Linde and Heidelberg Materials Announce Large-Scale Carbon Capture Project

Chemicals Monitor Worldwide

April 13, 2023 Thursday

Length: 576 words

Body

Heidelberg Materials and Linde GmbH (Pullach, both Germany) have established a joint venture (JV) under the name Capture-to-Use (CAP2U) to build and operate a state-of-the-art carbon dioxide capture and liquefaction plant. The worlds first industrial-scale carbon capture and utilization (CCU) facility in the cement industry is scheduled to start operations in 2025 at Heidelberg Materials Lengfurt plant in Germany (photo). The facility will enable the captured CO2 from cement production to be reused as a valuable raw material in manufacturing applications. The planned volume of purified and liquefied CO2 is around 70,000 metric tons per year.

The majority of the CO2 generated will be marketed by Linde as part of the JV. Thanks to its purity, the processed gas can be used in both the food and chemical industries, for example in carbonated mineral water. A smaller proportion will be used by Heidelberg Materials to drive forward new CO2 recycling and recarbonation technologies.

For the implementation of this project, the substantial contributions of both partners will be supplemented by funding of around 15 million from the Decarbonization of Industry funding program on behalf of the German Federal Ministry for Economic Affairs and Climate Action (BMWK).

We are pleased to implement the worlds first large-scale CCU project in the cement industry together with our partner Linde, says Dominik von Achten, Chairman of the Managing Board of Heidelberg Materials . As part of our ambitious global CCUS strategy, we are currently driving forward a number of different industrial-scale carbon capture and utilization projects. This way, we aim to identify viable and efficient ways to reduce our carbon footprint and reuse CO2. The project in Lengfurt is scheduled to go into operations as early as 2025. The BMWK funding shows the importance that the German government also attaches to our joint project.

For our customers, a secure, high-quality supply of CO2 produced in a climate-friendly manner is of particularly high importance, says Mathias Kranz, vice president On-Site & Bulk Linde GmbH, outlining the requirements for a CO2 supply. With our partner Heidelberg Materials and the plant in Lengfurt, we will not only be able to expand our supply in the future, but also provide CO2 in a sustainable and climate- friendly way with short transport routes.

Climate protection is one of the most urgent challenges our industry is facing, says Jrgen Nowicki, executive vice president Linde plc and CEO of Linde Engineering. With this joint venture, two global leaders in their field are combining their expertise to create a solution that is as sustainable as it is economical. Following successful pilot applications, this industrial-scale facility will pave the way for sustainable cement production.

The plant is being designed and built by Linde Engineering one of the leading companies for CO2 facilities. Based on an amine scrubbing system specially developed for flue gases, the carbon dioxide will be separated directly from part of the exhaust gas stream from the cement clinker kiln. Equipment for purification and liquefaction, tanks for intermediate storage of the product, and loading facilities are also part of the project scope.

Linde brings to the JV its expertise in forward-looking, gas-based environmental technologies that allow customers around the world to increase their productivity while reducing their environmental footprint.

Load-Date: April 13, 2023

Linde turns to Singapore to expand its carbon capture and sequestration operations

The Business Times Singapore

May 1, 2023 Monday

Section: COMPANIES & MARKETS; Energy & Commodities

Length: 1139 words

Body

INDUSTRIAL gas company Linde has been ramping up its investments in carbon capture and sequestration (CCS) in the last few years, with agreements signed with several companies to develop technology solutions and storage facilities. These include oilfield services company SLB, Saudi Arabia's state oil company Saudi Aramco, oil giant BP and materials company Heidelberg. And now, the United Kingdom-headquartered company is turning to Singapore and its surrounding region to expand its CCS operations. Its next tranche of investment would be to develop CCS capabilities at its expanded S$1.9 billion gasification facility on Jurong Island, said Sanjiv Lamba, chief executive officer of Linde.

The plan is to capture and store the increased amount of emissions resulting from the plant's production and supply of hydrogen and synthetic gas to oil and gas company ExxonMobil.Speaking to The Business Times, Lamba said that this next tranche will be "quite significant" with "ambitious" plans, though he declined to reveal its cheque size. He said that the company is working closely with the Economic Development Board (EDB), which has "a kind of an EOI (expression of interest) out in terms of looking at consortiums who can provide that carbon capture and sequestration capability".He added: "We will be part of one of those consortiums, and working with EDB to figure out how we might be able to move that forward. So I do expect investments in Singapore, either by us or by a consortium, to capture and sequester the carbon dioxide." Linde already captures carbon dioxide on Jurong Island and supplies them to beverage manufacturers for their use.However, Lamba said that this is currently done at a very small scale of about 300 tonnes of carbon dioxide equivalent per day, which translates to more than 100,000 tonnes per year. In this upcoming investment, Linde will be looking at capturing and storing a "few million tonnes" of carbon dioxide equivalent per year, he said. "So there is that scalability. And that's where I think the economic challenge lies for carbon capture and sequestration."One challenge with developing CCS in Singapore, though, is the lack of natural carbon sinks given the city-state's small land size and lack of geological formations. However, Lamba noted that there are opportunities in the region.Carbon dioxide captured in Singapore could either be pressurised and then piped into the wells and subsurfaces of its neighbouring countries, or be liquefied, shipped to these other countries and then injected. Such opportunities, however, are dependent on the outcome of government-to-government discussions. "Obviously, we're working on both of those options. But there are challenges. And the challenges really are, you know, a combination of economics, and the ability to work with neighbouring countries to make sure that we're able to use their pore space to do the sequestration," said Lamba. Linde - and other high-emitting companies - is turning to CCS as part of its pivot to clean energy, and to meet its target of being carbon-neutral by 2050. On a shorter-term basis, it aims to reduce its absolute greenhouse gas emissions by 35 per cent by 2035, from its 2021 levels. And its environmental, social and governance (ESG) strategies seem to be paying off, so far. Despite being a high-emitting chemicals company, Linde has not been dropped from the Dow Jones Sustainability World Index. It has also maintained its MSCI ESG rating at "A", though green advocacy purists might criticise this as greenwashing. During its latest earnings call on Thursday (Apr 27), Lamba announced that the company sees potential to invest more than US$50 billion globally into clean energy over the next 10 years. The company made a net profit of US$1.5 billion after taxes and minority interests in the first

quarter of 2023, up 29.1 per cent from the same quarter a year ago. The company also raised the top end of its 2023 earnings guidance, citing higher pricing and continued productivity initiatives across all its businesses. The group expects its adjusted earnings per share to grow between 9 and 13 per cent this year, after previously guiding for growth of between 9 and 12 per cent.Despite the continued market volatility, Linde's stock price is up 16.1 per cent since the start of 2023. Recently, the group completed its delisting from the Frankfurt Stock Exchange.Linde's bet on CCS, in its bid to decarbonise, may run into some challenges, however. According to a recent report by the United Nations' Intergovernmental Panel on Climate Change, CCS is potentially one of the lowest contributors to net emission reduction among the gamut of climate mitigation solutions, including solar, wind, nuclear and geothermal energies. Kevin Milla, carbon specialist at sustainability advisory Paia Consulting, said that climate activists and scientists are sceptical about CCS because it is not yet scalable enough to meet the decarbonisation goals outlined in the Paris Agreement. "CCS alone cannot solve the problem of carbon emissions. Instead, the chemical industry should focus on improving energy efficiency in processes that cannot be powered by green electricity sources. Broadly, this will help to reduce emissions from high-energy reactions, even in the absence of an efficient CCS solution," said Milla. As the best way forward, he recommended that the chemical industry implement other decarbonisation strategies alongside developing innovations in CCS technology.These other strategies include continuous investments in energy-efficient assets, procuring renewable energy on the supply side and promoting low carbon-emitting technologies, such as hydrogen, he said. On this front, Linde has also been increasing its investments in clean hydrogen production. It recently inked an agreement to supply green hydrogen, which refers to hydrogen manufactured through renewable energy sources, to Evonik - another chemicals company - by building an electrolyser plant in Singapore. Linde is looking at developing a more efficient cracking technology to derive hydrogen. This refers to the cracking of ammonia to release hydrogen molecules. As part of a joint development with Saudi Aramco, Linde has made a pilot investment in this technology in Germany, and is considering a second pilot investment in South-east Asia, said Lamba.However, he acknowledges that the development of green hydrogen at scale in this region is still challenging at this point, and that blue hydrogen, which refers to hydrogen production through natural gas, could be a good bridge between economics and decarbonisation in the meantime. "My view is the technology road map for that is probably four to five years out for at-scale green hydrogen production to happen on a safe, reliable and kind of consistent basis," he said.

Graphic

Linde's chief executive officer Sanjiv Lamba says that this next tranche of investment will be â€œquite significantâ€ with "ambitious" plans, though he declined to reveal its cheque size.

Load-Date: April 30, 2023

SIBUR and Linde to run a joint carbon footprint reduction project in Dzerzhinsk

Contify Energy News

June 1, 2021 Tuesday 6:30 AM EST

Length: 611 words

Body

Dzerzhinsk, June 1 -- SIBUR issued the following news release:

SIBUR-Neftekhim and Linde Gas Rus (both located in Dzerzhinsk) signed an agreement to launch a recycling project focusing on the carbon dioxide (CO2) generated as a by-product at SIBUR's facility. The project is an integral part of SIBUR's sustainable development strategy aiming to reduce GHG emissions by15% by20205, and as such it is expected to mitigate the impact of petrochemical production on the air quality.

The signing ceremony was attended by Evgeny Lyulin, Chairman of the Nizhny Novgorod Regional Assembly, and Ivan Noskov, head of the Dzerzhinsk Municipal District, as part of their working visit to the facilities.

As part of the project, SIBUR-Neftekhim will erect the necessary infrastructure to transport crude CO2, a by-product resulting from ethylene oxide synthesis, to Linde Gas Rus' treatment unit. In its turn, Linde Gas Rus will build a gas treatment unit to process it into a commercial-grade product usable in the food industry in particular and sell it to end consumers. The new arrangement will help recycle approximately 25kt of 100% carbon dioxide annually. All the works, including those planned for SIBUR's production facility, will be performed by Linde Gas Rus under an EPC contract. The project is scheduled for 2021-2022.

"We evaluate each project from both economic and environmental points of view," said Dmitry Vladimirov, CEO of SIBUR-Neftekhim. "This project gives us an opportunity to pursue more ambitious GHG reduction goals, thus making a significant contribution to our Sustainable Development Strategy, and to monetise the CO2 emissions that were previously released into the atmosphere."

"We are happy to develop our long-term partnership with SIBUR-Neftekhim in line with our shared values and sustainability goals. Our objective is to reduce the GHG emission intensity by35% by2028. Additionally, we make every effort to help our customers improve their environmental performance and reduce their carbon footprint by leveraging our gas technologies," said Sergio Bosio, Head of Linde in Russia and Kazakhstan.

"This agreement represents an important milestone in developing the region's economy. I am proud that by implementing the project our industry majors demonstrate responsibility towards the environment and their willingness to address environmental issues. With that project, the carbon dioxide released by ethylene oxide manufacturing units will not go into the atmosphere, but will be delivered to the Linde Gas Rus plant to be further used in production. The creation of a new facility is always a sign of resurgence in business activity and positive changes in the regional economy, which starts to bounce back from the COVID-19 pandemic," said Evgeny Lyulin, Chairman of the Nizhny Novgorod Regional Assembly.

"SIBUR has proved to be a long-standing and reliable partner of Dzerzhinsk. The Company promotes our city's development by running social projects in the realms of volunteering, culture, and education, including entrepreneurial literacy. The project presented today addresses the environmental aspect, which is yet another pressing issue for Dzerzhinsk. We have embarked on an important mission: by taking care of the environment, we

contribute to building the sustainable future for Dzerzhinsk, the city where our children and grandchildren will live and work. I have no doubt that the carbon dioxide recycling project will be implemented. Going further, SIBUR will come up with many other exciting initiatives for the benefit of the city and its residents," commented Ivan Noskov, head of the Dzerzhinsk Municipal District.

Source: SIBUR

Load-Date: June 2, 2021

GIDARA Energy Announces Collaboration With PARO, bp And Linde, Completing The Value Chain For The AMA Facility

PR Newswire

July 1, 2021 Thursday 10:23 AM EST

Length: 958 words

Dateline: NOOTDORP, The Netherlands, July 1, 2021

Body

PR Newswire

GIDARA Energy is pleased to announce collaboration between its Advanced Methanol Amsterdam ("AMA") facility and key players in the value chain from non-recyclable waste to advanced methanol: PARO, bp and Linde.

AMA's objective is to contribute to better, more sustainable fuels and a circular economy. The integration of the entire value chain is therefore essential for the success of GIDARA Energy's complete business case and to meet governmental objectives to achieve CO2 emission reductions as defined in the Renewable Energy Directive (RED II).

Wim van der Zande, CEO, GIDARA Energy:

"The value chain represents an important step in realizing GIDARA Energy's goal of converting non-recyclable waste into valuable end products. As such, GIDARA Energy, bp, PARO and Linde are delivering on their commitment to improve their sustainability footprint, moving towards a circular economy."

PARO: None of our waste wastedTogether with AMA, Amsterdam-based waste treatment companyPAROwill pelletize the non-recyclable waste to be used as feedstock in the facility. The Pelletized Feed Material (PFM) is converted into advanced Syngas using GIDARA Energy's patented HTW® technology, which is then converted into advanced methanol.

Gerard Putman, director, PARO:

"The combination of GIDARA's experience in chemical plants and gasification and PARO's experience in waste handling and recycling makes it possible to develop a waste sorting and pelletizing facility suitable for the HTW® gasification technology. Having PARO's waste handling adjacent to the AMA site eliminates the need of unnecessary transport and rehandling of waste material and pellets."

bp: Methanol as advanced biofuelAMA is exclusively working withbpfor the offtake of advanced methanol from the project. Advanced methanol can help decarbonise the global transportation and petrochemical sectors. The feedstock can contribute towards the growing European waste-based (advanced) biofuels mandates as it is considered advanced under the Renewable Energy Directive (RED II).

David Bucknall, senior vice president refining and products trading, bp:

"bp recognises the need for the world to transition from a linear economy to a circular one, which includes reconsidering how we think about waste. We believe that by partnering with AMA on the offtake of advanced

methanol, we can use our longstanding biofuels expertise to successfully integrate AMA's product into multiple energy markets in which we trade."

Linde: feeding the world by utilizing green CO2GIDARA Energy and AMA work closely withLindeto develop the capture and production of clean green CO2, which is intended to be provided by Linde subsidiary OCAP to greenhouse horticulture. A CO2-enriched atmosphere in the greenhouses is important in the growth of plants, and the sector is facing shortage of availability of CO2 in the near future. Without availability of green CO2 as provided by OCAP, the greenhouses have no other alternative than to produce their own CO2 by burning natural gas. This puts their sustainability goals at risk. In addition, GIDARA Energy, AMA and Linde are working together to make O2 available for the conversion process used by AMA.

Jacob Limbeek, director, OCAP:

"We are excited to collaborate with GIDARA Energy and AMA, which offers OCAP the opportunity to use green CO2. Without the availability of green CO2 as provided by OCAP, greenhouses have no other alternative than to produce their own CO2 by burning natural gas. This puts their sustainability goals at risk."

The AMA facility will be fully operational in 2023, representing a great step towards Europe's objectives to achieve CO2 emission reductions as defined in the Paris Agreement. The AMA plant will produce a yearly average of 87.000 metric tons of advanced methanol which will be used for advanced biofuels blending.

ReferencesFor more information related to GIDARA Energy and AMA:

GIDARA Energy General:http://www.gidara-energy.com

AMA:http://www.advancedmethanol.com

Media Resources:https://www.gidara-energy.com/about-gidara/media-resources

About GIDARA EnergyGIDARA Energy is a Dutch technology-based energy company focused on converting non-recyclable waste into syngas, a clean and incredibly versatile source of energy and/or chemical building block. GIDARA Energy is a joint venture between G.I. Dynamics B.V. (The Netherlands) and Ara Partners (USA). GIDARA Energy is the owner of the commercially proven High Temperature Winkler Gasification Technology (HTW®), now developed into the next generation HTW 2.0, further improving technical performance.

About Advanced Methanol Amsterdam (AMA)GIDARA Energy's first plant is Advanced Methanol Amsterdam (AMA) based in the Port of Amsterdam. AMA includes a knowledge centre, with a testing facility and pilot plant and a commercial plant producing advanced methanol that meets the European biofuel mandate (RED II) and, Dutch legislation. The plant is expected to be fully operational in 2024, producing an average of 87.5 KTA (kilotons per annum) of advanced methanol from 175 KTA non-recyclable waste. Side streams such as green CO2 and solid residue are used for greenhouses and cement filling, respectively. Its objective is to contribute to better, more sustainable fuels and a circular economy, while providing port expansion, thus more employment. AMA will be working in close cooperation with local partners and several universities.

Media Relations:Dennis Chafiâ, Manager Business Development and Marketing, communications@gidara-energy.com

View original content to download multimedia:https://www.prnewswire.com/news-releases/gidara-energy-announces-collaboration-with-paro-bp-and-linde-completing-the-value-chain-for-the-ama-facility-301324420.html

SOURCE GIDARA Energy

Load-Date: July 1, 2021

End of Document

TÜV Rheinland issues first green hydrogen certificate in Brazil for White Martins, Linde's subsidiary

PR Newswire

December 20, 2022 Tuesday 1:51 PM EST

Length: 930 words

Dateline: LITTLETON, Mass., Dec. 20, 2022

Body

PR Newswire

Linde-White Martins plant receives the Green Hydrogen Certificate based on the TÜV Rheinland Standard H2.21. The plant certified by TUV Rheinland produces 156 tons of green hydrogen per year.

TÜV Rheinland has issued the first green hydrogen certificate in Brazil, and also in Latin America. The certificate was awarded to White Martins after a process that involved the collection of technical documentation, analyses and audits over a period of about three months.

Present for more than 110 years supplying medical and industrial gases, White Martins, representing Linde in South America, a global leader in production, processing, storage and distribution of hydrogen, is the first company to produce green hydrogen on an industrial scale in the country and in South America.

The objective of the hydrogen certification is to evaluate the greenhouse gas emissions from the hydrogen production process. For this purpose the certification process starts with a pre-assessment, analyzing the industrial location and type of site, the applied technology and production, the energy and media volumes and flows. Based on a comprehensive overview over the production process TUV Rheinland reviews the provided data for completeness and consistency with established norms and standards. In this case, TUV Rheinland's latest "H2.21 Green and Low-Carbon Hydrogen Standard" has been used as certification basis. It relies on the GHG Protocol as well as other applicable EN ISO norms. Important areGHG emissions following the Cradle to X (Gate) concept, through emission scopes 1 & 2 and partially scope 3 as well as that the hydrogen is produced through electrolysis powered exclusively by renewable energy sources, such as solar or wind.

After a successful review and audit procedure TUV Rheinland grants the test mark and certificate. "As the green hydrogen certification process is relatively new and there is no internationally approved regulation," says Luiz Carvalho. "it was fundamental to communicate, document and understand the criteria, concepts and processes for success in all stages, which follow the requirements of the GHG protocol and EN ISO norms such as 14064, 14067 and 14040."

Transparent and independent documentation of sustainable energy supply

"With green hydrogen certification of TÜV Rheinland, companies transparently and independently document an energy supply with environmentally compatible products. At the same time, they communicate their sustainability strategy to the entire world, sending environmentally-friendly signals and demonstrating their contribution to a sustainable energy supply," explains Paulo Cintra, Director of Industrial Services & Cybersecurity at TÜV Rheinland South America. "This not only provides a competitive advantage, but also strengthens the trust of customers and business partners," Cintra says. "These and other benefits are part of our strategy," states Gilney Bastos, president

of Linde-White Martins in South America. "Our expectation is that this is the first certification of many that we intend to have in our region in the coming years. Decarbonization is a priority for the company."

What is Green Hydrogen?

Green hydrogen is produced by electrolysis of water, using only electricity from renewable energy sources such as solar and wind power. "The goal of using green hydrogen is decarbonization and improved sustainability. Therefore, it is necessary to ensure that the energy has a renewable origin," says Luiz Carvalho, Regional Sales Manager South America of TÜV Rheinland Industrial Services.

About TÜV Rheinland

150 years dedicated to safety. Since 1872, TÜV Rheinland has been committed to making technology safe for people and the environment. From steam engines to digitalization, what started as a regional association for the monitoring of steam boilers has grown into a global provider of test services. Today, TÜV Rheinland ensures safety and quality in almost all areas of business and life. This shared commitment unites more than 20,000 employees. They generate annual revenues of 2 billion euros. TÜV Rheinland's experts test technical systems and products around the globe, support innovations in technology and business, train people in numerous professions, and certify management systems according to international standards. By ensuring safety and sustainability, TÜV Rheinland is also shaping the future. Since 2006, TÜV Rheinland has therefore been a member of the United Nations Global Compact for more sustainability and against corruption. Website:http://www.tuv.com

About Linde-White Martins

White Martins is the largest industrial and medical gases company in Latin America. A subsidiary of Linde, it is the group's headquarters for seven countries in the continent, comprising more than 4 thousand employees. Globally, the group is present in more than 100 countries.

Its line of products and services is one of the most complete in the market: it includes atmospheric gases (oxygen, nitrogen, and argon), process gases (carbon dioxide, acetylene, hydrogen, and welding mixtures), and special and medical gases.

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View original content to download multimedia:https://www.prnewswire.com/news-releases/tuv-rheinland-issues-first-green-hydrogen-certificate-in-brazil-for-white-martins-lindes-subsidiary-301707576.html

SOURCE TUV Rheinland

Load-Date: December 20, 2022

Linde Receives Terra Carta Seal for its Commitment to a Sustainable Future

ACCESSWIRE

January 17, 2023 Tuesday

Length: 394 words

Body

WOKING, UK / ACCESSWIRE / January 17, 2023 / Linde (NYSE:LIN)(FWB:LIN) announced today it has been awarded the Sustainable Market Initiative's Terra Carta Seal.

The Terra Carta Seal, launched at COP26 by HM King Charles III when he was Prince of Wales, recognizes global companies which are driving innovation and demonstrating their commitment to creating sustainable markets. It is awarded to companies whose ambitions are aligned with those of the Terra Carta, a recovery plan for nature, people and planet. Linde is one of only 19 companies to have been awarded the 2022 Terra Carta Seal.

Linde has comprehensive sustainability targets across safety, health & environment, people & community, integrity & compliance. Linde's climate goals include its 2035 science-based absolute GHG emissions reduction target and 2050 climate neutrality ambition. It has been a constituent of the Dow Jones Sustainability World Index for twenty consecutive years and has been named to CDP's A List for both Climate Change and Water Security. The company is a participant in the United Nations Global Compact.

About Linde

Linde is a leading global industrial gases and engineering company with 2021 sales of $31 billion (€26 billion). We live our mission of making our world more productive every day by providing high-quality solutions, technologies and services which are making our customers more successful and helping to sustain and protect our planet.

The company serves a variety of end markets including chemicals & energy, food & beverage, electronics, healthcare, manufacturing, metals and mining. Linde's industrial gases are used in countless applications, from life-saving oxygen for hospitals to high-purity & specialty gases for electronics manufacturing, hydrogen for clean fuels and much more. Linde also delivers state-of-the-art gas processing solutions to support customer expansion, efficiency improvements and emissions reductions.

For more information about the company and its products and services, please visit www.linde.com

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SOURCE: Linde plc

View source version on accesswire.com:

https://www.accesswire.com/735490/Linde-Receives-Terra-Carta-Seal-for-its-Commitment-to-a-Sustainable-Future

Load-Date: February 13, 2023

Linde, Celanese expand CO2, hydrogen agreement for Texas methanol production

ICIS Chemical News

February 7, 2022 Monday 6:59 PM GMT

ICIS news

Length: 261 words

Body

HOUSTON (ICIS)--Industrial gases and engineering company Linde said it has expanded their current agreement with US-based acetyls producer Celanese to provide carbon dioxide (CO2) and hydrogen to their manufacturing facility in Clear Lake, Texas.

These products will aid in producing a lower-carbon methanol at the Celanese's Fairway Methanol joint venture with Mitsui & Co. The CO2 will be captured at Linde's carbon monoxide (CO) production facility.

"[T]he work we are doing with recycled carbon dioxide at our Clear Lake facility is a significant step forward in our efforts to preserve the environment and be a responsible community partner," said John Fotheringham, senior vice president of acetyls at Celanese. "By working with Linde, we expect to produce lower carbon intensity methanol with a high capital efficiency at a competitive cost."

Currently, Linde provides oxygen, nitrogen and CO to the Clear Lake facility.

Supplies from this agreement are expected to start in H1 2023.

Load-Date: February 7, 2022

End of Document

Linde Included in Dow Jones Sustainability World Index for 19th Consecutive Year

ACCESSWIRE

December 2, 2021 Thursday

Length: 413 words

Byline: ACCESSWIRE

Body

GUILDFORD, UK / ACCESSWIRE / December 2, 2021 / Linde (NYSE:LIN)(FWB:LIN) today announced that it has once again been recognized as a global leader in sustainability through inclusion in the Dow Jones Sustainability(TM) World Index (DJSI World) and DJSI North America Index. Linde is the only company in the chemical sector listed as a constituent of the DJSI World Index for nineteen consecutive years.

The DJSI World Index represents the top 10% of the largest 2,500 companies in the S&P Global Broad Market Index, based on long-term economic, environmental and social criteria. Index constituents are identified by S&P Global through the Corporate Sustainability Assessment.

"Linde has a steadfast commitment to ESG, and we are proud of our unparalleled track record of inclusion in the Dow Jones Sustainability(TM) World Index," said Sanjiv Lamba, Chief Operating Officer of Linde.

Linde helps customers improve their environmental performance and reduce their carbon footprint through high-quality solutions, technologies and services. The company recently announced new greenhouse gas (GHG) emission goals, including a target of 35% absolute emissions reduction by 2035 and climate neutrality by 2050.

About Linde

Linde is a leading global industrial gases and engineering company with 2020 sales of $27 billion (€24 billion). We live our mission of making our world more productive every day by providing high-quality solutions, technologies and services which are making our customers more successful and helping to sustain and protect our planet.

The company serves a variety of end markets including chemicals & energy, food & beverage, electronics, healthcare, manufacturing, metals and mining. Linde's industrial gases are used in countless applications, from life-saving oxygen for hospitals to high-purity & specialty gases for electronics manufacturing, hydrogen for clean fuels and much more. Linde also delivers state-of-the-art gas processing solutions to support customer expansion, efficiency improvements and emissions reductions.

For more information about the company and its products and services, please visit www.linde.com

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Linde Included in Dow Jones Sustainability World Index for 19th Consecutive Year

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SOURCE: Linde plc

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https://www.accesswire.com/675697/Linde-Included-in-Dow-Jones-Sustainability-World-Index-for-19th-Consecutive-Year

Load-Date: December 2, 2021

-Linde - CDP Awards Linde Double 'A' for Climate Change and Water Security

ENP Newswire

December 19, 2022 Monday

Length: 407 words

Body

UK - Linde (NYSE: LIN; FWB: LIN) announced today it has been awarded a double 'A' from CDP for its approach to tackling both water security and climate change.

CDP is a global non-profit organization that works with investors representing over $ 130 trillion in assets to measure how companies manage their environmental risk. Each year it evaluates companies, based on disclosure, awareness and management of environmental risks, alongside evidence of best practice, scoring them from 'A' to 'D-'. Linde is one of a small number of companies named to both 'A lists', out of nearly 15,000 companies scored.

'Sustainability is a key priority for Linde,' said Tamara Brown, Vice President Sustainability, Linde. 'We are proud to be recognized by CDP for our leadership, transparency and performance in our climate change strategy and water stewardship.'

Linde has comprehensive sustainability targets across safety, health environment, people community, integrity compliance. Linde's climate goals include its 2035 science-based absolute GHG emissions reduction target and 2050 climate neutrality ambition. The company also has water utilization assessment and productivity initiatives in place across its global footprint and realized savings of more than 500 million gallons of water last year. It has been a constituent of the Dow Jones Sustainability World Index for twenty consecutive years and is a participant in the United Nations Global Compact.

About Linde

Linde is a leading global industrial gases and engineering company with 2021 sales of $ 31 billion (EUR26 billion). We live our mission of making our world more productive every day by providing high-quality solutions, technologies and services which are making our customers more successful and helping to sustain and protect our planet.

The company serves a variety of end markets including chemicals energy, food beverage, electronics, healthcare, manufacturing, metals and mining. Linde's industrial gases are used in countless applications, from life-saving oxygen for hospitals to high-purity specialty gases for electronics manufacturing, hydrogen for clean fuels and

much more. Linde also delivers state-of-the-art gas processing solutions to support customer expansion, efficiency improvements and emissions reductions.

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[Editorial queries for this story should be sent to newswire@enpublishing.co.uk]

Load-Date: December 19, 2022

ACCESSWIRE: Linde Expands Agreement with Celanese to Provide Decarbonization

AWP OTS (Original text service) - English

February 7, 2022 Monday 12:30 PM GMT

Section: ADHOC-NEWS; Chemicals; Machine manufacturing, Engineering

Length: 526 words

Body

Solutions

GULDFORD, UK / ACCESSWIRE / February 7, 2022 / Linde (NYSE:LIN; FWB:LIN) announced today it has expanded its existing agreement with Celanese Corporation, a global chemical and specialty materials company, and will begin supplying carbon dioxide and hydrogen to the Celanese manufacturing facility in Clear Lake, Texas.

Linde currently supplies oxygen, nitrogen and carbon monoxide to the Clear Lake facility. Under the terms of the expanded agreement, Linde will now also supply carbon dioxide captured in its nearby carbon monoxide production facility. Celanese will use the carbon dioxide, plus hydrogen, as an alternative feedstock to produce methanol with a significantly lower carbon intensity in their Fairway Methanol LLC joint venture. By using the carbon dioxide captured from Linde's facility, the hydrogen supplied by Linde will also have a lower carbon intensity. Supply is expected to commence in the first half of 2023.

"Celanese is taking strategic steps aimed at reducing our operational impact globally, and the work we are doing with recycled carbon dioxide at our Clear Lake facility is a significant step forward in our efforts to preserve the environment and be a responsible community partner," said John Fotheringham, Senior Vice President, Acetyls, Celanese. "By working with Linde, we expect to produce lower carbon intensity methanol with a high capital efficiency at a competitive cost."

"Linde's products and technologies can assist customers in finding ways to produce essential chemicals with a lower carbon intensity," said Jeff Barnhard, Vice President South Region, Linde. "By capturing the carbon dioxide from our production facility and providing this to Celanese for use in their process, we are helping them to reduce their carbon footprint while also lowering Linde's own carbon emissions."

About Linde

Linde is a leading global industrial gases and engineering company with 2020 sales of $27 billion (€24 billion). We live our mission of making our world more productive every day by providing high-quality solutions,

technologies and services which are making our customers more successful and helping to sustain and protect our planet.

The company serves a variety of end markets including chemicals & energy, food & beverage, electronics, healthcare, manufacturing, metals and mining. Linde's industrial gases are used in countless applications, from life-saving oxygen for hospitals to high-purity & specialty gases for electronics manufacturing, hydrogen for clean fuels and much more. Linde also delivers state-of-the-art gas processing solutions to support customer expansion, efficiency improvements and emissions reductions.

For more information about the company and its products and services, please visit www.linde.com

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SOURCE: Linde plc

View source version on accesswire.com: https://www.accesswire.com/687550/Linde-Expands-Agreement-with-Celanese-to-Provide-Decarbonization-Solutions

Load-Date: February 7, 2022

Linde Awarded Best-in-Class for Sustainability Disclosure Practices

MENAFN - Press Releases (English)

May 4, 2021 Tuesday

Length: 379 words

Body

Link to Story

Linde Awarded Best-in-Class for Sustainability Disclosure Practices

Guildford, UK, May 4, 2021 - Linde (NYSE: LIN; FWB: LIN) today announced it has received the best possible rating from ISS Environment QualityScore in sustainability disclosure practices.

ISS QualityScore helps investors monitor the environmental risks in their portfolio companies. It measures the depth and extent of company disclosure relative to their industry group and is designed to indicate the company's understanding and preparedness to address environmental risks. The ISS methodology is informed by disclosure standards and frameworks including the Global Reporting Initiative, the Sustainability Accounting Standards Board and the Task Force on Climate-related Financial Disclosures.

"Sustainability underscores everything we do at Linde," said Todd Skare, Chief Technology and Sustainability Officer, Linde. "We have set ambitious targets for our own operations while also working with our customers to reduce their emissions through our applications and technologies. We are committed to the highest standards of transparency and disclosure and are pleased to receive this recognition from ISS."
About Linde

Linde is a leading global industrial gases and engineering company with 2020 sales of $27 billion (€24 billion). We live our mission of making our world more productive every day by providing high-quality solutions, technologies and services which are making our customers more successful and helping to sustain and protect our planet.

The company serves a variety of end markets including chemicals & refining, food & beverage, electronics, healthcare, manufacturing and primary metals. Linde's industrial gases are used in countless applications, from life-saving oxygen for hospitals to high-purity & specialty gases for electronics manufacturing, hydrogen for clean fuels and much more. Linde also delivers state-of-the-art gas processing solutions to support customer expansion, efficiency improvements and emissions reductions.
For more information about the company and its products and services, please visit
Contacts: Investor Relations

Linde Awarded Best-in-Class for Sustainability Disclosure Practices

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MENAFN0405202100469101066 6ID1102026292

Load-Date: July 28, 2021

End of Document

Linde (LIN) Picks Cummins to Power New York Green Hydrogen Unit

Newstex Blogs

Zacks Investment Research

December 13, 2022 Tuesday 4:20 PM EST

Length: 1075 words

Byline: Zacks Equity Research

Body

Dec 13, 2022(Zacks Investment Research: http://www.zacks.com/ Delivered by Newstex)

Linde plcLIN[1] has chosen Cummins Inc. CMI[2] to power its largest green hydrogen facility in the United States.

Cummins will supply a 35-megawatt proton exchange membrane (PEM) electrolyzer system for the Linde-operated hydrogen production facility inNew York.

Electrolyzers use electricity to convert water molecules into hydrogen and oxygen. The hydrogen can then be used to generate power for industrial, chemical and other applications. Cummins' advanced electrolyzer system is designed for easy on-site installation with the ability to boost production if required.

Cummins' electrolyzer will be powered by hydropower, making the end-product green or carbon-free hydrogen. The facility is likely to be Linde's largest U.S. green hydrogen facility and represents significant progress in advancing the green hydrogen economy.

Cummins has an extensive experience in advanced technology and engineering capabilities. The company has the capabilities to innovate across a broad portfolio of renewable hydrogen and zero-emission technologies, including PEM, alkaline and solid oxide electrolyzers.

Cummins expects green hydrogen to play a crucial role in reducing emissions in some hard-to-abate industries facing strict climate targets. Cummins initially projected that its electrolyzer business would generate annual revenues of $400 million by 2025. By comparison, Cummins reported total revenues of $24 billion in 2021.

The project highlights Cummins' pledge to enhance the green hydrogen economy and its ability to support large-scale renewable hydrogen production. The project aims to support the rising demand and drive to contribute to the green hydrogen market.

Linde is currently one of the leading hydrogen producers globally. It is likely to increase the company's green liquid hydrogen production capacity in the United States more than twice. The Niagara Falls, NY-based facility is expected to be up and running by 2025. Price Performance Shares of Linde have outperformed theindustry[3]in the past six months. The stock has gained 13.7% compared with the industry's 8.2% growth.

Image Source: Zacks Investment Research Zacks Ranks & Stocks to Consider Linde currently carries a Zacks Rank #3 (Hold).

Some better-ranked players in thebasic materials[4]space areCommercial Metals Company CMC[5], currently sporting a Zacks Rank #1 (Strong Buy),andInnospec Inc.IOSP[6], carrying a Zacks Rank #2 (Buy). You can seethe complete list of today's Zacks #1 Rank stocks here[7].

Commercial Metals Company manufactures, recycles and markets steel and metal products, related materials and services. CMC's net debt to trailing 12-month adjusted EBITDA ratio is at 0.5 at the end of the fiscal second quarter, while net debt to capitalization is just 14%.

Commercial Metals Company is expected to see earnings growth of 27.2% in 2022. CMC beat the Zacks Consensus Estimate for earnings in the prior four quarters, delivering an earnings surprise of 19.7%.
Innospec is a leading specialty chemicals company. The company strongly focuses on adding value to customers by delivering technologies and products.
Innospec is expected to see earnings growth of 30.4% in 2022. The company beat the Zacks Consensus Estimate for earnings in the prior four quarters, delivering an earnings surprise of 25.6%.
Free Report Reveals How You Could Profit from the Growing Electric Vehicle Industry
Globally, electric car sales continue their remarkable growth even after breaking records in 2021. High gas prices have fueled his demand, but so has evolving EV comfort, features and technology. So, the fervor for EVs will be around long after gas prices normalize. Not only are manufacturers seeing record-high profits, but producers of EV-related technology are raking in the dough as well. Do you know how to cash in? If not, we have the perfect report for you - and it's FREE! Today, don't miss your chance to download Zacks' top 5 stocks for the electric vehicle revolution at no cost and with no obligation. > >Send me my free report on the top 5 EV stocks[8] Want the latest recommendations from Zacks Investment Research? Today, you can download 7 Best Stocks for the Next 30 Days. Click to get this free report[9]
Cummins Inc. (CMI): Free Stock Analysis Report[10] Commercial Metals Company (CMC): Free Stock Analysis Report[11] Linde plc (LIN): Free Stock Analysis Report[12] Innospec Inc. (IOSP): Free Stock Analysis Report[13] To read this article on Zacks.com click here.[14]
Zacks Investment Research[15]
[1]: https://www.zacks.com/stock/quote/LIN [2]: https://www.zacks.com/stock/quote/CMI [3]: https://www.zacks.com/stocks/industry-rank/industry/chemical-diversified-34 [4]: https://www.zacks.com/stocks/industry-rank/sector/basic-materials-6 [5]: https://www.zacks.com/stock/quote/CMC [6]: https://www.zacks.com/stock/quote/IOSP [7]: https://www.zacks.com/stocks/buy-list/?ADID=zp_1link&ICID=zpi%20_1link [8]: https://www.zacks.com/registration/ultimatetrader/welcome/eoffer/3b9f?add=1727&adid=NEWSTEX_CONTENT_ZU_ELECTRICREPORTD_ANALYSTBLOG_254_12132022&cid=CS-NEWSTEX-FT-analyst_blog%7Ccompany_news_-_energy_sector-2028310 [9]: http://www.zacks.com/registration/pfp/?ALERT=RPT_7BST_LP194&ADID=NEWSTEX_CONTENT_ZER_ARTCAT_ANALYSTBLOG_254&cid=CS-NEWSTEX-FT-analyst_blog%7Ccompany_news_-_energy_sector-2028310 [10]: http://www.zacks.com/registration/pfp?ALERT=ZER_LINK&d_alert=ZER_CONF&t=CMI&ADID=NEWSTEX_CONTENT_ZER_ARTCAT_ANALYSTBLOG_254&cid=CS-NEWSTEX-FT-analyst_blog%7Ccompany_news_-_energy_sector-2028310 [11]: http://www.zacks.com/registration/pfp?ALERT=ZER_LINK&d_alert=ZER_CONF&t=CMC&ADID=NEWSTEX_CONTENT_ZER_ARTCAT_ANALYSTBLOG_254&cid=CS-NEWSTEX-FT-analyst_blog%7Ccompany_news_-_energy_sector-2028310 [12]: http://www.zacks.com/registration/pfp?ALERT=ZER_LINK&d_alert=ZER_CONF&t=LIN&ADID=NEWSTEX_CONTENT_ZER_ARTCAT_ANALYSTBLOG_254&cid=CS-NEWSTEX-FT-analyst_blog%7Ccompany_news_-_energy_sector-2028310 [13]: http://www.zacks.com/registration/pfp?ALERT=ZR_LINK&d_alert=rd_final_rank&t=IOSP&ADID=NEWSTEX_CONTENT_ZR_ARTCAT_ANALYSTBLOG_254&cid=CS-NEWSTEX-FT-analyst_blog%7Ccompany_news_-_energy_sector-2028310 [14]: http://www.zacks.com/stock/news/2028310/linde-lin-picks-cummins-to-power-new-york-green-hydrogen-unit?cid=CS-NEWSTEX-FT-analyst_blog%7Ccompany_news_-_energy_sector-2028310 [15]: http://www.zacks.com/

Link to the original story.

Notes

Load-Date: December 13, 2022

Linde's Green H2 production begins at its facilities in Greece

Chemicals Monitor Worldwide

November 26, 2022 Saturday

Length: 360 words

Body

Linde (NYSE: LIN) recently announced it has started green H2 production at its facilities in Greece, which the company says is also the first time this clean fuel has been produced in the country.

Greece is just one of the nations where the U.S.-German company produces green hydrogen. Back in September, Linde announced it was building a 35-megawatt PEM electrolyzer for green H2 production in Niagara Falls, New York. This new plant will be Lindes largest electrolyzer installed globally. It is expected to more than double the companys capacity to produce green liquid hydrogen in the U.S.

The company intends to build, operate and own the industrial-scale electrolyzer and will use hydroelectric power to generate the green liquid H2. The electrolyzer in Niagara Falls is one of the first of several electrolyzers that the company aims to build in the United States to address

the demand for clean liquid hydrogen.

Like the green hydrogen in New York, the green H2 production at the new Greece facilities is made from water by electrolysis. However, instead of being powered by hydroelectricity, it will use renewable wind and solar power.

Lindes Green H2 production plant in Greece is another step toward helping Europe reach its sustainability goals.

Linde is the largest industrial gases company in the world, and the world leader in the production, process, storage and distribution of hydrogen. With the worlds largest liquid hydrogen capacity and distribution systems, it operates the high-purity hydrogen storage cavern plus pipelines networks, which totals an estimated 1,000 kilometres globally. Worldwide, the company has installed more than 200 H2 fueling stations and 80 hydrogen electrolysis plants.

Hydrogen is an important part of Europes energy transition toward achieving its sustainable environment and net zero emission goals by 2050. Lindes first green H2 production facility in Greece can help toward reaching this objective.

Linde is taking an important first step towards establishing the green hydrogen economy in Greece, said, Oana Reiber, General Manger of Linde Hellas, allowing us to advance our sustainability agenda across the country.

Load-Date: November 26, 2022

SLB and Linde Collaborate on Carbon Capture and Sequestration; Projects will capture and sequester CO2 emissions from sectors such as hydrogen, ammonia and natural gas

Business Wire

October 31, 2022 Monday 12:00 PM GMT

Length: 922 words

Dateline: HOUSTON

Body

SLB (NYSE: SLB) and Linde (NYSE: LIN; FWB: LIN) announced today that they have entered into a strategic collaboration on carbon capture, utilization and sequestration (CCUS) projects to accelerate decarbonization solutions across industrial and energy sectors. The collaboration will combine decades of experience in carbon dioxide (CO2) capture and sequestration; innovative technology portfolios; project development and execution expertise; and engineering, procurement, and construction (EPC) capabilities.

CO2 is found or produced in many industrial and energy applications. This collaboration will focus on hydrogen and ammonia production, where CO2 is a by-product, and in natural gas processing. CCUS abates the emissions from these energy-intensive industries, creating new low-carbon energy sources and products. The International Energy Agency (IEA) estimates1 that over 6Gt of CO2 per year will need to be abated with CCUS in order to reach net zero by 2050.

"CCUS is vital in creating the decarbonized energy systems our planet needs to balance energy demand with climate objectives," said Olivier Le Peuch, chief executive officer, SLB. "We are excited about this collaboration with Linde to develop CCUS projects and support the growth of low-carbon energy products from conventional energy sources."

"Carbon capture and storage will be a key lever for tackling global warming," said Sanjiv Lamba, chief executive officer, Linde. "We are committed to helping customers decarbonize their operations in a cost-effective way. With SLB, we are able to offer technology-driven solutions-from execution of complex EPC projects through to ensuring reliable and safe long-term storage."

SLB and Linde have been working on decarbonization opportunities for over a year already. Using their global footprint across multiple sectors and industries, the collaboration will expand customer reach and will focus on designing business and operating models that maximize value for all stakeholders.

About SLB

SLB (NYSE: SLB) is a global technology company that drives energy innovation for a balanced planet. With a global footprint in more than 100 countries and employees representing almost twice as many nationalities, we work each day to decarbonize oil and gas and develop scalable new energy technologies to accelerate the energy transition. Find out more at slb.com .

About Linde

Linde is a leading global industrial gases and engineering company with 2021 sales of $31 billion ((EURO)26 billion). We live our mission of making our world more productive every day by providing high-quality solutions,

technologies and services which are making our customers more successful and helping to sustain and protect our planet.

The company serves a variety of end markets including chemicals & energy, food & beverage, electronics, healthcare, manufacturing, metals and mining. Linde's industrial gases are used in countless applications, from life-saving oxygen for hospitals to high-purity & specialty gases for electronics manufacturing, hydrogen for clean fuels and much more. Linde also delivers state-of-the-art gas processing solutions to support customer expansion, efficiency improvements and emissions reductions.

For more information about the company and its products and services, please visit www.linde.com .

1 IEA (2022), World Energy Outlook 2022 IEA, Paris https://www.iea.org/reports/world-energy-outlook-2022

Cautionary Statement Regarding Forward-Looking Statements

This press release contains "forward-looking statements" within the meaning of the U.S. federal securities laws - that is, statements about the future, not about past events. Such statements often contain words such as "expect," "may," "can," "estimate," "intend," "anticipate," "will," "potential," "projected" and other similar words. Forward-looking statements address matters that are, to varying degrees, uncertain, such as forecasts or expectations regarding the deployment of, or anticipated benefits of, carbon capture technologies and partnerships; statements about goals, plans and projections with respect to sustainability and environmental matters; forecasts or expectations regarding energy transition and global climate change; and improvements in operating procedures and technology. These statements are subject to risks and uncertainties, including, but not limited to, the inability to achieve net-negative carbon emissions goals; the inability to recognize intended benefits of carbon capture strategies, initiatives or partnerships; legislative and regulatory initiatives addressing environmental concerns, including initiatives addressing the impact of global climate change; the timing or receipt of regulatory approvals and permits; and other risks and uncertainties detailed in the companies' public filings, including SLB's most recent Forms 10-K, 10-Q and 8-K filed with or furnished to the U.S. Securities and Exchange Commission. If one or more of these or other risks or uncertainties materialize (or the consequences of such a development changes), or should underlying assumptions prove incorrect, actual outcomes may vary materially from those reflected in our forward-looking statements. The forward-looking statements speak only as of the date of this press release, the parties disclaim any intention or obligation to update publicly or revise such statements, whether as a result of new information, future events or otherwise.

View source version on businesswire.com: https://www.businesswire.com/news/home/20221030005014/en/

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http://www.businesswire.com

Load-Date: October 31, 2022

SLB and Linde Collaborate on Carbon Capture and Sequestration; Projects will capture and sequester CO2 emissions from sectors such as hydrogen, ammonia and natu....

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Salzgitter, E.ON and Linde start operating an industrial hydrogen production plant based on electricity from wind power

Contify Energy News

March 11, 2021 Thursday 6:30 AM EST

Length: 987 words

Body

March 11 -- E.ON SE issued the following news release:

The three project partners Salzgitter AG, E.ON subsidiary Avacon and Linde have taken an important and unprecedented step towards decarbonizing the steel industry. With the commissioning of the "Wind Hydrogen Salzgitter - WindH2" sector coupling project, the only one of its kind in Germany, green hydrogen will in future be produced on the site of the Salzgitter steelworks using electricity from wind energy.

WindH2 is a central component of the SALCOS - Salzgitter Low CO2 Steelmaking technology project developed by Salzgitter AG. SALCOS describes the most efficient and timely way to reduce CO2 emissions, and in the long term even to achieve almost CO2-free steel production. Hydrogen generated from renewable sources will replace the carbon previously required for iron ore smelting. The three blast furnaces currently in operation will have to be gradually replaced by a combination of direct reduction plants and electric arc furnaces. Such a transformation of steel production could reduce CO2 emissions by around 95 percent by 2050.

The newly constructed facilities were presented to the public today in Salzgitter. Among those present at the opening were State Secretary Andreas Feicht, Federal Ministry for Economic Affairs and Energy; Dr. Bernd Althusmann, Lower Saxony Minister for Economic Affairs, Labor, Transport and Digital Affairs; Olaf Lies, Lower Saxony Minister for the Environment, Energy, Building and Climate Protection; Dr. Johannes Teyssen, CEO of E.ON SE; Marten Bunnemann, CEO of Avacon AG, and Prof. Dr.-Ing. Heinz Jrg Fuhrmann, CEO of Salzgitter AG.

Avacon operates seven newly constructed wind turbines with a total capacity of 30 megawatts on the Salzgitter AG site. Salzgitter Flachstahl GmbH has installed two Siemens 1.25 megawatt PEM electrolysis units centrally on the plant site, which will generate around 450 cubic meters of high-purity hydrogen per hour. Hydrogen is already used in steel production for annealing processes and in the hot-dip galvanizing lines. Industrial gas producer Linde currently supplies the gas by truck and will continue to ensure a continuous supply of hydrogen in the future. All the plants are currently in trial operation. With "WindH2", the partners want to gain know-how and experience with the on-site production of wind power and hydrogen, as well as their integration into the complex procedures and processes of an integrated steelworks. The costs for the entire project amount to around 50 million euros. The construction of the electrolysis plant was funded by KfW.

Statements by the speakers at the opening event:

Prof. Dr.-Ing. Heinz Jrg Fuhrmann, Chairman of the Executive Board of Salzgitter AG: "We are proud to be pioneers in the industrial use of green hydrogen in the steel industry. As demonstrated by our SALCOS project, we are technologically capable of achieving significant CO2 reductions using hydrogen. The "Wind Hydrogen Salzgitter-WindH2" sector coupling, which is unique in Germany to date, is a significant building block on the way to climate-friendly steel production."

Salzgitter, E.ON and Linde start operating an industrial hydrogen production plant based on electricity from wind power

State Secretary Andreas Feicht, Federal Ministry for Economic Affairs and Energy: "The "Windwasserstoff Salzgitter - WindH2" project was supported by the Federal Ministry for Economic Affairs and Energy with 1.1 million euros from the federal funding for energy efficiency in the economy. With the sector coupling of wind energy and hydrogen production, the project implements one of the objectives of the German government's National Hydrogen Strategy: The use of climate-friendly hydrogen produced from renewable energies is a key element for decarbonization in industry."

Dr. Johannes Teyssen, CEO of E.ON SE: "Green gases have what it takes to become the "staple" of the energy transition and make a significant contribution to decarbonizing industry mobility and heat. The jointly implemented project symbolizes a milestone on the way to virtually CO2-free steel production and shows that intelligent sector coupling can replace fossil fuels."

Dr. Bernd Althusmann, Lower Saxony's Minister for Economic Affairs, Labor, Transport and Digital Affairs: "In view of the climate targets, the decarbonization of steel production with the aid of green hydrogen is a milestone for the German steel industry. I am all the more pleased that Lower Saxony, through Salzgitter AG, is pioneering this development nationwide and is launching a promising project with WindH2. With its pioneering work, Salzgitter is providing the blueprint for future climate-friendly production technologies at the German industrial site and at the same time securing qualified jobs in Lower Saxony."

Marten Bunnemann, CEO of Avacon AG: "With the wind farm on the industrial site of Salzgitter AG, we are supplying renewable electricity for the production of green hydrogen. This is used directly within the production processes and replaces fossil fuels. The entry into the hydrogen economy is emerging in regional stand-alone solutions, such as in Salzgitter, which are increasingly being combined to form an overall system. We will continue to drive this process forward together with our partners in politics, science and industry."

Olaf Lies, Lower Saxony Minister for the Environment, Energy, Building and Climate Protection: "What many thought was a wild vision of the future a few years ago is happening here: the gradual decarbonization of steel production. Climate protection in the energy and industrial sector is much more than just electricity from renewable sources. This is about securing highly skilled jobs and further developing our industrial base. As the cost of CO2 rises, green steel will also become increasingly economical. The world is therefore watching with interest to see what is being created here. The pioneering work done here has every chance of becoming a 'Made in Germany' export hit."

Source: E.ON SE

Load-Date: March 11, 2021

Dow selects Linde as clean hydrogen and nitrogen partner for its proposed net-zero carbon emissions ethylene and derivatives complex in Canada

PR Newswire

April 25, 2023 Tuesday 6:10 AM EST

Length: 1628 words

Dateline: MIDLAND, Mich., April 25, 2023

Body

PR Newswire

Dow (NYSE: DOW) announced today it has selected Linde (NYSE: LIN) as its industrial gas partner for the supply of clean hydrogen and nitrogen for its proposed net-zero carbon emissions1 integrated ethylene cracker and derivatives site in Fort Saskatchewan, Alberta, Canada. Final investment decisions for both the Dow and Linde projects are subject to approval by both companies' respective Board of Directors and various regulatory agencies. Final investment decisions are expected in fourth quarter this year for a potential startup of phase 1 in 2027.

Under the parties' framework agreement, Linde will complete the design and engineering for a Linde-owned and operated world-scale air separation and autothermal reformer complex. This complex would be integrated with Linde's existing operations in Fort Saskatchewan.

"Linde's partnership is critical in enabling Dow to advance its plans to decarbonize our Fort Saskatchewan site while growing our business," said Edward Stones, Dow's business vice president, Energy and Climate. "Our customers are looking to Dow to help lower the carbon footprint of their products, and this is an important step in that direction."

Dow'snet-zero carbon emissions ethylene cracker and derivatives complex would decarbonize approximately 20 percent of its global ethylene capacity while growing its global polyethylene supply by about 15 percent and supporting approximately $1 billion of EBITDA (earnings before interest, taxes, depreciation and amortization) growth across the value chain by 2030.

The proposed production process at Fort Saskatchewan will convert cracker off-gas into hydrogen as a clean fuel to be used in the ethylene production process and carbon dioxide will be captured onsite to be transported and stored by adjacent third-party carbon storage infrastructure partners.

"The Dow net-zero Fort Saskatchewan project will be a milestone project in global industrial decarbonization," said Dan Yankowski, senior vice president Americas, Linde. "Linde's engineering, large project execution and operations expertise, combined with our long-standing relationship, uniquely positions us to support Dow as it takes an important step towards achieving its decarbonization goals."

About Dow

Dow (NYSE: DOW) combines global breadth; asset integration and scale; focused innovation and materials science expertise; leading business positions; and environmental, social and governance leadership to achieve profitable growth and help deliver a sustainable future. The Company's ambition is to become the most innovative, customer centric, inclusive and sustainable materials science company in the world. Dow's portfolio of plastics, industrial intermediates, coatings and silicones businesses delivers a broad range of differentiated, science-based products

and solutions for its customers in high-growth market segments, such as packaging, infrastructure, mobility and consumer applications. Dow operates manufacturing sites in 31 countries and employs approximately 37,800 people. Dow delivered sales of approximately $57 billion in 2022. References to Dow or the Company mean Dow Inc. and its subsidiaries. For more information, please visithttp://www.dow.comor follow@DowNewsroomon Twitter.

Cautionary Statement about Forward-Looking Statements

Certain statements in this press release are "forward-looking statements" within the meaning of the federal securities laws, including Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Such statements often address expected future business and financial performance, financial condition, and other matters, and often contain words or phrases such as "anticipate," "believe," "estimate," "expect," "intend," "may," "opportunity," "outlook," "plan," "project," "seek," "should," "strategy," "target," "will," "will be," "will continue," "will likely result," "would" and similar expressions, and variations or negatives of these words or phrases.

Forward-looking statements are based on current assumptions and expectations of future events that are subject to risks, uncertainties and other factors that are beyond Dow's control, which may cause actual results to differ materially from those projected, anticipated or implied in the forward-looking statements and speak only as of the date the statements were made. These factors include, but are not limited to: sales of Dow's products; Dow's expenses, future revenues and profitability; the continuing global and regional economic impacts of the coronavirus disease 2019 ("COVID-19") pandemic and other public health-related risks and events on Dow's business; any sanctions, export restrictions, supply chain disruptions or increased economic uncertainty related to the ongoing conflict between Russia and Ukraine; capital requirements and need for and availability of financing; unexpected barriers in the development of technology, including with respect to Dow's contemplated capital and operating projects; Dow's ability to realize its commitment to carbon neutrality on the contemplated timeframe; size of the markets for Dow's products and services and ability to compete in such markets; failure to develop and market new products and optimally manage product life cycles; the rate and degree of market acceptance of Dow's products; significant litigation and environmental matters and related contingencies and unexpected expenses; the success of competing technologies that are or may become available; the ability to protect Dow's intellectual property in the United States and abroad; developments related to contemplated restructuring activities and proposed divestitures or acquisitions such as workforce reduction, manufacturing facility and/or asset closure and related exit and disposal activities, and the benefits and costs associated with each of the foregoing; fluctuations in energy and raw material prices; management of process safety and product stewardship; changes in relationships with Dow's significant customers and suppliers; changes in consumer preferences and demand; changes in laws and regulations, political conditions or industry development; global economic and capital markets conditions, such as inflation, market uncertainty, interest and currency exchange rates, and equity and commodity prices; business or supply disruptions; security threats, such as acts of sabotage, terrorism or war, including the ongoing conflict between Russia and Ukraine; weather events and natural disasters; and disruptions in Dow's information technology networks and systems; and risks related to Dow's separation from DowDuPont Inc. such as Dow's obligation to indemnify DuPont de Nemours, Inc. and/or Corteva, Inc. for certain liabilities.

Where, in any forward-looking statement, an expectation or belief as to future results or events is expressed, such expectation or belief is based on the current plans and expectations of management and expressed in good faith and believed to have a reasonable basis, but there can be no assurance that the expectation or belief will result or be achieved or accomplished. A detailed discussion of principal risks and uncertainties which may cause actual results and events to differ materially from such forward-looking statements is included in the section titled "Risk Factors" contained in the Company's Annual Report on Form 10-K for the year ended December 31, 2022 and the Company's subsequent Quarterly Reports on Form 10-Q. These are not the only risks and uncertainties that Dow faces. There may be other risks and uncertainties that Dow is unable to identify at this time or that Dow does not currently expect to have a material impact on its business. If any of those risks or uncertainties develops into an actual event, it could have a material adverse effect on Dow's business. Dow Inc. and TDCC assume no obligation to update or revise publicly any forward-looking statements whether because of new information, future events, or otherwise, except as required by securities and other applicable laws.

Dow selects Linde as clean hydrogen and nitrogen partner for its proposed net-zero carbon emissions ethylene and derivatives complex in Canada

About Linde

Linde is a leading global industrial gases and engineering company with 2022 sales of $33 billion. We live our mission of making our world more productive every day by providing high-quality solutions, technologies and services which are making our customers more successful and helping to sustain, decarbonize and protect our planet.

The company serves a variety of end markets such as chemicals & energy, food & beverage, electronics, healthcare, manufacturing, metals and mining. Linde's industrial gases and technologies are used in countless applications including production of clean hydrogen and carbon capture systems critical to the energy transition, life-saving medical oxygen and high-purity & specialty gases for electronics. Linde also delivers state-of-the-art gas processing solutions to support customer expansion, efficiency improvements and emissions reductions.

For more information about the company and its products and services, please visit http://www.linde.com.

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1 With respect to scope 1 and 2 carbon dioxide emissions.

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