

Munters »Heat-X« Rotate

Air-air heat exchanger

The air-air heat exchanger »Heat-X« Rotate developed is used for the heat recovery from the exhaust air of poultry and pig stables. The construction is very compact due to the straightforward construction with direct air guidance, without a preliminary filtration and in this manner generally differentiates itself from the solutions of our competitors.

Features

- No dust filtration required
- Low pressure loss in comparison to other heat exchangers in the poultry sector
- Fully automatic rotor cleaning
- Compact container construction, suitable for common lorry transports
- Almost no freezing issues
- Very high heat recovery performance figures
- Storage mass with plastic coating to satisfy the highest corrosion protection requirements
- Adjustable recovery performance by modification of the speed
- Eurovent-certified output DIN EN 13053



The core of the system is formed by a rotary heat exchanger, which with its fully automatic rotor cleaning safeguards optimal efficiency even in the event of a high degree of dust generation.

Furthermore, due to the easy access via service dampers, the hygienic and quick cleaning is possible at the end of the fattening period. The rotating storage mass made of aluminium is additionally fitted with a plastic coating in order to meet the highest requirements in regard to corrosion protection in agriculture.

The suction of fresh air is performed via a generously dimensioned weather protection grid with lamella with a streamlined design, which prevents the penetration of rain as well as leaves and birds.

»Heat-X« Rotate is available in 2 variants.

The smaller variant has a fresh air and exhaust air flow of 10,000 m³/h (5,900 cfm) and the larger unit can manage 20,000 m³/h (11,800 cfm). Both sizes are suitable for common lorry transports. Rotor systems are the most efficient systems for air-air heat recovery.

An exemplary calculation on the heat power:

Fresh air inlet

Air flow: 20,000 m³/h
 Air temperature: 0 °C
 Relative humidity: 90 %

Exhaust air inlet

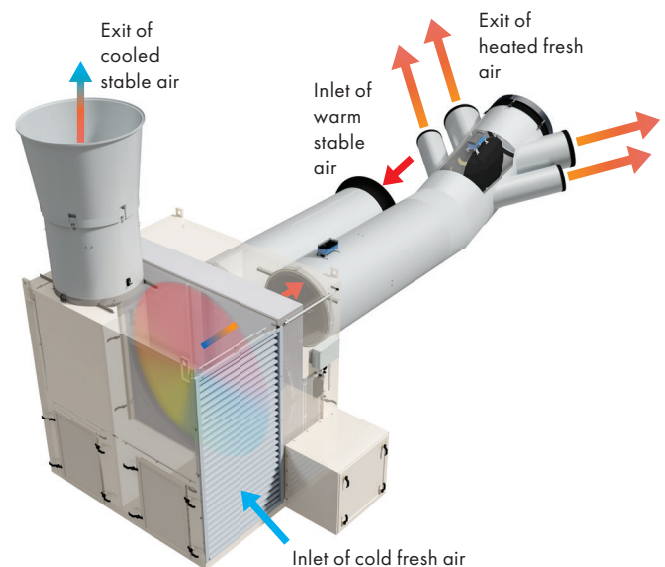
Air flow: 20,000 m³/h
 Air temperature: 25.1 °C
 Relative humidity: 67 %

Fresh air outlet

Air temperature: 14.8 °C
 Relative humidity: 79 %

Heat power:

=> 175 kW



Air flow of the heat exchanger from approx. 30%

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Control of the »Heat-X« Rotate

As standard, each system is delivered with a specifically developed control, which completely assumes control of the drive or the monitoring of the rotating storage mass and the control of the fresh air.

The exhaust air flow of the »Heat-X« Rotate is controlled by the stable climate computer via a 0-10 V signal. The controller included in the delivery assumes control of the corresponding fresh air flow. This guarantees the optimum operating point for the heat exchanger. Additionally, the control unit controls the cleaning, monitoring of the door switching contacts, the manual operation as well as the fresh air temperature at the outlet of the heat exchanger and provides an alarm signal in the event of malfunctions.

The weather guard for externally mounted control and regulation components for the »Heat-X« Rotate with removable cover for easy access is optional available.

Cleaning of the »Heat-X« Rotate

»Heat-X« Rotate possesses excellent self-cleaning properties due to smooth surfaces and the counterflow principle. In the poultry farming for example the amount of dust is very high. Therefore, the self-cleaning properties of the »Heat-X« Rotate are supported by a cleaning carriage, which is fitted with pneumatic nozzles. This cleaning carriage is activated in the event of the exceeding of an adjustable differential pressure. So the air flows unimpeded through the inlet or outlet sides of the rotating storage mass.

In the event that the cleaning of the rotor with water is desired in addition to this, e.g. after the animals are removed from the stable, the carriage is already fitted with a nozzle that can be connected to a high-pressure cleaner. The generated washing water can drain to the outside through the opened service openings.

Technical specifications

Type		10,000		20,000		20,000 Container	
		without	incl. compressor	without	incl. compressor	without	incl. compressor
Dimensions housing	[H x W x D / mm]	2,115 x 1,900 x 2,000		2,715 x 2,300 x 2,600		2,525 x 2,115 x 2,550	
Air flow	[m ³ /h]	10,000		20,000		20,000	
Fan, fresh air		E630-FN-D10-A7		E910-FN-D10-A5		E910-FN-D10-A5	

Optional available: weather guard for mounted control and regulation components and inlet nozzles for the »Heat-X« Rotate. ¹Air flow measured at 0 PA (0 inch wc).

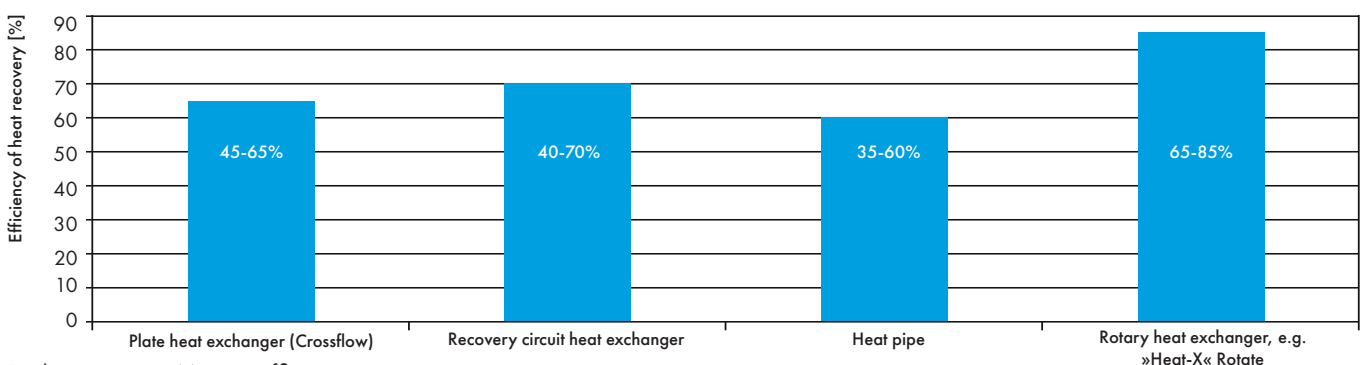
Example calculation for cost savings in poultry farming (42 days)

Average heating capacity per fattening period:	e.g. 35,000 kWh
Average gas price:	0.040 €/kWh to 0.065 €/kWh
Average higher electricity consumption per fattening period:	e.g. 1,100 kWh
Average price of electricity:	€ 0.20/kWh to € 0.25/kWh

Annual cost savings through heat recovery with 7.4 fattening periods:

Gas price Electricity price	0.040 €/kWh	0.045 €/kWh	0.050 €/kWh	0.055 €/kWh	0.060 €/kWh	0.065 €/kWh
0.20 € / kWh	€ 5,624	€ 6,534	€ 7,437	€ 8,347	€ 9,250	€ 10,160
0.21 € / kWh	€ 5,543	€ 6,453	€ 7,356	€ 8,266	€ 9,169	€ 10,079
0.22 € / kWh	€ 5,461	€ 6,371	€ 7,274	€ 8,184	€ 9,087	€ 9,997
0.23 € / kWh	€ 5,380	€ 6,290	€ 7,193	€ 8,103	€ 9,006	€ 9,916
0.24 € / kWh	€ 5,298	€ 6,209	€ 7,111	€ 8,022	€ 8,924	€ 9,835
0.25 € / kWh	€ 5,217	€ 6,127	€ 7,030	€ 7,940	€ 8,843	€ 9,753

Efficiency comparison with a number of other heat exchange systems



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