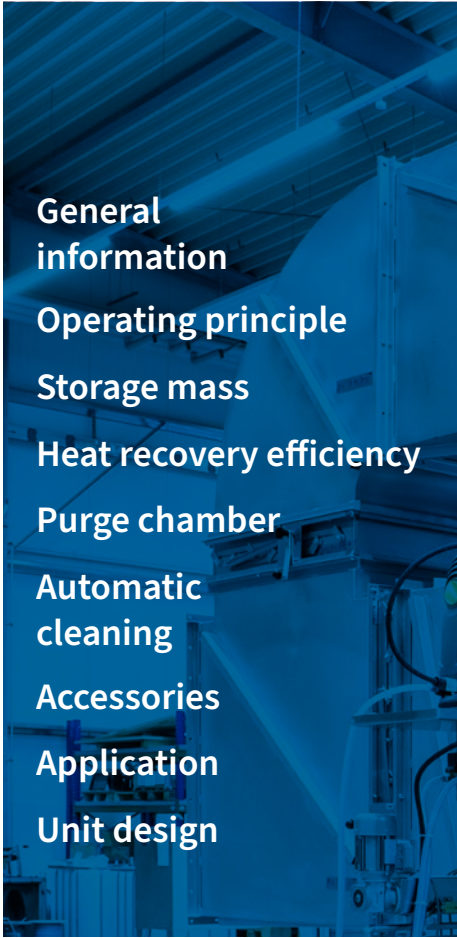


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General
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Operating principle

Storage mass

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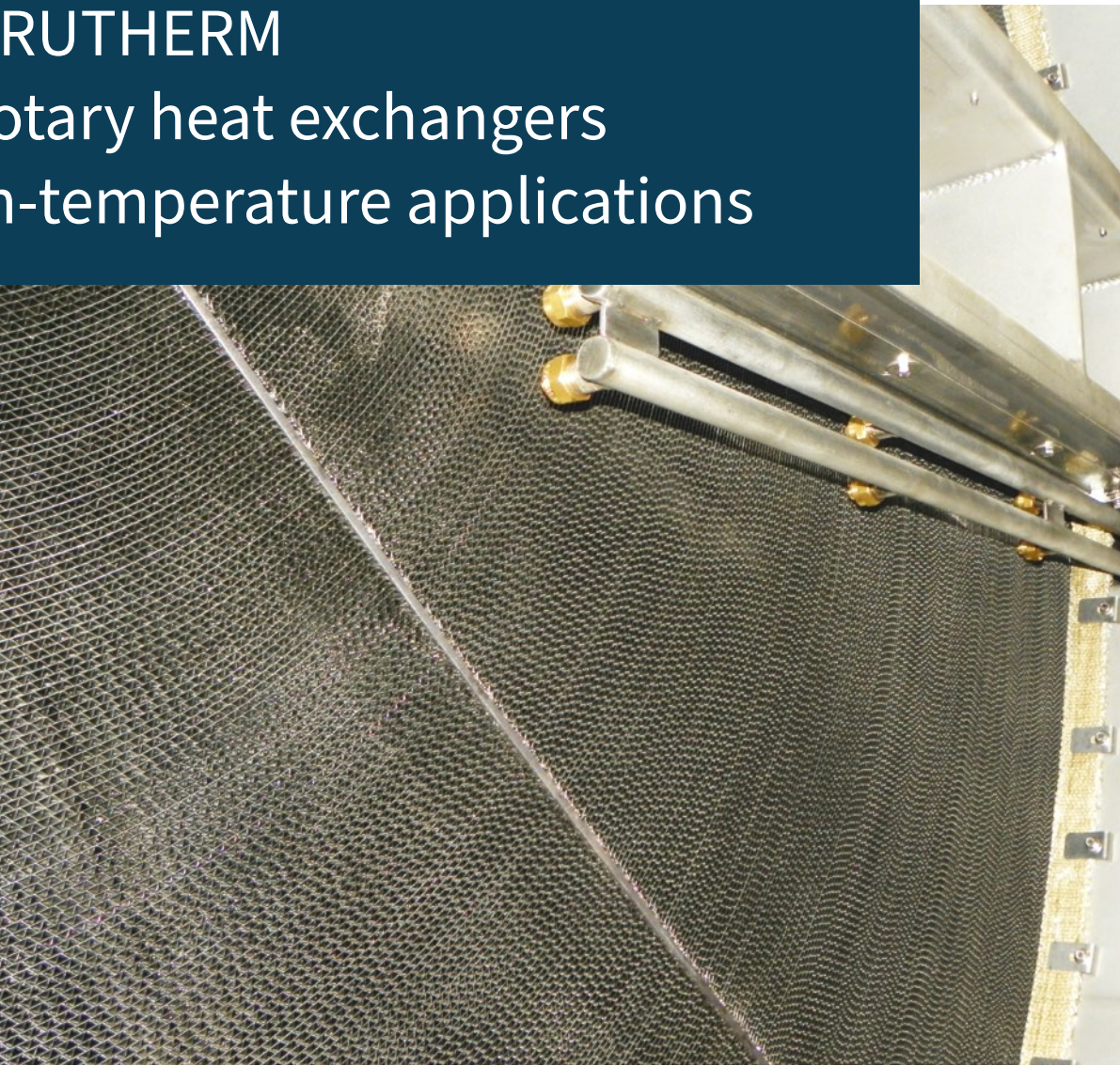
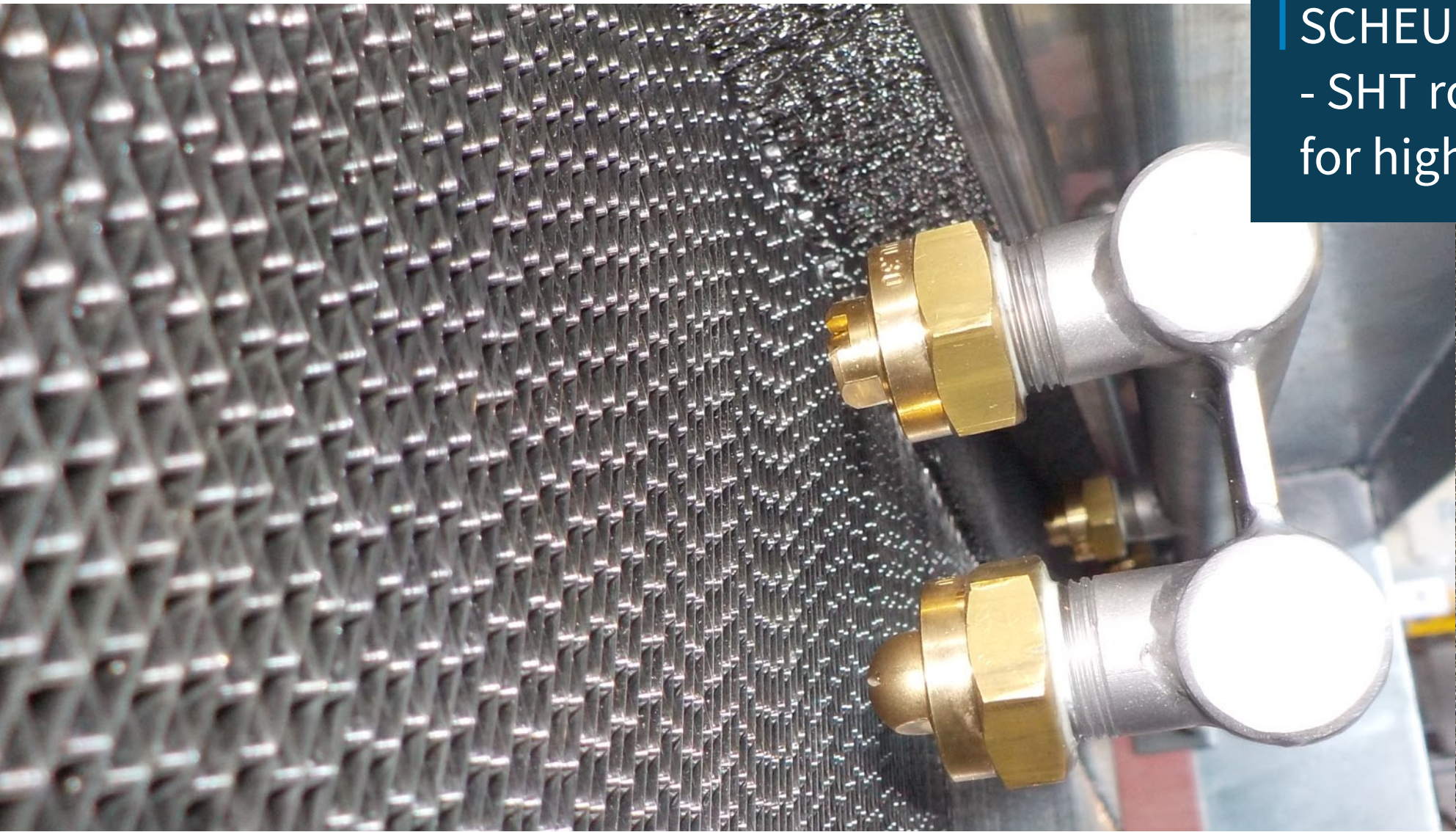
Unit design



Your specialist for heat recovery
in the high-temperature range

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SCHEURUTHERM
- SHT rotary heat exchangers
for high-temperature applications

GENERAL INFORMATION

In the manufacturing industry, the efficient use of primary energy is becoming increasingly important. Interest in technical products that allow the economical use of waste heat from production processes has risen significantly. Our rotary heat exchangers, proven in industrial applications, ensure high availability of production plants with consistently high product quality.

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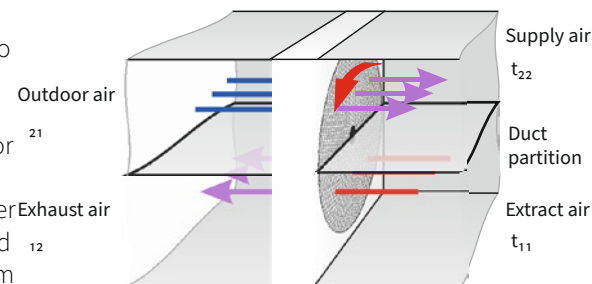
ROTARY HEAT EXCHANGERS FOR HIGH-TEMPERATURE APPLICATIONS

OPERATING PRINCIPLE

The regenerative heat exchanger is installed so that approx. 50 % of the storage mass (rotor matrix) is exposed to the exhaust air stream and 50 % to the outdoor (fresh) air stream.

The warm exhaust air heats the storage mass as it rotates through the exhaust air section, while the cooler outdoor air passes through the outdoor air section in counterflow.

The storage mass is thus alternately exposed to warm exhaust air and cooler outdoor air. Due to the prevailing temperature difference, heat is transferred from the exhaust air to the cooler outdoor air, cooling the exhaust air stream and warming the supply air stream. The rotation of the storage mass ensures continuous operation.



COMPARED TO OTHER SYSTEMS, THE REGENERATIVE HEAT EXCHANGER OFFERS THE FOLLOWING ADVANTAGES:

- | | | |
|----------------------------------|---|---|
| High heat recovery efficiency | → | high heat yield |
| Lower pressure drop | → | lower fan power requirement |
| Compact design | → | lower weight and smaller footprint |
| Easy cleaning | → | cleaning possible during operation, no downtimes |
| Good temperature controllability | → | optimum adaptation to process data such as supply and exhaust air temperature |

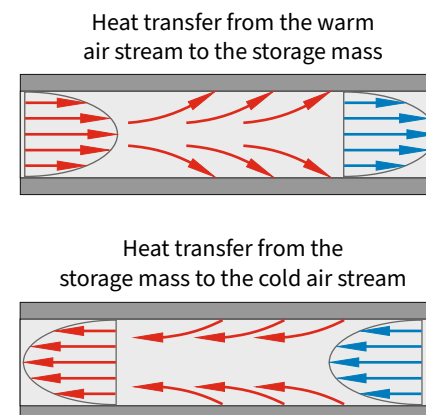
STORAGE MASS (rotor matrix)

Depending on the requirements for the heat exchanger, the heat recovery efficiency and the pressure drop can be adjusted within certain limits during design. This is achieved by modifying the lamella geometry.

The airflow inside the rotating storage mass is almost laminar, so only minor deposits form in the lamellae.

Industrial processes often involve heavily contaminated exhaust air streams which nevertheless contain a high heat potential, making it economical to use the waste heat. In this case the lamella geometry can be adapted so that heat recovery remains economical despite the cleaning effort.

To ensure the durability and service life required for industrial processes, high-grade stainless steel is used as rotor foil.



HEAT RECOVERY EFFICIENCY

The heat recovery efficiency is defined as the ratio of the temperature change achieved by the heat exchanger to the maximum temperature difference between supply air and exhaust air.

Depending on the design of the storage mass (rotor matrix), economical efficiencies of up to 80 % can be achieved.

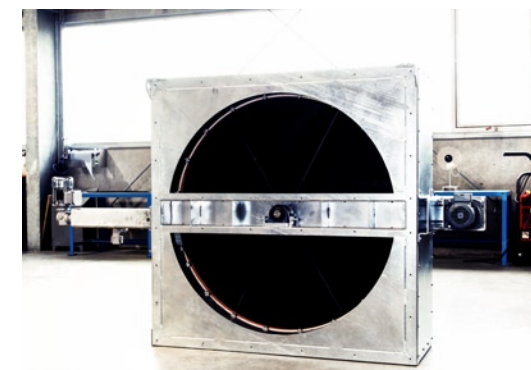
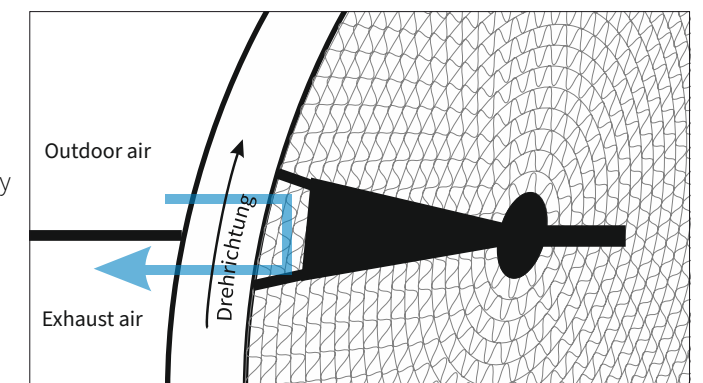
$$\text{Heat recovery efficiency (cold air)} \Phi_2: \quad \Phi_2 = \frac{t_{22} - t_{21}}{t_{11} - t_{21}}$$

PURGE CHAMBER - Option

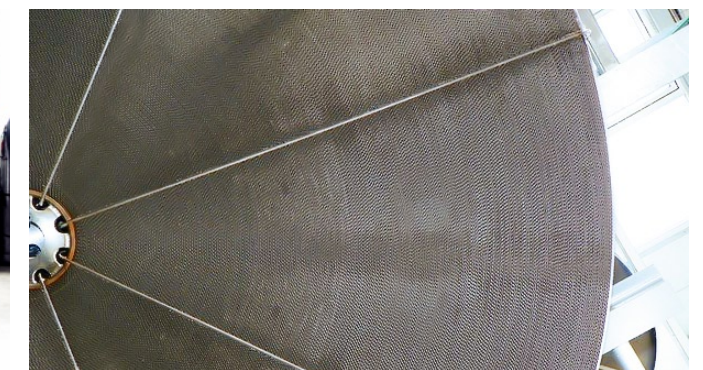
The alternating flow direction of the air streams through the storage mass provides extensive purging and reduces the carry-over of gaseous exhaust air components.

To further minimize the transfer of gaseous contaminants from the exhaust air into the supply air, a purge chamber can be installed. In this section, the storage mass is purged as it passes from the outdoor air to the exhaust air side. The additional purge air volume must be taken into account when sizing the fans.

The fans must be arranged so that a pressure gradient exists from the outdoor air to the exhaust air.



Rotary heat exchanger cassette



Rotor detail

FEATURES

AUTOMATIC CLEANING

In many industrial processes the exhaust air carries a high dirt load. For these applications, the rotary heat exchanger cassettes can be equipped with an automatic cleaning system. The storage mass (rotor matrix) is cleaned during plant operation without any interruption. Automatic cleaning can be carried out at adjustable time intervals or when a differential pressure limit is exceeded. The automatic cleaning system consists of a traversing lance using high-pressure water and compressed air for sticky contamination, or compressed air only for dust-type contamination.

ACCESSORIES - Options

- Transition pieces with inspection covers for connection to on-site air ducts
- Support base for simplified installation
- Purge chamber to minimize the transfer of gaseous contaminants
- Operator panel/terminal box for the connection of I&C equipment
- Control cabinet for the control of the heat recovery unit and the cleaning system

APPLICATION

The high-temperature regenerative heat exchanger has been specially designed for the demanding process requirements of industry. It thus meets the increased demands of tough everyday operation. Heat recovery here means optimum use of process waste heat and a reduction in heating energy costs. The possible applications are diverse and concern industrial processes in which heating energy is required or high-energy exhaust air streams occur.

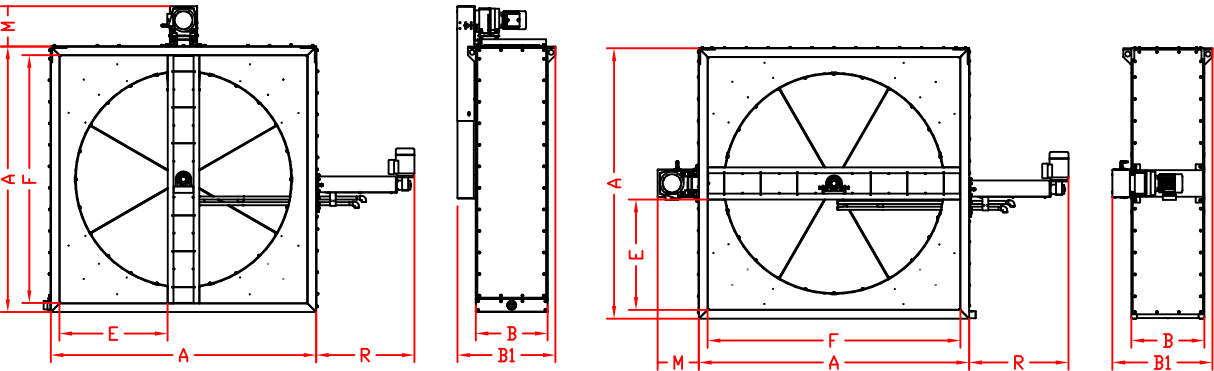
FIELDS OF APPLICATION:

- Printing plants
- Paint spraying lines
- Gypsum fibreboard
- Plasterboard
- Brickworks
- Coating lines
- Wood fibreboard
- Paper dryers
- Refractory materials
- Film stretching lines
- Thermal treatment plants
- Spray towers etc.

SUITABLE FOR TEXTILE MACHINES AND DRYERS:

- Conveyor dryers
- Multi-deck dryers
- Drum dryers
- Stenter frames
- Relaxation dryers
- Shrink dryers

UNIT DESIGN



Vertically split Horizontally split

SELECTION TABLE / DIMENSIONS

Air flow m³/h@20 °C	Size	A mm	B mm	B1 mm	E mm	F mm	M mm	R mm
							approx.	approx.
3.300 - 5.600	350	1.250	500	685	475	1.130	300	700
4.300 - 7.200	400	1.350	500	685	525	1.230	300	700
5.700 - 9.600	600	1.500	500	685	590	1.380	300	700
8.100 - 13.600	875	1.850	500	685	735	1.690	300	700
10.800 - 18.000	1.100	2.050	500	685	835	1.890	300	700
13.200 - 22.000	1.400	2.250	500	685	925	2.090	300	700
17.200 - 28.700	1.700	2.550	500	685	1.075	2.390	300	700
21.200 - 35.300	2.150	2.700	500	685	1.150	2.540	300	700
24.100 - 40.150	2.450	2.860	500	685	1.230	2.690	300	700
27.000 - 45.000	2.700	3.150	600	785	1.325	2.950	300	700
31.000 - 52.000	3.160	3.350	600	785	1.425	3.150	300	700

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