



2 MTPY MIDREX[®]
HOT BRIQUETTED IRON PLANT
VOESTALPINE TEXAS LLC, TEXAS, USA

CORPUS CHRISTI, TEXAS, USA

THE BIGGEST OVERSEAS INVESTMENT OF VOESTALPINE

MAIN BENEFITS

- Safe and clean ironmaking due to direct reduction based on multiple references
- HBI production for the voestalpine group and partly for the merchant HBI market
- HBI also to be charged to voestalpines blast furnaces allowing for
 - Higher BF productivity
 - Lower specific coke consumption
 - Reduced specific CO₂ emissions
- Safer transport and storage of HBI compared to DRI (Direct Reduced Iron)
- Highest iron yield achievable by captive briquetting plant for briquetting of fine iron ore dust and sludges



HBI plant tower and reformer

THE CUSTOMER

Name: voestalpine Texas LLC

Location: Corpus Christi Bay, Texas, USA

voestalpine Texas LLC is the local presence of the voestalpine group in the south of Texas and a 100% subsidiary of voestalpine AG.

With an annual steel production of 7.8 mtpy, voestalpine is the biggest steel producer in Austria. Headquartered in Linz/Austria, voestalpine has over 500 companies in 50 countries on 5 continents. The group itself has around 47,000 employees and stands out for its high quality products and high sense of responsibility for the environment. It is one of the leading partners for Europe's automotive sector and for oil and gas industries worldwide.

THE CHALLENGE

Primetals Technologies and consortium partner Midrex Technologies, Inc. received an order from the Austrian voestalpine group to build a direct reduction plant in the United States. The Midrex plant is constructed near the city of Corpus Christi, Texas. It is designed to produce two million metric tons of hot briquetted iron (HBI) per year, making it the largest single module of this type worldwide. The order value for the consortium is in the three digit million Euro range. Operation of the plant started in September 2016.

VIRTUAL REALITY EXPERIENCE

Primetals Technologies has developed an app for iOS and Android devices with which you can inspect the Corpus Christi plant in a three-dimensional environment. For the full experience, please use the app with Google Cardboard glasses or a comparable 3D viewer.



primetals.com/vr

THE SOLUTION

The direct-reduction process removes the bonded oxygen from pelletized iron ore at elevated temperatures by means of a reducing gas that is generated from natural gas.

Reduction takes place in a low-pressure reduction shaft by reduction gas that was generated by natural gas reformation and heating in a natural gas reformer. The iron ore pellets that are charged into the reduction shaft through feed pipes, are reduced to metallic iron by the reduction gas in counterflow, are discharged and finally briquetted to high quality HBI. Due to the utilization of natural gas (and not coke as reducing agent as in the traditional blast furnace route), the process is considered to be environmentally friendly. As a result also carbon dioxide emissions are considerably reduced.

SCOPE OF SUPPLY

- Mechanics
 - Furnace feed conveyor
 - Hot briquetting system
 - Hot fines recycling system
 - Cooling conveyors and vapor removal system
 - Seal gas system
- Utilities and water treatment plant
 - Natural gas reducing station
 - Air compressor station
 - Water treatment plant incl. sea water cooling towers
 - Raw water treatment (reverse osmosis)
- Electrics, instrumentation and automation
 - Power distribution and emergency power supply
 - Medium voltage motors
 - Level 1 and Level 2 systems including material handling
 - Instrumentation
 - Motor control centers
- Metallurgical services
 - Laboratory
- Balance of plant
 - Maintenance cranes/hoists
 - Basic engineering buildings

PLANT DATA

Input	DR grade oxide pellets
Annual capacity	2 mtpy HBI
Reduction furnace inner diameter	7.15 m
Number of reformer bays	20
7 briquetting presses including DRI hot fines recycling	
2 HBI cooling conveyors	
Sea water cooling circuit	
Oxide coating system	
Ferrous material briquetting system	



Hot briquetted iron

Project specifics and advantages for the local community



Roads:
540,000 sq. ft.
(50,200 m²)



Reinforced concrete:
1.6 million cu. ft.
(45,300 m³)



Mechanical equipment:
13,000 short tons
(11,800 metric tons)



Structural steel:
20,000 short tons
(18,150 metric tons)



New jobs:
150



Construction jobs:
800

Primetals Technologies Austria GmbH

A joint venture of Mitsubishi Heavy Industries and partners

Turmstrasse 44
4031 Linz
Austria

primetals.com

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