

# HeatMatrix<sup>®</sup> LUVO

## FOR INDUSTRIAL BOILERS & FURNACES

The HeatMatrix<sup>®</sup> LUVO is a new generation 'gas/gas' heat exchanger that enables heat recovery from corrosive and fouling gas streams. This heat exchanger consists of lightweight corrosion resistant plastic modules instead of heavy and costly metal components. The counter current flow configuration recovers over 20% more energy compared to existing cross flow exchangers and the lightweight construction enables easy installation in existing plants.

### Industrial boilers & furnaces

Industrial boilers and furnaces are heavy energy consumers in the industry. The typical stack temperature is 140 °C or higher, which represents a valuable opportunity for saving energy. Up to 5% of the total energy consumed can be recovered when heat from hot flue gas is transferred to the cold combustion air stream.

Common complaints about standard metal heat exchangers are their high weight, poor efficiency, significant maintenance cost and limited corrosion resistance. HeatMatrix offers a simple compact heat exchanger for direct heat integration of hot flue gas and cold combustion air. Its counter current flow characteristic provides the highest efficiency at a minimum of occupied space. The lightweight plastic internals require only a minimum of supporting structure and allow installation at elevated locations.

### Corrosion resistant

The HeatMatrix<sup>®</sup> LUVO consists of plastic internals contained in a coated carbon steel frame. The heat exchanger is resistant to high temperatures (200 °C) and acidic components such as sulphuric acid. In combination with a traditional metal exchanger also waste heat from higher flue gas temperatures can

be recovered. In this specific hybrid configuration the metal exchanger is protected against (cold spot) corrosion due to the pre-heated air from the HeatMatrix exchanger. If a metal exchanger is already applied for high temperature heat recovery, the performance of it will be improved with an additional downstream HeatMatrix<sup>®</sup> LUVO (e.g. no corrosion, less maintenance, no pre-heating steam required during wintertime, increased heat recovery and extra carbon emission reduction).

### Low installation cost

Our standardized installation concepts ensure low installation cost. For example, the HeatMatrix<sup>®</sup> LUVO can be designed for partial load operation of the boiler or furnace, which limits the heat exchanger to a cost effective size, to optimize return on investment.

### Easy cleaning and maintenance

The (fouling and/or corrosive) flue gas stream flows 'straight-through' the inside of the plastic tubes. This design and the plastic material minimizes the deposition of fouling particles. The retractable tube bundles are accessible via the top of the heat exchanger for easy cleaning and maintenance.

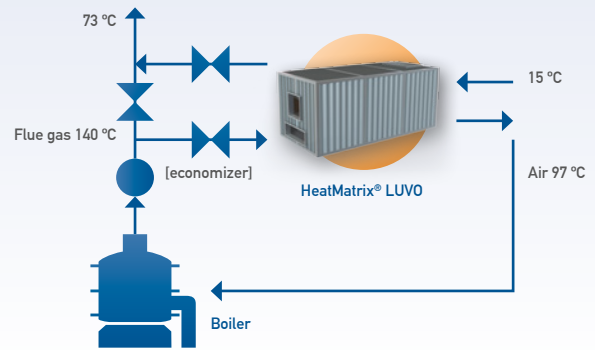
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## Case: 100.000 kg/hr flue gas from an industrial boiler

The case below shows the potential savings for an industrial boiler equipped with a HeatMatrix® LUVO heat recovery unit.



- Flue gas flow 100,000 kg/hr
- Flue gas temperature 140 °C
- Combustion air flow 90,000 kg/hr
- Combustion air inlet temperature 15 °C
- Heated combustion air temperature 97 °C
- Duty HeatMatrix® LUVO 2,050 kw
- HeatMatrix® LUVO dimensions 7 x 4 x 3 m

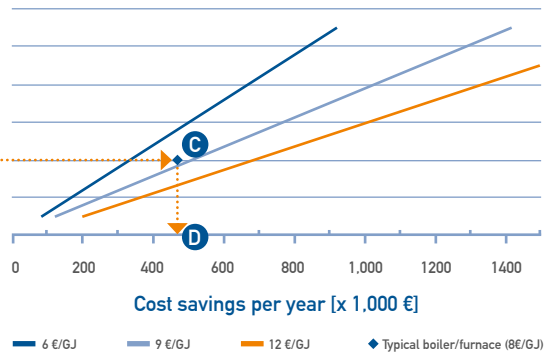
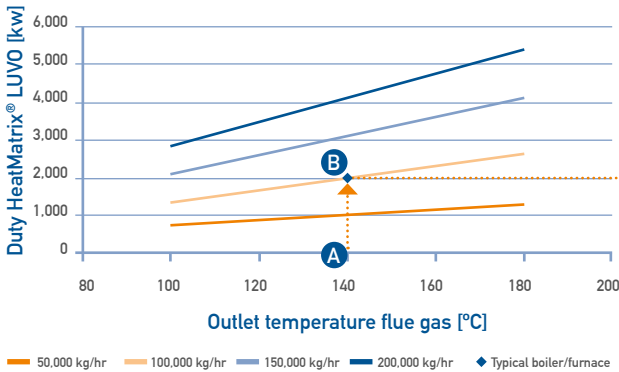


Using the graphs below the potential savings can be calculated for any industrial steam boiler or furnace capacity operating 8,000 hr per year and fuel cost (0.25 €/m<sup>3</sup> natural gas is 8 €/GJ and 0.45 €/litre heating

oil is 12 €/GJ). The savings for a flue gas stream of 140 °C (A) and 100,000 kg/hr (B) at 8 €/GJ (C) are 475,000 €/yr (D). The carbon dioxide emission is reduced by 3,600 mt/yr based on natural gas.

### Graphs for calculating potential energy savings

(follow steps from A to D)



### Contact information

Please visit our website for more information and the online business case calculator or contact a HeatMatrix engineer for professional advice on your energy saving opportunity.

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