

## Direct reduction of iron ore

### Iron & Steel

Solid state direct reduced iron (DRI) with low residual metal contamination is required for the production of higher quality steels, mainly by electric steelmakers. The demand for metallic iron in a new form drove the development and proliferation of direct reduced ironmaking. The need to produce DRI led to a steep increase in the construction of DR plants using shaft furnace and fluidized bed technologies in regions where inexpensive natural gas was available. Competitive coal-based DRI production technologies have emerged including rotary kiln and rotary hearth DR processes and shaft furnace technology utilizing synthetic gas produced in coal gasifiers.

Plentiful, inexpensive natural gas from shale formations in North America has boosted demand for natural gas boxed DR plants in the region. The attractive economics and smaller environmental footprint of DR/EAF compared with conventional BF/BOF steelmaking drive the booming market of DRI production plants.

Hatch has completed conceptual and feasibility studies, design, engineering, construction, commissioning and operations support services for DR plants around the world. We have also assisted clients with process consultancy and engineering services to improve and optimize DRI plant performance. Clients value our undisputed reputation and professional approach to the selection of the most suitable DR technologies for their project needs.

Our services to the DR industry include:

- Prefeasibility and conceptual studies to identify and outline suitable solutions given the specific conditions for each project
- Engineering studies through a staged front-end-loading (FEL) process to select the most suitable technology and define the best solution from preliminary design to the implementation stage
- Complete EPCM services for implementation
- Operations support, benchmarking, and asset evaluation
- Scale-up, technological, and commercial risk evaluation
- Due diligence and consultancy services for the DR industry and its clientele.

We are dedicated to delivering the best-in-class service to our clients through centers of excellence with key professionals who have substantial track records and experience in process and technology development, design, engineering, construction, commissioning and operation of DR processes and plants. We help our clients select the best suited DR technologies, and identify potential technological risks and opportunities identified.



Qatar Steel —Hatch provided consultancy services for the selection of technology and equipment for a DRI plant.



ArcelorMittal Canada DR Plant – Hatch provided wraparound engineering services for module I and EPCM services for its upgrading.

#### Contacts

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Our FEL approach to engineering enables an optimum project cost and fast implementation time by reducing rework in later stages of the project.

Strong and sustained support by our project delivery group ensures professional implementation and management of our DR projects.

