

# **Scheurutherm - SHT**

## **Rotary heat exchangers**

### **for sensible heat**

**- High temperature applications -**

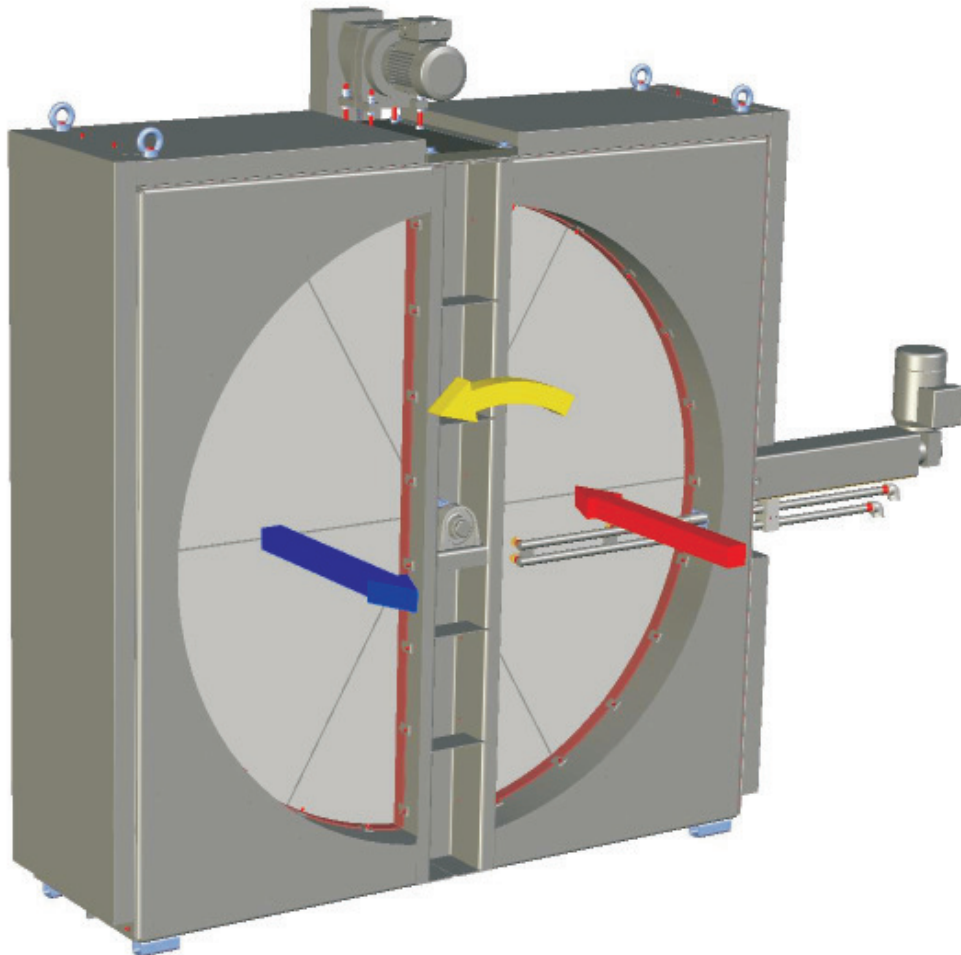
**Operating  
temperatures**

**150°C**

**200°C**

**350°C**

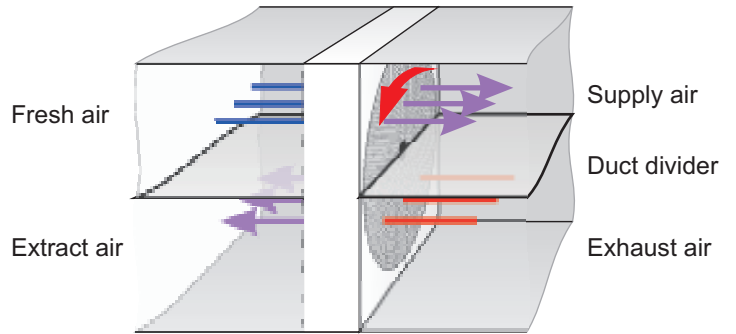
**500°C**



**R. Scheuchl**

### Function

This device is a rotary air-to-air exchanger which is installed between the exhaust and supply air duct work in a process system. It recovers up to >85% of the heat from the exhaust airstream before it is exhausted to the atmosphere and transfers this energy to the incoming supply air. The energy exchange is accomplished by the use of a permanent metal transfer.



Compared to other systems the regenerative heat exchanger shows following advantages:

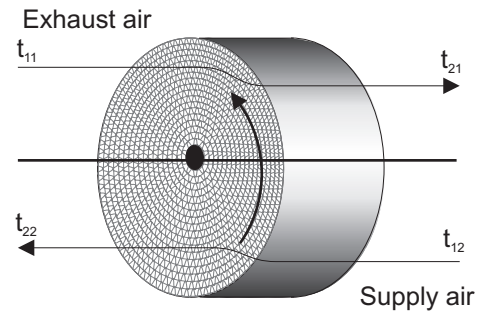
High thermal efficiency	=	high energy recovery
Less pressure drop	=	low electric energy cost
Compact unit design	=	less weight
Small unit configuration	=	less space required
Excellent cleaning feasibility	=	cleaning during process operation
Accurate temperature control	=	adaption to process temperatures

### Efficiency

The efficiency ratio is defined as an optimum of heat, recoverd by the rotating heat exchanger as a function of maximum temperature differential between exhaust and supply air stream. Efficiencies up to 85% can be reached, depending on the rotor structure and equal airflow for sensible heat only.

$$\text{Thermal Efficiency } \varnothing_{\text{SUPPLY}} = \frac{T_{22} - T_{12}}{T_{11} - T_{12}}$$

Definition of heat efficiencies according to VDI 2071



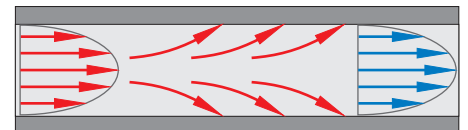
### Rotor material

The rotor is made off corrugated material with narrow air channels in the direction of airflow so as to provide rather laminar airflow and a positive guided flow through the rotor without by-passing or allowing radial flow within the rotor. The laminar airflow inside the air channels of the rotor element prevents the accumulation of particles contained in the exhaust air.

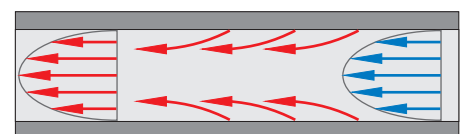
The design assures optimum operation and performance characteristics with respect to efficiency, pressure drop, low maintenance costs and less space required.

For technical applications where corrosive substances may occur in the exhaust airflow, the rotor itself is made off stainless steel (as a corrosion resistant material). Additionally, the rotor is offered in different sizes, enabling you to select the equipment wheel with performance data matching your application requirements.

#### Heat transfer from the warm air flow to the rotor matrix



#### Heat transfer from the rotor matrix to the cold air flow

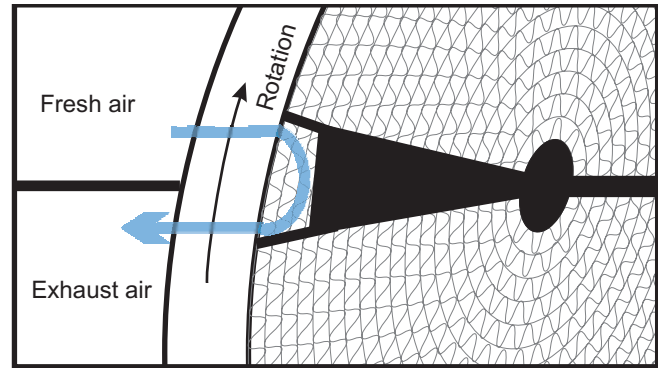


### Purge sector

The rotary air-to-air exchanger can be equipped with a purge sector which limits the cross contamination of exhaust air into the supply air to less than 0.1% by volume.

As the wheel rotates from the exhaust side to the supply side across the purge section, fresh air purges the corrugated passages in the purge section. The purge airflow is always from the fresh air side into the exhaust air side.

Each passage is purged by approximately six air changes before the downstream end of the corrugated passage rotates past the seal into the fresh air duct.



### Automatic cleaning

In case of extremely dirty exhaust air, the rotating air-to-air heat exchanger can be equipped with automatic cleaning nozzles for compressed air, water or steam cleaning. This feature enables a cleaning of the heat exchange media without interruption of the process.

(1) Cleaning nozzle mounted fix inside the casing for steam at 3 bar or compressed air at 6 bar. The corrugated media rotates along the cleaning nozzle for at least two minutes.

(2) Moving cleaning nozzle for high pressure water and compressed air at extremely dirty exhaust air. The nozzles are moving from outer diameter to inner diameter and the media will be cleaned.

### Application

The regenerative rotating air-to-air heat exchanger has been used successfully in process applications. The advantages are combining all features for proper use in process applications. The rotor and its casing are especially designed to cover the full range of industrial systems. Wherever hot air is exhausted, the rotating energy recovery wheel provides a potential for energy savings.

Areas of application:

- Printing plant
- Paint booth
- Gypsum fibreboards
- Plaster boards
- Brick factory
- Refractory material
- BOPAD-production lines
- Ovens and tunnels
- Furnaces
- Thermal treatments
- Spray towers etc.

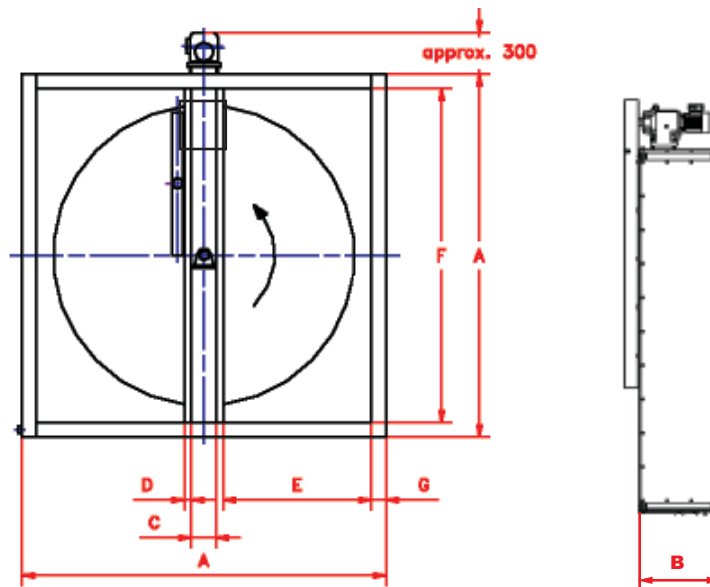
Applicable on textile machines and driers:

- Multilayer drier
- Singlelayer drier
- Drum drier
- Circular drier
- Shrink relax drier
- Conveyor drier
- Shrink drier

Areas of application within textile fabric:

- Drying
- Fixation (sanforising and shrinking)
- Coating
- Flame-retardant preparation
- Flock coating
- Production of non-woven
- Latex coating
- Lamination
- Drying of thread etc.

## Configuration



## Selection table

Air volume m <sup>3</sup> /h (20°C)	Size ICM	A mm	B mm	C mm	D mm	E mm	F mm	G mm
3.300 - 5.600	350	1250	500	120	30	475	1130	60
4.300 - 7.200	400	1350	500	120	30	525	1230	60
5.700 - 9.600	600	1500	500	140	30	590	1380	60
8.100 - 13.600	875	1850	500	140	40	735	1690	80
10.800 - 18.000	1100	2050	500	140	40	835	1890	80
13.200 - 22.000	1400	2250	500	160	40	925	2090	80
17.200 - 28.700	1700	2550	500	160	40	1075	2390	80
21.200 - 35.300	2150	2700	500	160	40	1150	2540	80
24.100 - 40.150	2450	2860	500	160	40	1230	2690	80
27.000 - 45.000	2700	3150	600	200	50	1325	2950	100
31.000 - 52.000	3160	3350	600	200	50	1425	3150	100

### R. Scheuchl GmbH

Königbacher Strasse 17  
D-94496 Ortenburg, Germany

tel +49 (0) 8542 165 0 - fax +49 (0) 8542 165 33  
info@scheuchl.de - www.scheuchl.de

### Branch Office

#### R. Scheuchl GmbH

Vorderer Böhl 39  
D-55218 Ingelheim, Germany

tel +49 (0) 6132 730 88 - fax +49 (0) 6132 733 70  
info@scheuchl.de - www.scheuchl.de

