Howden
A Chart Industries Company

Indirect mine heating systems

Reduce greenhouse gas emissions and improve underground air quality

Revolving Around You™

howden.com

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Advanced Combustion Inc (ACI) was acquired by Howden, a Chart Industries Company, in 2018 and is now part of Howden's portfolio of renowned product brands. Howden specialises in the design, manufacture and installation of ACI indirect mine air heating systems.

Howden indirect mine air heating systems can include these configurations and equipment: indirect fired fuel oil heaters, indirect gas-fired heaters, liquid to air heat exchange systems, electric heating systems, fuel oil storage and distribution systems, E-houses, electrical distribution, and integrated control systems.

The indirect fuel heaters are capable of burning everything from natural gas and propane to waste oil. Our single-source solutions result in lower capital cost, safe and quick installations, shortened start-up times, and ease of operation and maintenance. The secret behind our brand is the unique modular approach to equipment design, manufacturing, and installation that is provided seamlessly by dedicated in-house resources.

"Our unique approach to modularization results in near limitless heating and airflow capacity."

Indirect fuel fired mine air heaters

Howden indirect fuel-fired mine air heaters can burn gaseous fuels such as natural gas, propane, and fuel oil or waste oil. All indirect fuel-fired heaters are modular in design and capable of independently supporting multiple units stacked vertically. This is achieved through product layout customisation capabilities that accommodate every application, including particular module requirements to multiple modules for large airflow and heating needs.

In addition to our unique modular design, Howden indirect fuel-fired mine air heaters are highly fuel-efficient, with heat transfer efficiencies in excess of 85%. As a result, they can have the largest gross input capacity available at 8.0 MMBTUH per module.

Every module is carefully designed and outfitted for each application, including materials selection for our custom shell and tube heat exchangers that are available in multiple grades of stainless steel and the selection of the best available burner and controls technologies.

Main benefits

- Safe operation
- Low emissions
- Extremely fuel-efficient
- Unique modular approach
- Ease of maintenance and serviceability

Notable Installation

Installation of a 480,000 SCFM, indirect-fired, arctic diesel, horizontal discharge heating system in Canada's Northwest Territories.

Thermal heat recovery

Fuel costs can significantly contribute to the OPEX of running a mine. The Howden technical team works closely with mines to identify and evaluate energy savings opportunities through heat recovery.

Howden can design and supply a multitude of heat recovery options that are best suited for every application. Recommended heat recovery systems are based on the quality of heat available, distances between the heat sources, and the heated fresh air. Potential heat sources for recovery can include mine exhaust air, central boilers, power generators, compressors, and even geothermal.

Howden thermal heat recovery options typically include all infrastructure required from the heat transfer point to the fresh airstream. This equipment can consist of stand-alone heat transfer coils, liquid pumping stations, control and automation systems. Additionally, this equipment can be combined with other heating methods, such as direct or indirect fuel-fired mine air heating systems.

Main benefits

- Combined heat recovery system resulting in operational flexibility.
- Ease of maintenance and serviceability.
- Energy savings.
- Customizable

Notable Installation

Installation of a 725,000 SCFM, indirect-fired, diesel heating system in conjunction with glycol heat recovery modules located in remote Nunavut, Canada.

Electric mine air heaters

Howden electric heaters are an ideal option where power can be made available at a reasonable cost.

All electric heaters are built with the same modular design philosophy as our direct-fired heating systems. Typically, the design configuration and capacity of an electric mine air heater are limited only to the electric power available.

The electric heaters use industrial-grade, Incoloy tubular elements selected for optimal functionality and maintenance. In addition, heating elements are specifically designed and installed in banks to allow ease of removal for service and maintenance.

Electric heating systems include SCR and PLC control systems and can consist of all necessary electrical infrastructure for power delivery and isolation.

Main benefits

- No fuel requirements
- Simple and safe operation
- Easy to maintain and service
- Zero emissions.
- Ease of installation
- Easily combined with fuel-fired systems for operational and Opex flexibility.
- A unique modular design approach
- Reduced maintenance costs

Notable installation

Located in a mine in Canada's Northern British Columbia.

Fuel storage and distribution

Most Howden indirect fuel-fired mine air heaters operate on fuel oil.

A typical Howden heating system will include the necessary fuel storage and distribution systems. In addition, Howden will design the piping infrastructure between all devices and supply fuel storage tanks, fuel pumping skids and mechanical buildings, fuel blending systems, in-line oil heaters, and control systems to monitor and link fuel storage and supply to the heating system.

Main benefit

- Integrated and designed to accommodate each specific application and location.

Notable Installation

The Fuel Oil (diesel) and Waste Oil tanks are located in a mine in Canada's North-West Territories.

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