategies that will help fast-track the transition to renewable energy. They provide an expert analysis of the achievable steps that citizens, organizational leaders, and policy makers can take to put their commitments to sustainability into practice. Empowering the Great Energy Transition examines trends that suggest a transition away from carbon-intensive energy sources is inevitable there are too many forces for change at work to stop a shift to clean energy. Yet under the status quo, change will be too slow to avert the worst consequences of climate change. Humanity is on a path to incur avoidable social, environmental, and economic costs. Valentine, Brown, and Sovacool argue that new policies and business models are needed to surmount the hurdles separating the current consumption model from a sustainable energy future. Empowering the Great Energy Transition shows that with well-placed efforts, we can set humanity on a course that supports entrepreneurs and communities in mitigating the environmental harm caused by technologies whose time has come and gone.

The Climate Change Encyclopedia responds to the outstanding risk, survival, and ethical issue of our time, requiring action and providing opportunity. Primary-source expert authors write in a unique case-study structure that enables the Encyclopedia to be approachable, informational, and motivational for the public. The key focus areas are Climate Change and Finance, Economics, and Policy, with many other related climate categories included. The over 100 case studies provide realistic and interesting views of climate change, based on authors' published papers, reports, and books, plus climate-related activities of organizations, and selected topics. This inspiring work can enhance optimism and courage to act urgently and persistently on climate change, with foresight for a livable future.For more information on the list of contributors, please refer to https://www.worldscientific.com/page/encyclopedia-of-climate-change.Related Link(s)

This open access book presents a picture of the current energy challenges on the African continent (and the Sub-Saharan region in particular) and proposes pathways to an accelerated energy transition. Starting with an analysis of the status quo and the outlook for Africa's energy demand and energy access, it provides an account of the available resources, including hydrocarbons and renewable energy resources, which are playing an increasingly crucial role. It then moves on to analyze the level of investment required to scale-up Africa's energy systems, shedding light on the key barriers and elaborating on potential solutions. It also provides a suggestion for improving the effectiveness of EU Africa cooperation. While mainly intended for policymakers and academics, this book also speaks to a broader audience interested in gaining an overview of the challenges and opportunities of the African energy sector today and in the future.

This report addresses the increasingly important interactions of variable renewables and dispatchable energy technologies, such as nuclear power, in terms of their effects on electricity systems. These effects add costs to the production of electricity, which are not usually transparent. The report recommends that decision-makers should take into account such system costs and internalise them according to a "generator pays" principle, which is currently not the case. Analysing data from six OECD/NEA countries, the study finds that including the system costs of variable renewables at the level of the electricity grid increases the total costs of electricity supply by up to one-third, depending on technology, country and penetration levels. In addition, it concludes that, unless the current market subsidies for renewables are altered, dispatchable technologies will increasingly not be replaced as they reach their end of life and consequently security of supply will suffer. This implies that significant changes in management and cost allocation will be needed to generate the flexibility required for an economically viable coexistence of nuclear energy and renewables in increasingly decarbonised electricity systems.

"Over the next few decades, we will see a profound energy transformation as society shifts from fossil fuels to renewable resources like solar, wind, biomass. But what might a one hundred percent renewable future actually look like, and what obstacles will we face in this transition? Authors explore the practical challenges and opportunities presented by the shift to renewable energy."--Page 4 of cover.

Space and water heating account for nearly two-thirds of energy consumption in U.S. homes, and a large contributor to energy costs of end-use residential dwellings. Most home heating systems in the United States are fueled by fossil fuels - natural gas and fuel oil (heating oil) - representing more than 50 percent of all U.S. homes' heating. These heating systems result in higher greenhouse gas emissions than electric heating systems now, and the emissions difference will increase as the grid trends toward lower carbon intensity in the decades ahead. Electrification of residential heating systems, by eliminating site fossil fuel use for heating, provides an important element of ultimately achieving carbon-free buildings. The objective of this research is to analyze the heating load of end-use residential dwellings. The research for this thesis achieves this by first conducting a survey of energy usage profile of some residents in Boston, Massachusetts and Houston, Texas. It then applies a thermal model to simulate building heat load, which was used in developing an electrification cost model to verify and validate the case for electrification of residential dwellings. Thermal models were developed for two cities, Boston and Houston, having contrasting winter weather and electricity rates. The model simulated heat load demand and energy outputs from heat pumps in both cities and analyzed resulting data and potential tradeoffs compared with electric resistance and gas furnace heating systems. Results show that heat in residential dwellings using electric air-source heat pumps (ASHPs) is more cost-effective and energy efficient compared with other heating systems. Model analyses indicate that heat demand in residential dwellings, which increase as outside temperature decreases due to heat loss, is disproportionately higher at low temperatures because the performance of ASHPs drops with outside temperature. However, ASHP performance is higher in Houston compared to Boston due to milder winter temperatures in the former. And the "balance point" between heat load and energy output decreases as capacity of ASHP increases.