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JAPANESE INDUSTRY AND POLICY NEWS
October - November, 2021

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Legislation and Policy News

Ministry of Economy, Trade and Industry adopted Takasago Thermal Engineering "World's First Hydrogen and Oxygen Generation Project on the Moon"

Takasago Thermal Science Co., Ltd. announced on November 15, the Ministry of Economy, Trade and Industry's project to develop water electrolysis technology with an eye on future lunar activities adapts the company as in a non-space business.

In 2019, Japan officially decided to participate in the manned lunar exploration program "Artemis Program" proposed by NASA. This program will send humanity to the moon by 2024, aiming to build a lunar base and sustainably work on the moon through the construction of a manned lunar orbital base.

Thirteen countries, including Japan and the United Kingdom, are participating. in the "Artemis Program," Japan in collaboration with private businesses, etc., promotes the development and sophistication of basic technologies necessary for sustainable exploration activities beyond the moon and promotes international space exploration.

In all activities such as the constant stay of astronauts and the short-term manned lunar exploration prior to that, the installation and construction of residential facilities require the securing and stable supply of electricity on the lunar surface. It is thought that a certain amount of water ice exists on the moon, and in order to carry out sustainable lunar surface activities, that water is needed as a fuel for takeoff and landing aircraft (to use it as hydrogen / oxygen).

Takasago Thermal Engineering has been engaged in air conditioning equipment engineering since its establishment in 1923, but about 20 years ago, it focused on hydrogen as a building equipment application and refined its water electrolysis technology. In December 2019, it signed a corporate partner contract for the private lunar exploration program "HAKUTO-R" operated by space startup “ispace” to generate hydrogen and oxygen from water on the moon.

Takasago Thermal Science website (in Japanese):
https://www.tte-net.com/topics/2021/pdf/20211115_1.pdf

Image of the moon

Supply and demand of power for winter 2021, the toughest in 10 years
The Ministry of Economy, Trade and Industry summarized the supply and demand outlook of the power and measures for the winter of 2021 at the 40th Comprehensive Resources and Energy Study Group held on October 26 and 27. Although the minimum reserve margin of 3% required for stable supply has been secured in seven areas nationwide this winter, it is the toughest outlook in the past 10 years, so it calls efficient use of electricity within a reasonable range.

According to the Ministry of Economy, Trade and Industry, the Tokyo area is 3.2% in January, 3.1% in February, which is "just 3%", and in February, it is 3.9% in 6 areas in Central and West Japan, which is an extremely difficult outlook. According to the three-month forecast released by the Japan Meteorological Agency on October 25, the winter-type pressure distribution is rather strong mainly in western Japan, and the temperature in the next three months in western Japan and Okinawa / Amami is forecast to be as low as normal. The forecasts for northern and eastern Japan are on par with normal

years.

In addition, due to the influence of the COVID-19, etc., the electricity demand in 2020 was about minus 3 to 8% compared to the previous year, but in 2021, the demand is also increasing compared to the previous year, and it is compared with 2019, too. Based on this situation, the outlook for electricity supply and demand in the winter of 2021 and the points of countermeasures are summarized as follows.

Regarding the supply and demand of electricity in the winter of 2021, although the supply capacity required for stable supply can be barely secured, the outlook is quite severe, and the situation surrounding fuel and electricity is becoming more severe worldwide. While closely monitoring the transition of the situation, making every effort to secure a stable supply of electric power is requested for supply measures and market measures to electric power companies (power generation / retail electric power companies).

In addition, METI doesn't request consumers to save electricity, but call for cooperation in efficient use of electricity (energy saving) within a reasonable range, as in the past few years, and ask them to continue their normal live keeping in mind the efficient use of electricity.

METI website (in Japanese):
https://www.meti.go.jp/press/2021/10/20211027003/20211027003.html

Image from Nikkei xTECH

Government decides 6th energy basic plan / NDC

On October 22, the government approved a new energy basic plan that indicates the direction of Japan's energy policy, which aim for about 60% of non-fossil power sources such as renewable energy 36-38% and nuclear power 20-22% as the power source composition in 2030.

It is to show the energy policy path toward the realization of the "2050 Carbon Neutral" announced in October 2020 and the new greenhouse gas emission reduction targets announced in April 2021, and to take measures against climate change. In order to overcome the issues facing Japan's energy supply and demand structure, the government has formulated two important themes: to secure a stable supply and to show efforts to reduce energy costs on the premise of ensuring safety.

As for the outlook for energy supply and demand in 2030, the government will promote energy consumption reduction of 50.3 million kl from 2013, expand the introduction of non-fossil energy, renewable energy 36-38% (2019 18%), nuclear power 20-22 r% (6%) and hydrogen / ammonia 1% (0%). Of the fossil energy, LNG was 20% (about 37%), coal was 19% (about 32%), and petroleum was 2% (about 7%).

In the NDC decided this time, Japan aims to reduce greenhouse gases by 46% in 2030 from 2013 as an ambitious goal consistent with 2050 carbon neutral. The government would continue to take on the challenge of reaching a height of 50%.

METI website: https://www.meti.go.jp/english/press/2021/1022_002.html

Energy supply and demand for FY 2030 (Ambitious outlook)		
Energy saving	62 million Kl	Breakdown of renewable energy Solar power 14~16% Wind power 5% Geothermal power 1% Hydropower 11% Biomass 5%
Final energy consumption	350 million Kl	
Renewable energy	36~38%	
Hydrogen / Ammonia	1%	
Nuclear power	20~22%	
LNG	20%	
Coal	19%	
Petroleum	2%	
Greenhouse gas reduction rate	46%(50% is ideal)	

Data source: METI

Survey and Business Data

Domestic vehicle sales decreased by 31% in October 279,341 units, the lowest ever

The number of new vehicles sold in Japan (including micro vehicles) in October announced by the vehicle sales organization on Nov. 1, was 279,341 units, a decrease of 31% from the same month of the previous year. It was the fourth consecutive month that the sales fell below the same month of the previous year. It was the lowest sales in October and also the lowest in 54 years, below the 279,634 units in 1968 when statistics began. Due to the delay in parts supply because of the spread of the COVID-19 in Southeast Asia, the decline continues by significant reduction in production.

The negative range in October improved by 0.9 points from September, but it decreased by 30% from the same month of the previous year for the second

consecutive month. The number of registered vehicles decreased by 30% to 176,743 units, and the number of micro vehicles (displacement of 660 cc or less) decreased by 33% to 102,598 units. Registered vehicles have been down for two months, and micro vehicles have been down for five consecutive months.

By passenger vehicle brand, seven of the eight major companies fell below the previous year's level. Toyota (excluding Lexus) decreased 42% to 81,822 units. Daihatsu has the largest decrease, with a 47% decrease to 31,597 units. Only Mitsubishi Motors increased by 10% year-on-year to 5,428 units.

Due to the spread of the COVID-19 in Southeast Asia and the global shortage of semiconductors, the shutdown of domestic factories spread in October. Toyota also suspended operations at most of its domestic plants in October. SUBARU reduced domestic production by 40% compared to the initial plan, and Honda reduced it by 30%. Daihatsu's production was down 20% year-on-year.

While manufacturers are unable to supply enough new vehicles, sales demand itself is strong. The backlog of orders is piled up at dealers. In addition, the production of vehicle companies is improving. It is said Toyota’s global production in November will decrease by 15% from the plan, but it is expected to recover to the record high of 820,000 units in November 2020. Honda's domestic production will also be recovered by minus 10% compared to the plan in early November.

Japan Vehicle Dealers Association website (in Japanese):
http://www.jada.or.jp/data/month/m-r-hanbai/m-r-brand01/

Vehicle sales in Japan (October, 2021)

Oct. 2021			Oct. 2020	Jan. to Oct. 2021	Jan. to Oct. 2020
Daihatsu	Total	1,535	5,135	30,671	49,985
	% Y to Y	29.9	—	61.4	—
Hino	Total	4,487	4,418	50,344	50,357
	% Y to Y	101.6	—	100.0	—
Honda	Total	26,271	26,483	227,967	249,336
	% Y to Y	99.2	—	91.4	—
Isuzu	Total	3,519	3,968	55,941	56,071
	% Y to Y	88.7	—	99.8	—
Lexus	Total	2,841	3,835	44,220	38,335
	% Y to Y	74.1	—	115.4	—
Mazda	Total	8,015	10,797	106,033	120,953
	% Y to Y	74.2	—	87.7	—
Mitsubishi	Total	2,389	1,662	29,494	22,068
	% Y to Y	143.7	—	133.7	—
Mitsubishi Fuso	Total	2,139	3,139	28,112	31,172
	% Y to Y	68.1	—	90.2	—
Nissan	Total	17,061	19,824	234,186	223,942
	% Y to Y	86.1	—	104.6	—
Subaru	Total	5,707	5,869	69,128	67,263
	% Y to Y	97.2	—	102.8	—
Suzuki	Total	7,536	7,795	84,861	89,660
	% Y to Y	96.7	—	94.6	—
Toyota	Total	79,458	137,510	1,171,564	1,172,316
	% Y to Y	57.8	—	99.9	—
UD Trucks	Total	797	751	7,397	7,213
	% Y to Y	106.1	—	102.6	—
Others	Total	14,988	22,118	217,842	205,034
	% Y to Y	67.8	—	106.2	—
Total		176,743	253,304	2,357,760	2,383,705
Previous year		253,304	—	2,383,705	—
% to 2020		69.8	—	98.9	—

Domestic vehicle total	156,660	223,301	2,065,269	2,134,154
% to 2020	70.2	—	96.8	—
Imported vehicle total	20,083	30,003	292,491	249,551
% to 2020	66.9	—	117.2	—

Data: Japan Vehicle Dealers Association

Trade deficit JP¥ 985 billion, first half of FY 2021, import surge due to soaring crude oil

According to the preliminary trade statistics (customs clearance basis) for the first half of FY 2021 (April-September) released by the Ministry of Finance on

Oct. 20, the trade balance after deducting the import value from the export value was a deficit of JP¥ 985.0 billion. The trade deficit is the first in two periods on a half-year basis. Due to the depreciation of the JP¥ and soaring crude oil prices, the value of crude oil imports doubled from the same period of the previous year.

On the other hand, the trade balance announced at the same time in September was a deficit of JP¥ 622.8 billion. In addition to the increase in crude oil imports, the export value of automobiles fell sharply by 40.3% from the same month of the previous year due to the impact of production cuts due to difficulty in procuring parts.

The export value in the first half of FY 2021 increased by 23.2% from the same period of the previous year to JP¥ 39,857.3 billion. Imports increased 12.2 % to JP¥ 38,872.3 billion, of which crude oil increased 103.0% to JP¥ 3,389.3 billion , the first increase in five periods.

The trade balance by country was a surplus of JP¥ 2,811.8 billion to the United States, driven by exports of mainstay automobiles and parts. On the other hand, China has a deficit of JP¥ 1,111.1 billion. This was due to an increase in imports of mobile phones and non-ferrous metals.

The import value in September increased by 38.6% from the same month of the previous year to JP¥ 7,464 billion, which was a record high since 1979. On the other hand, the export value increased by 13.0% to JP¥ 6,841.2 billion, increasing for 7 consecutive months, but the growth rate slowed down due to the decrease in automobiles.

As a result, the trade balance in September was in the red for the second consecutive month. By country, exports to the United States fell 3.3% to JP¥ 1,155.5 billion due to the decline in automobile exports, the first decline in seven months.
MOF website:
https://www.customs.go.jp/toukei/shinbun/trade-st_e/2021/2021_415e.pdf

(Reference)

- Japanese EX and IM with EU (Apr. – Sept., 2021)

Unit: JP¥ million

MM/YY	Exports	% to 2020	Imports	% to 2020	Surplus
9/2020	554,110	-10.6	671,727	-14.0	-117,617
10/2020	599,153	-2.7	639,258	-11.4	-40,105
11/2020	560,980	-2.6	630,428	-17.2	-69,448
12/2020	621,699	-1.6	699,276	-4.0	-77,577
1/2021	532,212	-1.6	690,006	-2.3	-157,794
2/2021	589,139	-3.3	629,671	0.4	-40,532
3/2021	714,542	12.8	799,030	19.0	-84,488
4/2021	675,907	39.5	786,876	16.6	-110,969
5/2021	617,042	69.6	805,287	39.4	-188,245
6/2021	653,649	51.1	791,400	29.2	-137,751
7/2021	639,992	46.1	742,830	14.0	-102,838
8/2021	618,698	29.9	863,012	54.5	-244,314
9/2021	621,256	12.1	839,504	25.0	-218,248

Data: MOF Japan

- Exports & Imports with EU (Apr. – Sept., 2021)

	Value (JP¥ billions)	% to the same period in 2020	Reference
Exports	3,782.4	23.4	Increased for the first time in 5 periods
Imports	4,502.0	16.4	Increased for the first time in 4 periods
Balance	-719.6	-10.6	In red 8 periods continuously

- Movement of principal goods with EU (Apr. – Sept., 2021)

Export goods	% to the same period in 2020	Import goods	% to the same period in 2020
Auto parts	54.1	Medicines	24.9
Vehicles	8.0	Vehicles	36.9
Pump / Centrifuge	45.7	Aircrafts	152.8
-	-	Organic compounds	-24.4

Company & Organization News

Sumitomo Corporation acquires additional forest assets in New Zealand, with an area of 52,000 ha

Sumitomo Corporation announced on November 19, it acquired a total of approximately 15,000 hectares of forest in New Zealand's Coromandel and Gisborne districts through Summit Forests New Zealand Ltd (SFN), a wholly owned subsidiary of Forestry. It was an additional acquisition and as a result, the scale of forest assets owned and managed by SFN in the country has expanded to approximately 52,000 hectares.

The company expects this acquisition to provide further synergies with existing assets in terms of tree logging, forest road construction and timber exports. Going forward, they will continue to promote DX, such as mechanization of logging, tree planting, and pruning for the purpose of cost reduction and improvement of safety, mainly in the Asian region where demand is expected to increase. The company intends to supply high-quality timber that has obtained FSC certification.

Taking advantage of the warm climate, New Zealand is an advanced forestry country that realizes effective use of forest assets and coexistence with the global environment by systematically planting and logging every 30 years.

The company established SFN in 2013 and participated in the forestry business in New Zealand. As a business under the newly established Energy Innovation Initiative (EII) in April 2021, it owns a total of approximately 2.7 million hectares of forest assets in Russia and New Zealand, and has the top management record as a Japanese company.

Sumitomo Corporation website:
https://www.sumitomocorp.com/en/jp/news/release/2021/group/15250

Location of the acquired assets from Sumitomo Corp. website

Five companies including Toyota expand fuel options by utilizing internal combustion engines

In Europe and the United States, EV conversion is already becoming the center of carbon neutrality, but Japanese automobile and motorcycle manufacturers are likely to seek a way to zero emissions while leaving options instead of EV.

Kawasaki Heavy Industries, SUBARU, Toyota, Mazda, and Yamaha Motor announced on November 13 that they will take on the challenge of expanding

fuel options that utilize internal combustion engines to achieve carbon neutrality. They will promote three initiatives, such as participating in races using carbon-neutral fuel and hydrogen engine vehicles.

Specifically, in order to further expand the options for "making," "transporting," and "using" fuel, (1) participating in races that utilize carbon-neutral fuel, (2) considering the use of hydrogen engines in motorcycles and (3) Continue to participate in the race with a hydrogen engine.

SUBARU, Toyota and Mazda will use carbon-neutral fuel to participate in the Super Taikyu series. Mazda is a vehicle equipped with SKYACTIV-D 1.5 (diesel engine) that uses 100% bio-derived diesel fuel, and will be in the ST-Q class of the "Super Taikyu Race in Okayama" to be held on November 13 and 14. Diesel fuel is supplied by Euglena.

SUBARU and Toyota will introduce a new vehicle that uses synthetic fuel derived from biomass into the ST-Q class of the 2022 season Super Taikyu series and conduct demonstration experiments. On the other hand, two companies will promote electric vehicles (EV), SUBARU "SOLTERRA" and Toyota "bZ4X", which are planned to be released in various parts of the world in the middle of 2022. By cooperating and competing together in the race, the companies plan to speed up technological development for all options.

Kawasaki Heavy Industries and Yamaha Motor have begun studying joint research on hydrogen engines with a view to mounting them on motorcycles. In the future, Honda Motor Co., Ltd. and Suzuki will join, and the four companies will explore the possibility of realizing carbon neutrality using internal combustion engines in motorcycles.

TOTOTA website:
https://global.toyota/en/newsroom/corporate/36328304.html

Hydrogen-engine vehicle during the SUZUKA S-TAI

Osaka Gas participates in the supply and demand adjustment market in Europe, Invests in Dutch company that adjusts supply and demand by EV control

On November 10, Osaka Gas announced it signed a capital tie-up agreement with JedliX VB (Netherlands), which operates a supply and demand adjustment business in Europe, through its wholly owned subsidiary Osaka Gas UK (OGUK) in the United Kingdom. It will participate in the supply and demand adjustment market in Europe, which has the most advanced institutional design in the world.

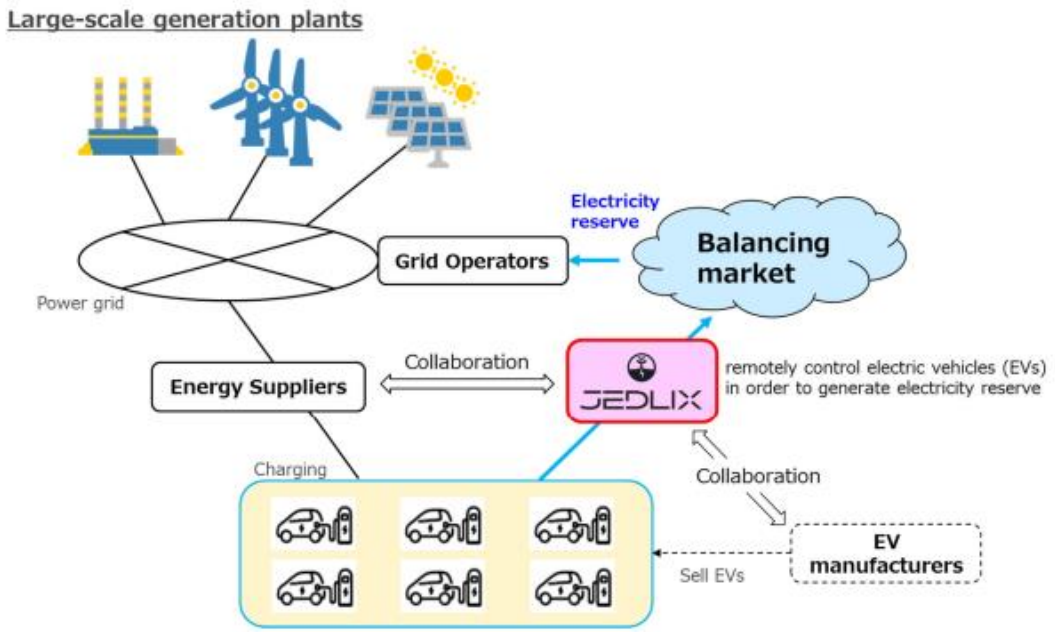
JedliX V.B. is an aggregator operating in Europe, which adjusts supply and demand by remotely controlling the battery of an electric vehicle (EV) using an in-house developed system. The startup was established in 2016 and is steadily expanding its business in seven countries (UK, Netherlands, Switzerland, Germany, Norway, France and Belgium). The company also aims to expand its business by further promoting alliances with EV manufacturers, EV charging spot operators and energy retailers.

In recent years, with the progress of the introduction of renewable energy worldwide, the importance of the supply and demand adjustment function to cope with the output fluctuation of renewable energy affected by the weather is

increasing. In Europe, the introduction of renewable energy has progressed from an early stage, and the system design of the supply and demand adjustment market is the most advanced in the world. The Osaka Gas Group is engaged in the natural gas-fired power generation business and the renewable energy business in the overseas electric power business, and will also promote participation in overseas supply and demand adjustment business in the future.

In Japan, in order to contribute to the stabilization of the electric power system in a society where a large amount of renewable energy is introduced, the group is working for a virtual power plant (VPP) construction project utilizing a household fuel cell ENE-FARM and an industrial demand response service utilizing a cogeneration system. It will utilize the knowledge gained from this alliance in Japan as well.

Osaka gas website:
https://www.osakagas.co.jp/en/whatsnew/__icsFiles/afieldfile/2021/11/09/211110_1.pdf



Concept of the project from Osaka gas website

MOL, Japan Engine and Dry Bulk agree on demonstration operation of marine hydrogen fuel engine

On November 9, MOL announced, the company, MOL Dry Bulk and Japan Engine Corporation have reached a basic agreement that they will install a low-speed marine 2-stroke hydrogen fuel engine developed by Japan Engine on the actual ship operated by MOL. Through this basic agreement, the three companies will carry out demonstration operations with hydrogen-fueled engines to promote the market launch and popularization of net-zero emission hydrogen-fueled vessels.

As the movement to reduce greenhouse gases accelerates as a measure against climate change, the shipping industry is also promoting the conversion to next-generation fuels that are environmentally friendly. In the future, the hydrogen supply chain is expected to expand globally in response to the progress of hydrogen utilization in each industry such as power generation and mobility, and hydrogen fuel is one of the promising next-generation fuels in the shipping industry as well. It is attracting attention as an option.

Japan Engine was adopted as a green innovation fund project by the New Energy and Industrial Technology Development Organization (NEDO) together with Kawasaki Heavy Industries and Yanmar Power Technology, and they develop the world's first main fuel engine for large ocean going vessels and coastal vessels. MOL Group aims to achieve net zero emissions by 2050 and to start operating net zero emission ocean-going vessels by the end of the 2020s.

Mitsui O.S.K. Lines (MOL) website:
https://www.mol.co.jp/en/pr/2021/21102.html

Image of hydrogen-powered ship from MOL website

Mitsui collaborates with France's Forsee, a storage battery business, to expand sales in Japan and Asia

Mitsui & Co., Ltd. announced on November 9 that it has strengthened its capital tie-up with France's Forsee Power, which manufactures battery systems for electric mobility, and has signed a new collaboration agreement.

Mitsui invested in Forsee in 2017, and both companies have focused on "electricity of mobility" centered on buses and scooters, but in recent years they have also expanded into a wide range of commercial mobility such as agriculture, construction machinery, ships and railways. As the movement toward electrification is expanding, the company aims to "electricize mobility" by expanding sales of Forsee battery systems, mainly in Japan and Asia, based on this collaboration agreement. At the same time, Mitsui will work with Forsee to create complex solutions to the challenges of decarbonization and low carbonization facing business sites such as the mining industry and the logistics industry.

Forsee was listed on Euronext Paris on November 3, aiming to further accelerate growth, promoting technological innovation, developing new markets, increasing production capacity and contributing to the realization of zero emissions through electric mobility.

Mitsui has set "Sustainability Management / ESG Evolution" as one of the priority areas of the "Medium-Term Management Plan 2023" and has set Net-zero emissions as the ideal situation of 2050. In addition, energy solutions are one of the Strategic Focuses, and the creation of businesses that contribute to climate change response is positioned as a focus area.

Mitsui corporation website:
https://www.mitsui.com/jp/en/topics/2021/1242207_12171.html

New product by Forsee Power in 2021, the thinnest modular battery systems in the world (for 8, 11, 16 and 21 kWh)

Mitsui O.S.K. Lines (MOL), Mitsubishi Shipbuilding and Namura Shipbuilding started development of large ammonia transport ship sailing with ammonia

MOL, Mitsubishi Shipbuilding, and Namura Shipbuilding announced on November 4 that they have agreed to jointly develop a large ammonia transport vessel that uses ammonia as fuel. In the future, the three companies will jointly proceed with the basic design of the ammonia transport ship.

MOL will establish a collaborative system with each company to place an order for the main engine of ammonia fuel under development by MAN Energy Solutions (MAN ES) of Germany, aiming for the early introduction of the main engine for ships using ammonia as the main fuel. In October, the company

signed a basic agreement with MAN ES and Mitsui E & S Machinery to place an order for an ammonia fuel engine currently under development by MAN ES.

Ammonia is currently mainly used as a fertilizer raw material and the amount of sea transportation is limited, but as a next-generation clean energy that does not emit CO2 during combustion, it is mainly used for co-firing at coal-fired power plants and as a hydrogen carrier. Large-scale demand is expected in the future. There are great expectations for ammonia as a fuel for ships.

In the Japanese government guideline "6th Basic Energy Plan" announced in September 2021, ammonia is positioned as a promising option for achieving carbon neutrality, and as of an annual domestic demand 3 million tons in 2030, and 30 million tons in 2050 is expected.

Mitsui O.S.K. Lines (MOL) website:
https://www.mol.co.jp/en/pr/2021/21098.html

Image of the vessel's operation from Mitsui O.S.K. Lines (MOL) website

Toda Corporation operates approximately 28 MW onshore wind farm in Brazil

Toda Corporation announced on October 25 that the onshore wind farm with a rated power generation output of 27.72 MW, which was being developed and

constructed by a local subsidiary, started commercial operation on September. 8 unit of 3.465 MW wind turbines were installed, and the annual planned power generation is expected to be about 120 GWh. The company will utilize its sales network in Brazil, which is celebrating its 50th anniversary, to supply green power to factories such as Japanese companies.

Toda Corporation announced in August 2020 that it established two new local subsidiaries in Brazil and started onshore wind power generation and sales in the northeastern part of Areia Branca, Rio Grande do Norte.

According to Toda Corporation, in Brazil, the ratio of hydroelectric power generation has been high in the power generation composition, and the electricity price is easily affected by the amount of rainfall, so the electricity price will rise due to the recent drought caused by abnormal weather. The power procurement cost has a considerable impact on local companies to make management plans.

On the other hand, mainly in the northeastern region, there are regions with excellent wind conditions throughout the year even from a global perspective, and the development of renewable energy centered on onshore wind power, which contributes to stabilizing electricity procurement costs, is booming. In recent years, the supply network of power generation facilities, operation and maintenance, and infrastructure such as power transmission and substation facilities have been significantly improved.

Toda Corporation website (in Japanese):
https://www.toda.co.jp/english/company/overview.html

Full view of TODA ENERGIA power plant from Toda corporation website

Mitsubishi Heavy Industries Engineering completes demonstration experiment on CO2 capture liquid, recovery rate is 99.8%

On October 19, Mitsubishi Heavy Industries Engineering announced it conducted a demonstration test at the world's largest CO2 recovery experimental facility in Norway, and with the new CO2 absorber "KS-21TM", the CO2 recovery rate from exhaust gas was reached up to 99.8%.

The demonstration test for commercialization of MHIENG's original CO2 absorber was conducted at the Mongstad CO2 Capture Technology Center (TCM) in Norway from the beginning of May to the end of August 2021. The verification test has been completed, and MHIENG has acquired useful data demonstrating the technological superiority of the absorbent "KS-21" used in the CO2 separation and capture process newly developed with Kansai Electric Power. They aim to get orders for the CO2 capture business in the UK and European markets.

In the performance confirmation of "KS-21" in the verification test, the condition of CO2 capture rate for the exhaust gas emitted from the gas turbine in the TCM facility was set to 95-98%, which is higher than the industry standard (about 90%). As a result, it greatly surpassed the general amine absorbent (MEA) used in the chemical absorption method.

Furthermore, in the high CO2 capture rate test conducted under different operating conditions, the world's highest level of capture rate of 99.8% was achieved. This means that CO2 is recovered from the exhaust gas to a level below the CO2 concentration contained in the atmosphere. These tests were also performed on the exhaust gas from the residual oil fluid cracker at the Mongstad refinery adjacent to the TCM, and the result was the same level.

CCUS (Carbon dioxide Capture, Utilization and Storage) has been attracting attention as an effective means for realizing a carbon-neutral society. MHIENG has been working on the development of CO2 capture technology "KM CDR Process TM" in collaboration with Kansai Electric Power since 1990.

The Mongstad CO2 Capture Technology Center (TCM) is the world's largest CO2 capture experimental facility established in 2012. It has the capacity to recover a total of about 100,000 tons of CO2 annually from the adjacent oil refinery and gas-fired power plant.

Mitsubishi Heavy Industry Group website:
https://www.mhi.com/news/211019.html

Technology Centre Mongstad (Norway)
from Mitsubishi Heavy Industry Group website

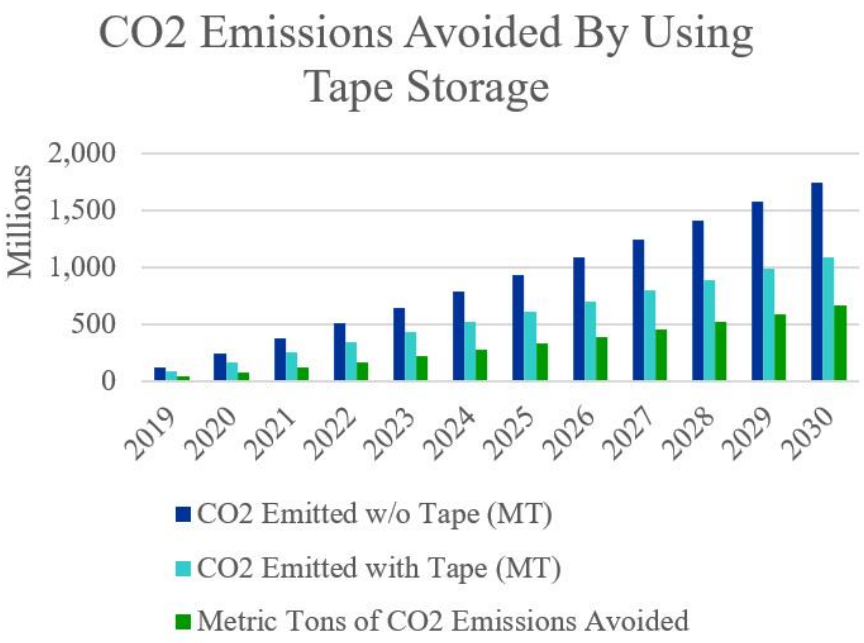
FUJIFILM contributes to "Decarbonization of Data Centers" by utilizing magnetic tape

FUJIFILM announced October 19 that it participated in a "Green x Digital Consortium" established by the Japan Electronics and Information Technology Industries Association (JEITA) to promote the creation of new digital solutions that will lead to carbon neutralization of companies and industrial & social transformation. In the consortium, the company proposes the use of magnetic tape storage for data, and promotes the realization of "decarbonization of data centers" together with related companies and users of data centers, as well as electric power companies.

As a manufacturer of magnetic tapes for computers, which has the largest share in the world (according to the company), the company is able to contribute to the reduction of CO2 emissions, which is an urgent need for global measures such as the realization of decarbonization of data centers. According to research of International Data Corporation (IDC), from 2017 to 2020, the world's leading data center operators consume an average of 31% more electricity, reducing CO2 emissions by reducing electricity consumption as well as shifting to renewable energy has demanded.

Magnetic tapes can store large amounts of data safely for a long period of time at low cost, and as they do not need to be energized at all times when storing data, they have a significant environmental impact and attracting attention as a data storage solution. The white paper issued by IDC also recommends the need to utilize magnetic tape storage. Magnetic tape is said to be able to reduce CO2 emissions generated during data storage by 95% compared to hard disk drives.

Fujifilm US website: https://www.fujifilm.com/us/en/news/SustainableData



Data of IDC from Fujifilm US website

Other Topics

China's September new energy vehicle sales, share of NEV in total exceeded 20%

According to the information of Japan External Trade Organization (JETRO) on October 12, Chinese Passenger Car Market Information Council (CPCA), announced new passenger car sales decreased 17.3% year-on-year to 1,582,000 units, but of which new energy vehicles (NEV, Note) tripled to 334,000 units. The share of NEV in passenger car sales exceeded 20% at 21.1%, a significant increase from 5.8% for the full year of 2020. Cumulative new car sales from January to September increased 12.0% year-on-year to 14,486,000 units, of which NEV tripled to 1,818,000 units, which also expanded significantly.

The "New Energy Vehicle Industry Development Plan (2021-2035)" announced by China in November 2020 stipulates that the NEV occupancy rate in total automobile sales will be around 20% by 2025. Demand for NEVs is strong in compare with gasoline-powered vehicles which continue to be sluggish. The cumulative sales volume from January to September announced by the China Automobile Manufacturers Association (CAAM) reached 11.6% of total vehicle

sales. According to the China Electric Vehicle Committee of 100, "it is possible that China will reach the goal without waiting for 2025."

CPCA also revealed the power consumption status of NEV. Electricity consumption of charging facilities for NEV in August increased by 34.3% year-on-year to 989 million KWh, accounting for only 0.13% of the total electricity consumption of China. CPCA estimates that the ratio will be only 0.2% even if the amount of charge in the household sector, which is not subject to statistics, is added up, and that there will be almost no impact on the electricity consumption of society as a whole.

(Note) NEV refers to three types of vehicles: electric vehicles (EV), plug-in hybrid vehicles (PHV), and fuel vehicles (FCV), and does not include hybrid vehicles (HV).

JETRO website (in Japanese):
https://www.jetro.go.jp/biznews/2021/10/8a5f8d6457439f5d.html

Chinese EV model, image from Toyokeizai online