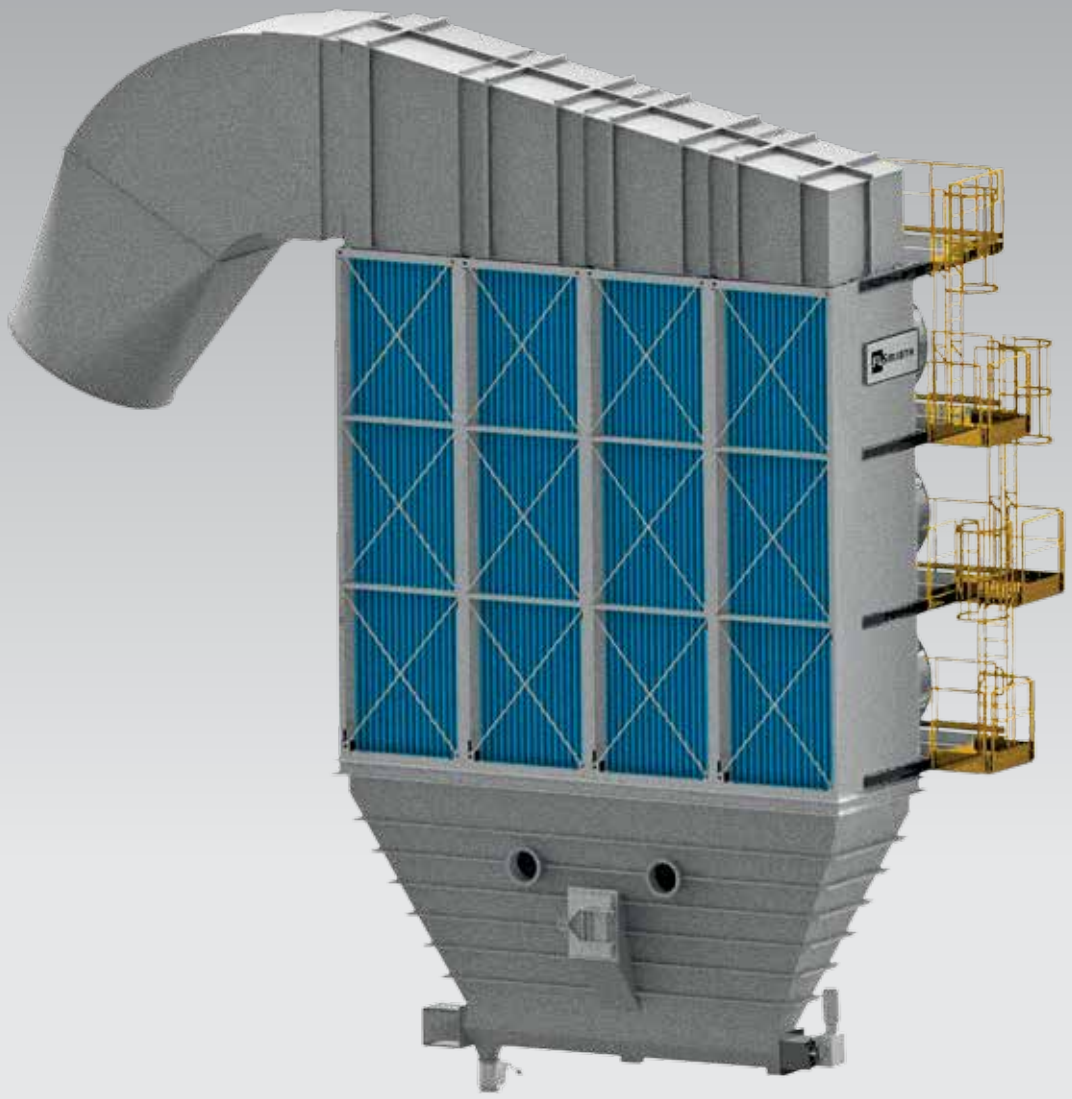
One Source

Heat exchanger for gas cooling



FLSmidth

Efficient excess gas cooling

Key benefits

- **Long lifetime of downstream filter bags**
- **Low power consumption for the cooling fans**
- **Minimal maintenance demands**
- **Proven performance and design**
- **Low initial costs and fast installation on-site**
- **Future-proof installation that can be extended to handle increases in production**

Based on more than 30 years of experience, the FLSmidth® air-to-air heat exchanger is a proven product for handling clinker cooler excess gas.

Operating principles
The excess gas from the clinker cooler is ventilated to the heat exchanger where it passes evenly through vertical parallel tubes. Cooling air is blown horizontally over the outer surface of the tubes by axial flow fans. The upper fan row has full-speed cooling fans whereas the rest of the fan rows have a common frequency drive per row. The outlet temperature is controlled by changing the speed of the fans and the number of rows in operation. This method minimizes the power consumption.

Performance and design
The heat exchanger is designed to handle cooling from 500°C to 120°C (or any range in between) and the size can be made for any kiln and cooler known in the industry.

The design of the heat exchanger includes pre-assembled modules and fans, making it fast to install on-site and reducing initial costs. Small axial fans are used to cool the hot excess gas, reducing operating costs due to decreased power consumption. The optimised design also keeps civil costs low.

Long filter bag life
The heat exchanger is designed to reduce the temperature of the excess gas to the desired operating temperature of the downstream filter.

A constant outlet temperature level is maintained, eliminating problems such as filter bag damage, unstable kiln hood draft control and limited vent system capacity even during flushes from the kiln. In case of extreme temperature fluctuations, the installation includes two safety dampers that take in fresh air to protect the filter bags.

4-module heat exchanger unit

Modular design

Mechanical concept
Heat exchanger modules are assembled in the workshop and transported to site in standard containers. Each module consists of a bundle of carbon steel tubes, assembled within a structural frame. The tubes are shop-welded to upper and lower tube sheets, with intermediate tube sheets located between fan levels to guide the tubes. The lower and intermediate tube sheets are welded to the frame, while the upper tube sheet floats to allow for tube expansion.

Easy maintenance
Easily replaceable wear parts at each tube inlet, where wear is known to occur, make maintenance easy.
In addition, each fan motor can be maintained while the remaining heat exchanger is in operation.

Dust discharge
The dust precipitated from the gas stream is collected in a bottom hopper and transported out by a screw conveyor. At the discharge of the screw conveyor, a flap valve minimises false-air intake before passing the dust to the subsequent conveying system.

Design flexibility
The heat exchanger can be configured to allow gas to enter from either the side or the top, according to the layout of your system. The tube surface area is adjusted to provide optimum performance, depending on the desired temperature drop and the expected gas flow.

The basic heat exchanger can easily be extended to meet your requirements. Modules can be added to match an increase in production, making this a future-proof solution to cool excess gas efficiently.

Standard module and extension

Inlet plenum

Tube wear parts at the inlet

One Source

www.flsmidth.com

C 11-13 400-29 ENG

Project Centre Denmark
FLSmidth A/S
Vigerslev Allé 77
DK-2500 Valby
Copenhagen
Tel: +45 3618 1000
Fax: +45 3630 1820
E-mail: info@flsmidth.com

Project Centre USA
FLSmidth Inc.
2040 Avenue C
Bethlehem, PA 18017-2188
Tel: +1 610-264-6011
Fax: +1 610-264-6170
E-mail: info-us@flsmidth.com

Project Centre India
FLSmidth Private Limited
FLSmidth House
34, Egatoor, Kelambakkam
(Rajiv Gandhi Salai, Chennai)
Tamil Nadu – 603 103
Tel: +91-44-4748 1000
Fax: +91-44-2747 0301
E-mail: indiainfo@flsmidth.com

FLSmidth