



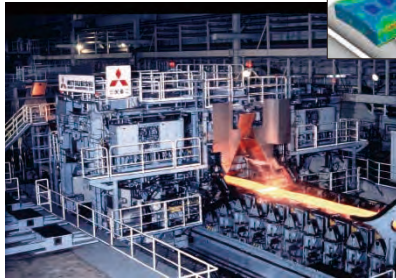
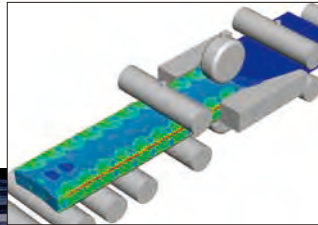
# Rolling & Processing

As the latest steel production requires exquisite rolling and processing technologies, JFE Steel implements the state-of-the-art process technologies in its full-scale production facilities, improving its steel manufacturing process.

## Rolling & Processing Technology

Technology of plasticity, like rolling and forging, is indispensable to manufacture steel products. The Rolling and Processing Research Department carries out fundamental research on working load/deformation characteristics by state-of-the-art CAE and experimental techniques. We develop innovative new processes, process technologies for high quality products and energy savings etc.

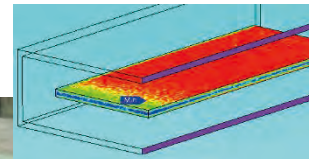
Example of FEM simulation for sizing press process



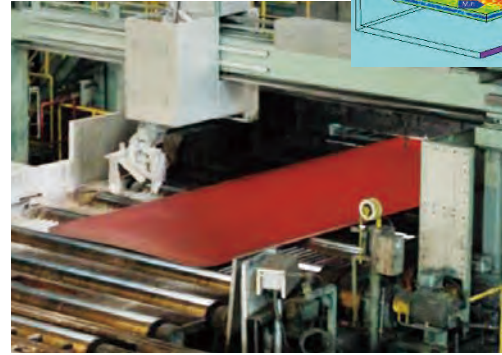
Example of developed equipment [Joining machine for endless rolling at Chiba No.3 hot strip mill]

## Heating Technology

Energy saving in heating process of steel industry is a key technology for global warming. HOP™ is an example of developed heating systems by JFE. HOP™ applies induction heating for heat treatment of steel plate combined with Super-OLAC™ after plate rolling. Our challenge for heating process technology is not limited in conventional furnace technology.



Heat generation



Heat treatment On line Process [HOP™] at Fukuyama Plate Mill

## Cooling Technology

Thermal engineering using brand-new heating and cooling technique is crucial for manufacturing high-quality products. Based on the results of numerical analysis and laboratory test, JFE Steel has developed innovative equipment, such as the Super-OLAC™ series of online accelerated cooling devices, which has the world's highest cooling performance (700K/s cooling rate for plate thickness of 3mm)

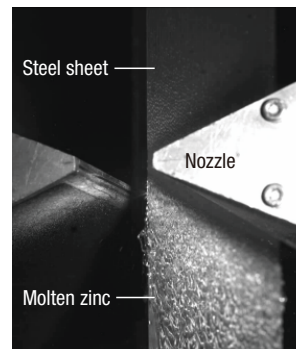
Super-OLAC™ at Fukuyama Plate Mill



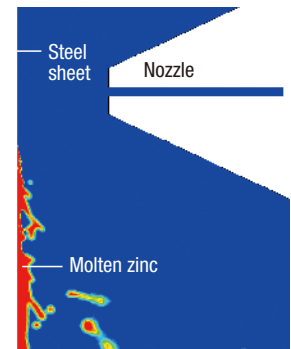
Laboratory cooling test

## Surface Treatment Technology

Surface treatment technology is important to make steel sheets with excellent corrosion resistance and formability. We are developing epoch-making surface treatment technologies by using computational fluid dynamics and various process simulators.



High-speed camera image



Numerical simulation