



Energy efficient Minfurn™ for regeneration of activated carbon

The energy efficient, new generation Minfurn™ using DRH technology is an ideal solution for activated carbon regeneration. With every adsorption cycle in the process, the activated carbon loses its adsorption ability due to contamination by organics. Thermal regeneration decomposes the organic matter and restores the original activity of carbon.

Minfurn is a new generation furnace used for regeneration of activated carbon using Direct Resistive Heating (DRH). DRH generates heat inside the carbon bed which results in minimal heat loss and maximises the energy utilisation making Minfurn a highly energy-efficient furnace for regeneration of activated carbon. Minfurn has several advantages over conventional carbon regeneration equipment:

- Continuous operation.
- Smaller foot print than equivalent kilns and batch operated furnaces.
- Fewer moving parts, thus lower maintenance cost and break downs.
- Efficient energy utilisation.
- Refractory walls that resist high temperature and corrosion.
- A unique control strategy that does not rely on thermocouples to maintain temperature.
- Owing to its small size, simplicity in operation and energy efficiency, the Minfurn is economical to construct and efficient to operate.

Principle of operation

Minfurn uses direct resistive heating to achieve regeneration. To achieve the desired temperature an electrical current is passed through the carbon bed inside the Minfurn. This generates heat and the temperature required for regeneration. The optimum temperature is maintained by regulating the temperature of the bed itself, rather than using thermocouples to control the temperature of a chamber.

The electrical resistivity of carbon bears an inverse relationship to its temperature the current through the furnace is used as an indication of temperature. The discharge rate is regulated to keep the current (temperature) constant. This ensures a constant and instantaneous match between the carbon throughput and the power required for maintaining a constant temperature profile.

Highlights of Minfurn

Low energy consumption

- Without dryer <0.6 kWh/kg.
- With dryer <1 kWh/kg.
- *In situ* heat generation results in highest temperature inside the carbon bed.
- Highest energy efficiency.
- Low maintenance cost.
- Fewer moving parts – less wear and tear.
- No heater elements that require frequent replacement.
- Refractory lining more suited at high temperatures – longer furnace life.
- Can be stripped and rebuilt in a single shift.

Low carbon loss

No tumbling action – minimal attrition of carbon.

Small footprint

- Vertical tube configuration enables 100% utilisation of space.
- Small furnace for a given throughput compared to rotary kiln.

High quality product

Activity in excess of 95% of virgin carbon achieved.

Minfurn capacity

Minfurn can be manufactured with capacities of 3, 25, 42, 75 and 125 kg/h dry regenerated carbon. Customised units can be manufactured to suit client requirements.

Installations world-wide

Minfurn are operating in various process industries world-wide. Major installations of Minfurn include locations in South Africa, Peru, Zimbabwe, Brazil, Russia, Chile, Cote d'Ivoire, Sudan and USA.

ISO 9001

QUALITY
MANAGEMENT SYSTEM

ISO 14001

ENVIRONMENTAL
MANAGEMENT SYSTEM

ISO 17025

TESTING AND CALIBRATION
LABORATORY

OHSAS 18001

OCCUPATIONAL HEALTH AND
SAFETY MANAGEMENT SYSTEM

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