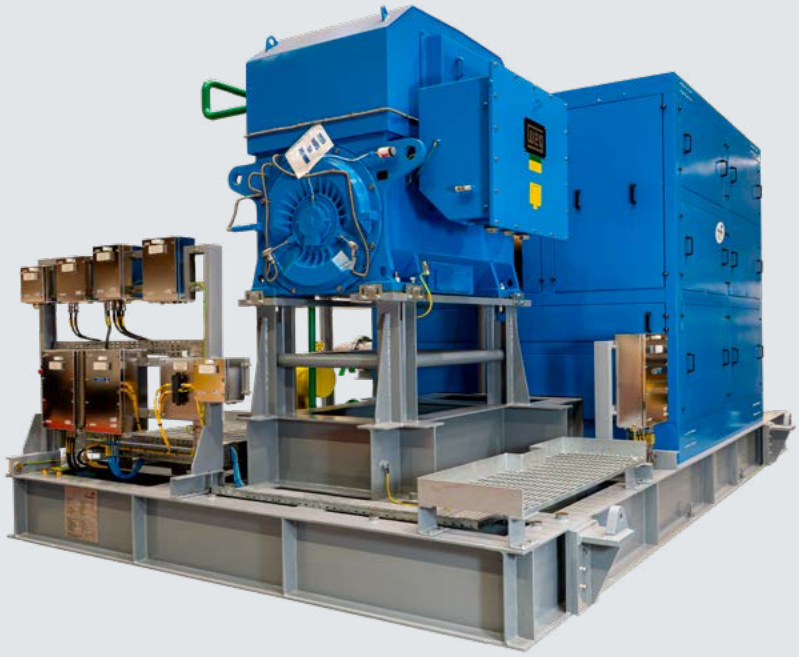
PTS Compressor

Engineered equipment for Direct Reduced Iron (DRI) production



High performance, reliable oil-free compression packages for safe, consistent transfer of hot DRI

Key benefits

- Exceptional reliability with availability rated at 99.7%
- Operates reliably at temperatures of up to 225 °C/ 437 °F
- Oil-free design eliminates the risk of hydrocarbon contamination
- Low vibration and pulsation ensures smooth operation and reduced wear
- Consistent volumetric flow is achieved independent of system pressure

Howden, a Chart Industries company, possesses extensive expertise in the design and supply of screw compressors for Pneumatic Transport Systems (PTS), involved in the transport of hot DRI.

The PTS in a DRI facility is a highly specialized application requiring stringent control of gas quality, flow, and temperature.

Compressors must deliver a continuous stream of dry, inert nitrogen to prevent oxidation and facilitate the transport of hot DRI to the Electric Arc Furnace (EAF). Oil-free operation is mandatory to avoid contamination of the product stream.

Unlike dynamic compressors, which rely on velocity and are more susceptible to erosion from particulate matter, Howden's screw compressors maintain high reliability even in challenging gas conditions.

Howden employs positive displacement screw compressors, which operate by trapping and displacing a fixed volume of gas per cycle. This ensures:

- Stable flow rates regardless of discharge pressure.
- Low vibration and minimal pulsation.
- High tolerance to particulates, thanks to non-contacting rotors separated by timing gears.



Our PTS compressor is part of a wider solution portfolio supporting DRI steel production.



Air and gas handling equipment for applications such as main air, flue gas, process gas, cooling gas and seal gas



Solutions for hydrogen production, liquid storage and regasification.

Safe transfer of hot DRI

Hot DRI is extremely reactive meaning any oil within the stream carries a high risk of fire.

The oil-free screw compressor is ideal for this application and handles gases with high levels of liquid, dirt, and particulates without performance degradation.

The seal system uses, as standard, wet mechanical seals with carbon rings to prevent any lubrication oil entering the process; optionally dry gas seals are available.

Consistent performance

Keeping the flow of the hot DRI consistent is critical within the process to avoid potential blockages and reduce material fines. The screw compressor, being positive displacement, ensures stable volume delivery, independent of pressure fluctuations.

Howden has of the broadest product ranges in the market, which means we support all mid-pressure volume requirements.

Customizable solutions

Our oil-free screw compressors are provided as fully engineered systems tailored to site-specific requirements, including skids with motors, gearboxes, and control panels.

There are flexible drive options with support for both direct drive and gearbox configurations.

We also support clients with standardized components for global deployment (e.g., NEMA for North America, IEC for Europe)

Operating conditions

Typical operating conditions required of the PTS compressor are:

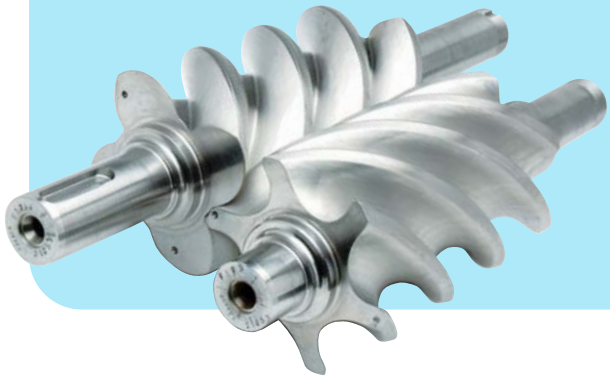
- Inlet Temperature: 40–50 °C (104-122 °F)
- Discharge Temperature: Up to 225 °C (437 °F)
- Inlet Pressure: ~3.5 bar (50.7 psi)
- Discharge Pressure: Up to 10–12 bar (145-174 psi)
- Pressure Differential: near the upper limit for oil-free screw compressors

Project example: New Build DRI Plant

As part of a decarbonization initiative, a steel producer invested in a new DRI plant to supply their Electric Arc Furnace with reduced iron.

The Howden compressor handles the conveying medium which is a gas composition of N_2, H_2, H_2O, CO and CH_4.

The process flow of 28,588 m^3 per hour (15°C, atmospheric), required one of the larger Howden models with a 408mm rotor diameter.



For further information contact our team today:

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