



# JFE Steel

## Koji Kakigi

President & CEO

### Constantly refining manufacturing capabilities and creating new value as a global steel supplier that grows together with its customers

JFE Steel has developed world-leading technical prowess and highly efficient production centers to meet the growing demands for high-grade steel. In the face of a very harsh business environment, we are steadily implementing a variety of initiatives to enhance our manufacturing capabilities towards the future, including:

- Strengthening manufacturing bases in Japan through capital investment and human resource development
- Investing overseas in sectors and regions that show a strong potential for growth
- Intensifying research and development aimed at boosting technical advantages.

Moving forward, we will continue to meet the challenge of supplying value-added, high-performance products that satisfy the many needs of our global customers.

### Strengthening manufacturing bases in Japan

JFE Steel is steadily reinforcing its domestic manufacturing bases in terms of facilities and personnel for increasingly stable operations and improved cost competitiveness. Proactive repairs and renewals of facilities are helping to bolster competitiveness. For example, we are moving ahead with intensive repairs of our material loading/unloading and transport equipment, and upgrading facilities such as coke ovens.



With respect to personnel, we are emphasizing the passing down of technical skills to younger workers. Initiatives include recruiting diverse human resources and implementing our Technical Expert Program to station full-time trainers in each workplace for strengthened human-resource development.

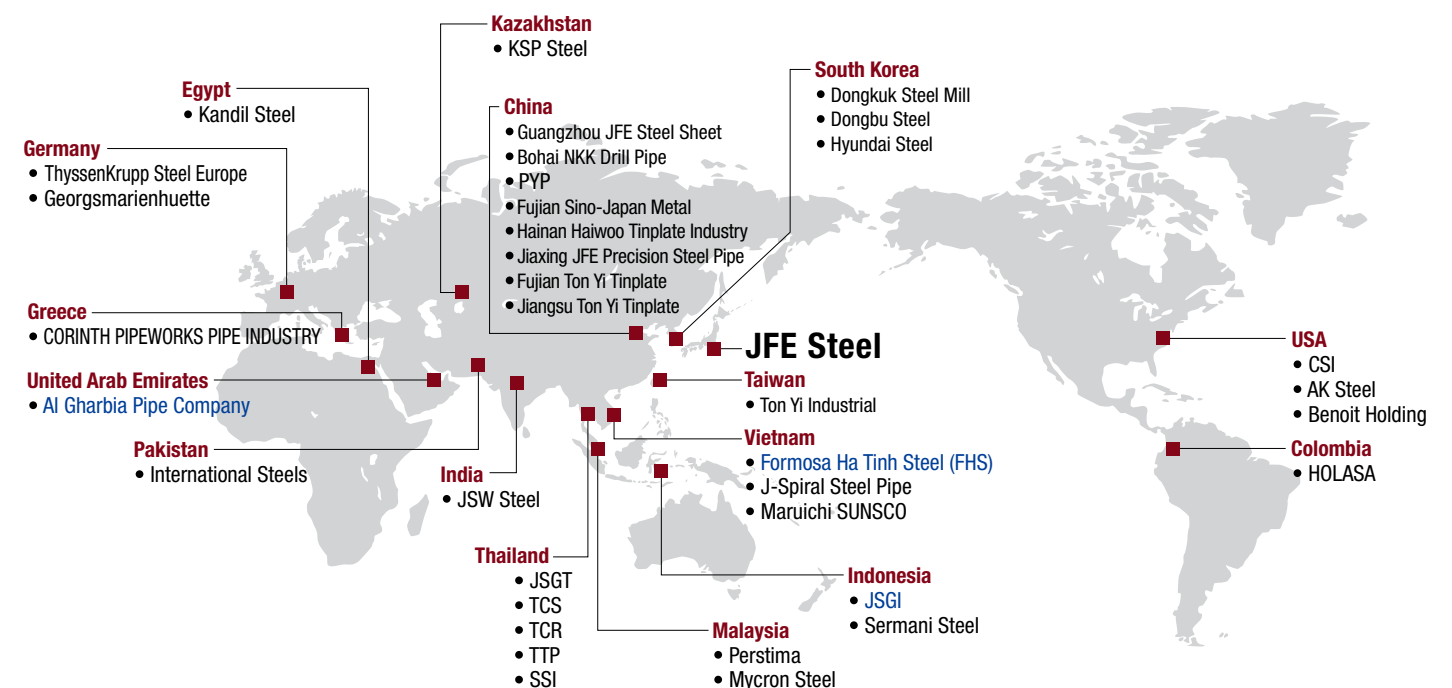


### Expanding our access to the growing global market

JFE Steel is taking a number of measures to adapt to the current and future global steel market, which is expected to expand. To supply plate steel for vehicles, we are establishing a manufacturing and sales network for high-grade steel, involving our manufacturing bases in China, Thailand and Indonesia, and an alliance partner in India. In addition, we are setting up a steel-pipe supply system for the energy sector, which is expected to see medium to long-term

demand. Together with Marubeni-Itochu Steel Inc. and SENAAT, a general holding company wholly owned by the Emirate of Abu Dhabi, we have established a manufacturing and sales company in Abu Dhabi for large-diameter welded steel pipes. The plant is now under construction. We have also decided to take a stake in FHS, an integrated steelworks in Vietnam, to serve as an overseas manufacturing base that we will support with technical assistance.

#### Major Capital and Alliance Partners





## Participating in a Vietnamese integrated steelworks

We have decided to take a stake in an integrated steelworks project that is being carried out in Vietnam by the Formosa Plastics Group. JFE will provide technical support. Formosa Ha Tinh Steel (FHS), the joint venture that is executing the project, is building Vietnam's first large-scale integrated steelworks, which will sequentially bring its facilities online. JFE Steel will support the project to help ensure that FHS starts operating as soon as possible. JFE Steel also will sell FHS products as a future growth opportunity.



FHS's blast furnace, the iconic core facility at this integrated steelworks



## Groundbreaking ceremony in Abu Dhabi

Al Gharbia Pipe Company held a groundbreaking ceremony for a large-diameter welded steel pipe plant in Abu Dhabi in April 2016. The company is a joint venture established by JFE Steel, Marubeni-Itochu Steel and SENAAT, an investment company wholly owned by the Emirate of Abu Dhabi. Some 80 people took part, including the president of each company, government officials and people involved in the construction work. The guests expressed their strong wishes for the safe completion of construction and the success of the project.

## CGL begins operating in Indonesia

PT. JFE STEEL GALVANIZING INDONESIA (JSGI), a wholly owned subsidiary of JFE Steel, began operating Indonesia's first continuous galvanizing line (CGL) for vehicles. The line is scheduled to begin full-scale commercial production once test runs are approved by its customers. JSGI gives JFE Steel a third Asian base with a CGL to serve automakers, joining lines already in operation in China and Thailand.



JSGI facility for galvanizing substrate that JFE Steel manufactured in Japan

## Upgrading coke ovens in Japan

As part of JFE Steel's efforts to strengthen its manufacturing bases in Japan, the company is sequentially upgrading its coke ovens in the country. Once they become operational, JFE Steel will attain self-sufficiency in supplying the entire company with coke, which will substantially reduce costs and enhance competitiveness.



The No. 3 Coke Oven in the Kurashiki District of West Japan Works

## New cold-rolled, high-tensile strength steel and molding technique for hard-to-machine parts

JFE Steel's new 980-Mpa high-tensile, cold-rolled steel plate strikes a practical balance between outstanding elongation characteristics and hole expansibility. Compared to conventional materials, this advanced steel improves elongation by 20% and doubles its hole-expansion rate. By increasing the strength of parts with complicated shapes, it boosts the impact performance of vehicle frames while reducing weight for improved fuel economy.

We have also developed a new molding technique for parts that previously could not be machined with conventional steel. Applicable for everything from mild (low-carbon) steel to ultra-high-tensile strength steel materials, regardless of strength, it contributes to improved part performance and design, as well as lower weight.



Automotive rear hatch machined with JFE Steel's new molding technique

## Newly developed accumulators for hydrogen filling stations

JFE Steel and subsidiary JFE Container have developed accumulators that reduce the construction costs of hydrogen filling stations. Designed by JFE Container, the accumulators store hydrogen in special liner units, made with steel pipes wound with carbon fiber, and featuring a simple, straight shape to lower both material and maintenance costs.



Prototype measuring about 1.6 meters

## Highlights 2015

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|-----------|--|
| 2015      |  |
| April     | <ul style="list-style-type: none"> <li>Developed a world-leading 100-Mpa high-pressure hydrogen gas permeation test device</li> <li>Minister of Education, Culture, Sports, Science and Technology Award received for anti-seismic technology</li> </ul>   |
| May       | <ul style="list-style-type: none"> <li>JFE Western Japan baseball team won first JABA Babe Ruth Cup Tournament</li> <li>Festivals held in Fukuyama and Keihin districts</li> </ul>   |
| June      | <ul style="list-style-type: none"> <li>East Japan Works' cumulative production reached 100 million tons of crude steel</li> <li>National Commendation for Invention Award received for HOP-HIPER®</li> </ul>   |
| July      | <ul style="list-style-type: none"> <li>World's first adoption of structural crack arrest technology for large container ships</li> <li>West Power Plant No. 4 began operating at the Chiba District</li> <li>JFE Western Japan baseball team played in the National Intercity Nonpro Baseball Championship Series</li> </ul>   |
| August    | <ul style="list-style-type: none"> <li>First JFE Family Day held</li> </ul>  |
| September | <ul style="list-style-type: none"> <li>Agreement reached to participate in integrated steelworks project in Vietnam</li> <li>Merger of JFE Mechanical with JFE Electrical &amp; Control Systems announced</li> </ul>   |
| October   | <ul style="list-style-type: none"> <li>Upgrade begun on Battery A of No. 6 Coke Oven in Chiba District</li> <li>Festival held in the Chiba District</li> <li>Opening ceremony held for Jiaxing JFE Precision Steel Pipe in China</li> </ul>  |
| November  | <ul style="list-style-type: none"> <li>Festival held in the Kurashiki District</li> <li>Monodzukuri Nippon Grand Award received for JFE-TF1</li> <li>Festival held at the Chita Works</li> <li>JFE East and West Japan works' baseball teams played in 41st National Championship</li> <li>80th anniversary of Keihin District research laboratory commemorated</li> <li>Accumulator developed to cut costs and extend lifespans of hydrogen filling stations</li> </ul> |
| December  | <ul style="list-style-type: none"> <li>Environment Minister's Award for Global Warming Prevention Activity received for Super-SINTER®</li> <li>Molding technique developed for hard-to-machine parts</li> <li>High-tensile strength steel developed for excellent elongation and hole expansivity properties</li> </ul>  |
| 2016      |  |
| January   | <ul style="list-style-type: none"> <li>Began operating a CGL in Indonesia</li> <li>Decided to open childcare centers at our plants in the Chiba District</li> <li>Decided to upgrade Battery B of No. 6 Coke Oven in Chiba District</li> </ul>   |
| February  | <ul style="list-style-type: none"> <li>Completed upgrades and began operating No. 3 coke oven in Kurashiki District</li> <li>Charles Ndirangu of JFE Steel won Japan Industrial Track &amp; Field Association half marathon</li> </ul>   |
| March     | <ul style="list-style-type: none"> <li>New Machinery Promotion Award received for NEO Press</li> <li>Announced investment in Egypt-based Kandil</li> <li>Iwatani Naoji Memorial Award received for chromium-ore heating burner</li> <li>Ichimura Industrial Award received for Super-CR</li> <li>Okochi Memorial Award received for Mighty Seam®</li> </ul>  |