

How can Japan make the steel industry sustainable?

ectrical appliances. To make the steel industry sustainable, Japan will work with the public and private sectors to pave the way toward producing "green steel." "I believe that the decarbonization of the steel industry needs to be tackled as a mission shared by all of Japan," says ORIHASHI

How does Japan's steel industry develop?

Japan's steel industry developed through the blast furnace process, which is energy efficient and capable of mass-producing high-quality steel with few impurities. Still, such a process uses carbon to reduce (remove oxygen from) iron ore, the raw material, making carbon (i.e., CO<sub>2</sub>) emissions inevitable.

Why is steel important in Japan?

Just as the traditional swordsmith meticulously works steel to combine those contradictory properties within a sword, Japan's steel industry produces high-performance, high-quality steel materials fit for a variety of applications, supporting its global competitiveness in industrial products.

What will Japan do with scrap steel?

Crude steel production in Japan will shift from a focus on blast furnaces to electric furnaces. The rational choice for Japan is to make maximum use of the large amount of scrap steel that exists in Japan, import or produce a limited amount of hydrogen direct-reduced iron domestically, and make steel in electric furnaces.

Can Japan produce green steel?

Accelerated decarbonization efforts are critical for Japan's steel industry to remain competitive in the global market. This report identifies the challenges of producing green steel in Japan through blast furnaces, hydrogen-based direct reduced iron (H<sub>2</sub>-DRI) making, and electric furnaces.

How can Japan decarbonize the steel industry?

In Japan, so-called "COURSE50" and "SuperCOURSE50" projects, which use hydrogen in blast furnaces along with CCS, have comprised the main efforts to decarbonize the steel industry. However, their carbon reduction targets are 30% and 50%, respectively, and cannot be claimed as methods aiming at zero-carbon steelmaking.

the steel industry already being an industry dominated by multinational producers, the most competitive decarbonised steel will come from geographies with the cheapest and most abundant renewable energy production and iron ore. This will drive Japanese steel companies to look outside Japan, towards other countries in which to build greenfield H<sub>2</sub>

Journal of Energy Storage 72 (2023) 108404 Available online 31 July 2023 2352-152X/2023 Elsevier Ltd. ... 2023; Asian Renewable Energy Hub in Australia: aims to produce up to 26 GW of renewable energy using wind and solar power, which will be used to produce hydrogen through

electrolysis. ... The project involves collaboration between ...

The onshore construction was carried out by Kajima Corporation and the offshore construction by a joint venture between Shimizu Corporation and Nippon Steel Engineering. The Ishikari Bay New Port Offshore Wind Farm ...

**Key Findings.** 1. Accelerated Decarbonization is crucial for Japan's Steel Industry ? Emissions from the steel industry account for 48% of Japan's industrial CO<sub>2</sub> emissions and 13% of the country's total energy-related CO<sub>2</sub> emissions. The decarbonization of the steel industry is a critical pillar in the strategy toward reaching carbon neutrality and will become ...

There are three decarbonization pillars for the Japanese steel industry: maximum use of scrap steel by electric furnaces; utilization of H<sub>2</sub>-DRI imports; and introduction of DRI ...

Energy consumption in the steel industry is decreasing due to improved energy-saving measures. Energy consumption in 2004 amounted to 2,371 PJ (equivalent to 61.2 million kiloliters in crude oil), a decrease of 4.4% ...

newable electricity (RE) is essential for decarbonising Japan's steel industry. The 7th Strategic Energy Plan (SEP) should allocate RE for electric arc furnace (EAF) steel ...

On June 28, 2024, as an effort to establish a business model that can be horizontally applied in order to achieve carbon neutrality by 2050, the Japan Organization for Metals and Energy Security (JOGMEC) selected nine CCS\* projects as FY2024 Advanced CCS Projects, which is an initiative as part of the project undertaken by the Ministry of Economy, Trade and Industry (METI).

**Milestones of Japanese Steel Industry** Aiming for carbon neutrality by 2050, the industry strives to build a system to supply 10 ... Utilize non-fossil energy switching targets in the Act on Rationalized Energy Use to promote fuel/material switching Energy ... \*2 CCUS: Carbon dioxide Capture, Utilization and Storage \*3 CCS :Carbon dioxide ...

By 2030, official estimates show variable renewable energy reaching 20% of Japan's power mix. Noting the demand case and ever-growing renewables curtailment numbers nationwide, more and more firms are tapping ...

(The Japan Iron and Steel Federation) Power Supply at Nippon Steel Corporation, FY 2020 \*Blast furnace top-pressure recovery turbines, waste heat recovery from coke- dry quenching equipment, others

CCS operators would be able to transfer these monitoring operations to the Japan Organization for Metals and Energy Security (JOGMEC) as long as the operators satisfy certain criteria.

Nippon Steel is a world leader in technology and manufacturing. Our aim is to contribute to society in our steel business as the world's No. 1 steelmaker in terms of overall corporate strength.

Japan is one of the most talked-about emerging grid-scale energy storage markets in Asia, and as such, it featured prominently at the Energy Storage Summit Asia, held in Singapore earlier this month. Andy Colthorpe ...

At the end of 2024, the Japanese government released several new policy documents. These policy documents have significant importance for Japan's energy strategy through 2030 as well as driving decarbonisation of the ...

2. Scope of the research in to Energy Storage Market The Energy Storage Sector 3. Grid Energy Storage Applications a. Energy Shift/Time-Arbitrage b. Seasonal Storage c. Infrastructure Flexibility and Service Life d. Support for Renewables i. Economic Maturity of Renewable Energy Generation 4. The Energy Storage Technology Landscape a. Scale i.

Trends in the mix of the primary energy supply in Japan Japan is largely dependent on oil, coal, natural gas (LNG), and other fossil fuels imported from outside Japan. Following the Great East Japan Earthquake, the degree of dependence on fossil fuels increased to 84.8% in FY 2019 in Japan. What sources of energy does Japan depend on? Dependency on

The most electricity efficient steelmaking processes require a rapid increase in RE to secure the future of Japan's steel industry. We advocate for the inclusion of targets for RE ...

The Japan steel market, valued at USD 84.3 billion in 2024, is expected to grow to USD 101.4 billion by 2033, with a CAGR of 2.13% from 2025 to 2033. ... wave energy converters, and energy storage systems, such as batteries, hydrogen ...

Japan Organization for Metals and Energy Security (JOGMEC) selected 7 role model projects (5 for domestic storage and 2 for overseas storage) for Japanese Advanced CCS Projects. JOGMEC provides support for ...

Japan, which targets renewable energy representing 36% to 38% of the electricity mix by 2030 and 50% by 2050, is seeking to promote energy storage technologies as an enabler of that goal. At the same time, electricity ...

The steel industry emits more CO<sub>2</sub> than any other industry in Japan's industrial sector. In particular, manufacturing steel using the blast-furnace method results in high emissions, so drastic reductions in CO<sub>2</sub> emissions are ...

In 2021, the crude steel production of the Japanese steel industry increased by a large +15.8% from the previous year, reaching 96.33 million tons. 9) In 2020, Japan's crude steel production fell below the 87.53

million tons ...

Japan's goal of carbon neutrality by 2050 necessitates reductions in industrial carbon emissions. The country's steel industry is taking steps toward that goal by using hydrogen ...

for this is that Japan emits 3.5% of the world's CO<sub>2</sub>, 15% of which is from the steel industry.<sup>2</sup>) In particular, the ironmaking process, which uses coal as the raw material, accounts for the majority of the emissions, and there are high expectations for CO<sub>2</sub> reduction. The Japanese steel industry has been developing energy-saving technol-

**ENERGY STORAGE IN JAPAN** Some of the more recent new-build renewable power plants in Japan include an energy storage component. The two largest solar PV power plants in Hokkaido, commissioned in July and October 2020, respectively, both include lithium ion batteries. One plant has generating capacity of 64.6MWp and

Japan's steel industry emits approximately 114 million tonnes of carbon dioxide annually, contributing around 40% of the country's industrial emissions and 14% of its total greenhouse gas emissions. The reliance on ...

Direct CO<sub>2</sub> intensity of the iron and steel sector in the IEA's Net Zero Scenario, 2010-2030. Source: IEA Emissions of Steel Industry in Japan. Japan's steel industry emits approximately 114 million tonnes of carbon ...

JFE Steel Corporation, one of the world's leading integrated steel producers, was established through the consolidation of NKK Corporation and Kawasaki Steel Corporation in ...

Carbon Neutrality Plan for Japanese Steel Industry (METI) Multitrack approach to develop ultra-innovative technologies that will help the Japanese steel industry achieve carbon neutrality by 2050 During the transitional period, expand the use of scrap via conventional technologies (energy

Consequently the forged steel parts used in such equipment also need to be bigger. Moreover, the steel ingots must have high levels of uniformity and cleanliness. JSW M& E has the technology to manufacture components from ...

The electro-chemical battery storage project uses lithium-ion battery storage technology. The project will be commissioned in 2018. The project is developed by Green Power Development Corporation of Japan. Buy the profile here. 5. Renova-Himeji Battery Energy Storage System. The Renova-Himeji Battery Energy Storage System is a 15,000kW lithium ...

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