

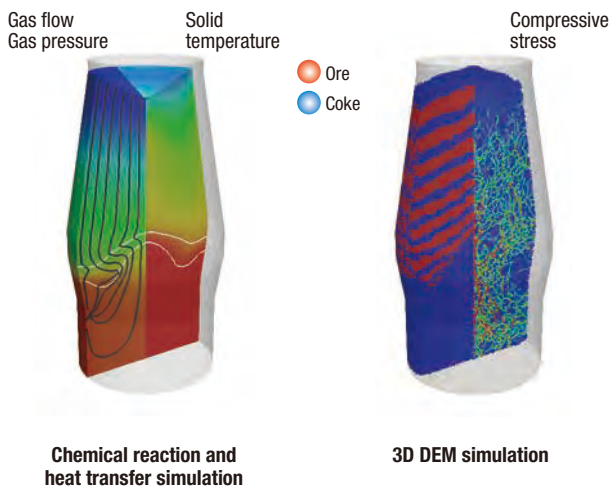


# Ironmaking

Ironmaking Research Department is in charge of development on ironmaking processes that can contribute to environment-friendly and resource-saving production.

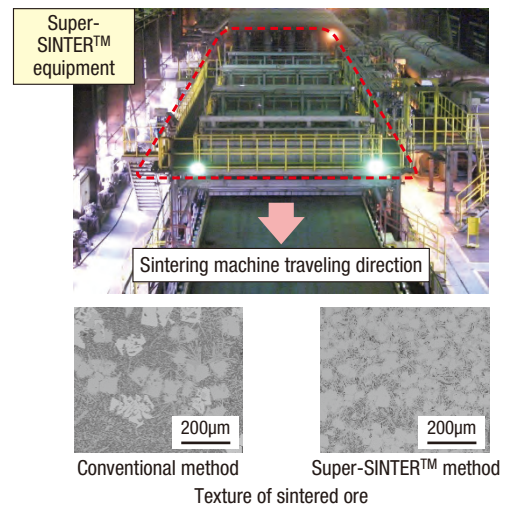
## Blast Furnace

Numerical simulation is a key technology for use of low grade resources, increase in productivity and also contribution to reduction of CO<sub>2</sub> emission. Simulations of burden distribution, pulverized coal combustion, chemical reaction and heat transfer have been studied based on measured data of blast furnaces and experiments with particle flow by Discrete Element Method (DEM) and so on.



## Raw Materials & Sintering

JFE Steel has developed new sintering technologies suitable for various characteristics of iron ore to improve ironmaking productivity. Super-SINTER™ by utilizing natural gas is one of our latest innovative technologies for improving sinter quality and reducing CO<sub>2</sub> emission.



## Coal & Coke

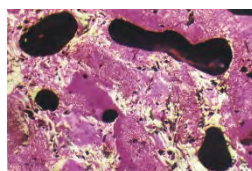
Coal structure in the molecular size and mechanism of carbonization behavior in coke making process have been studied. Those researches are contributing to utilization of various kinds of coal resources and coke making processes with high efficiency.



Large scale 250kg test coke oven



Lump coke



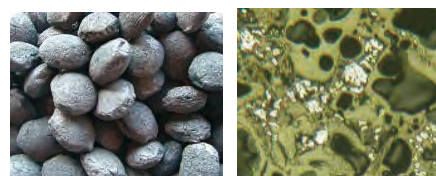
Coke microstructure

## Innovative Process (Ferro Coke)

Innovative raw material, Ferro coke, is composed of metallic iron and carbon material. Ferro coke greatly reduces CO<sub>2</sub> emissions in the blast furnace. Production process for utilizing Ferro coke was studied by using the pilot plant at Keihin District, East Japan Works.



Ferro coke pilot plant



Appearance and microstructure of Ferro coke