

Feature- I : Energy and Environment

Kobe Steel Group's Technological Development in Energy and Environmental Fields

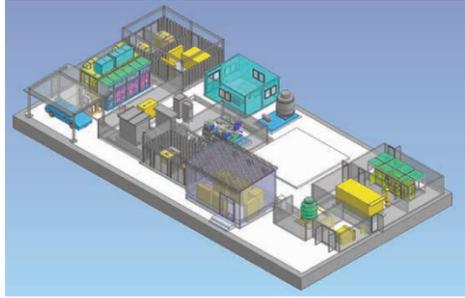


Fig.1 Demonstration facility for hydrogen refueling station using renewable energy (site area: 38 m×19 m)



Fig.2 MIDREX direct reduction plant in Tosyali, Algeria with production capacity of 2.5 million tonnes/year

Kobe Steel Group develops and commercializes technologies that meet a variety of energy and environmental needs. In recent years, global warming has become a major social problem, and the Group is working hard to develop technologies that contribute to the reduction of greenhouse gases. Its effort is directed toward the creation and saving of energy, hydrogen related technologies, and technologies using natural gas, which emits less CO₂.

Fig.1 is a 3D diagram of the demonstration facility for a hydrogen refueling station using renewable energy. Our group is engaged in the engineering of the entire hydrogen refueling station, including the production of hydrogen-related equipment such as hydrogen compressors and water electrolysis hydrogen generators. Combining the technologies and know-how cultivated through this development and these operations, our group has demonstrated a system that produces hydrogen by water electrolysis using electric power derived from renewable energy and supplies it to a hydrogen refueling station.

Fig.2 shows the latest MIDREX direct reduction plant built in Tosyali, Algeria. It is a large-scale direct reduction ironmaking plant that uses natural gas and has an increased capacity of 2.5 million tonnes per year. Not using coal, the direct reduction process generates less CO₂ than the blast furnace process does and is the only commercially proven process that can achieve a significant reduction in CO₂ emissions.

Feature- II : Advanced Materials Business

New Products and Technologies in Advanced Materials Business (State-of-the-art Approach in the Newly Launched Advanced Materials Business)

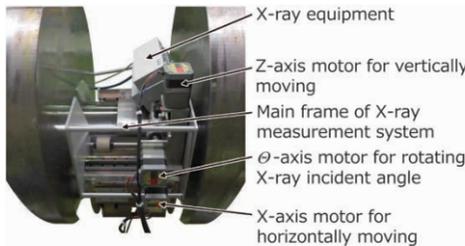


Fig.3 Photo of automatic X-ray system for measuring stress in fillet part of solid-type crank shaft

Advanced Materials Business consists of 7 units: namely the Steel Casting and Forging Unit, Aluminum Casting & Forging Unit, Titanium Unit, Aluminum Suspension Unit, Aluminum Extrusion & Fabrication Unit, Copper Rolled Products Unit and Steel Powder Unit. Many of them produce parts that are incorporated as-is into various machines. This necessitates the total manufacturing technology from raw materials to parts, as well as part-design technology and evaluation technology that meets customer needs. This issue features the latest trends in new materials, products, manufacturing technology and evaluation technology in Advanced Materials Business.

Fig.3 shows a photo of the automatic X-ray stress measurement system developed by Kobe Steel for solid-type crankshafts. This system has enabled easy and accurate measurement of the residual stress in the surface-treated crankshaft fillet, allowing customers to confirm product safety.

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