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ENERGIES

ENERGY FOR  
NEW SOLUTIONS



## ROTARY HEAT EXCHANGERS

Highly efficient rotary heat exchangers by KASTT belong among the top products in the market with solutions for heat recovery. They are designed to save energy from all ventilation and air conditioning systems, from small flats, through office spaces, hospitals, schools, production halls to special industrial operations.

Rotary heat exchangers by KASTT excel by their state-of-the-art technology, precise manufacture and high efficiency in energy savings. We do our best to be one step ahead through innovations and continuous improvements. At the same time we are able to adapt to customer-specific requirements and needs.

### Main benefits

- Highly efficient thermal energy transfer (heat and cold)
- Transfer of humidity together with thermal energy
- Low tendency towards rotor freezing
- Low installation width in air-handling units

Rotary regenerative heat exchangers work on the principle of accumulating the energy (heat, humidity) contained in exhaust air into a slowly rotating heat exchanger rotor (aluminum foil) and the subsequent transfer of that energy into supply air. With the rotor rotating, each individual part of it gets into the stream of exhaust and then supply air.



The KASTT heat exchangers are designed with the aim to reach the maximum efficiency in heat and humidity recovery - up to 90 %, which contributes to lower contamination of the environment.

The biggest possible diameter of the exchanger rotor, of up to 5 m, represents approx. 150000 m<sup>3</sup>/h of nominal air volume.



For more information visit [www.kastt.cz](http://www.kastt.cz)

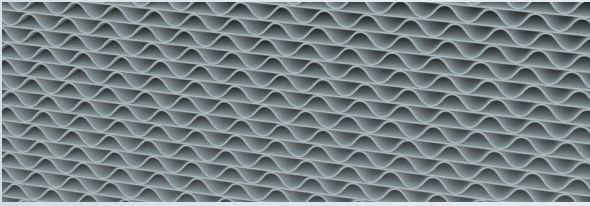
## Exchanger rotor

The rotor is alternately wound from straight and wavy layers of aluminum foil. The resulting matrix is able to guarantee an optimum air flow and transfer heat or humidity at the highest efficiency possible.

## Rotor types

### • CONDENSATION ROTOR

Is wound from aluminum foil and primarily used for thermal energy transfer.



### • HYGROSCOPIC ROTOR

Is wound from aluminum foil with a special hygroscopic layer (silica gel, zeolite) allowing the transfer of heat together with humidity with an efficiency of up to 90%.



#### Enthalpy

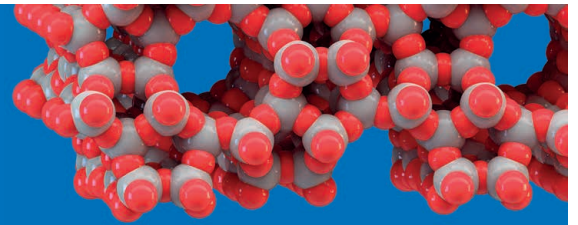
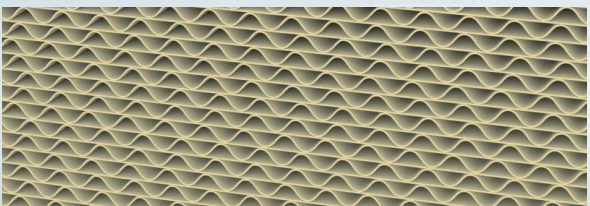
One layer of aluminum foil is coated with a hygroscopic layer. Based on the required efficiency of humidity transfer, the combination of straight and wavy layer of aluminum foil is used.

#### Sorption

Both layers of aluminum foil are coated with a hygroscopic layer (the highest possible efficiency of humidity transfer).

### • EPOXY ROTOR

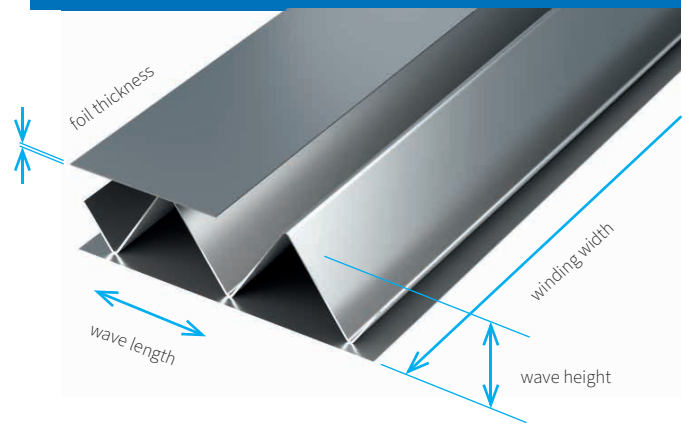
is wound from aluminum foil treated with an epoxy layer. This option is suitable for aggressive environments.



## Zeolite layer

A special zeolite layer is used for rotary heat exchangers designed for the combined transfer of heat and humidity. The layer is formed by 4A – ZEOLITE molecular sieve. Zeolite layer transfers water steam molecules and concurrently prevents from sorption and transfer of molecules of common odors and volatile organic compounds (VOC).

➔ For more details on special KASTT zeolite layer see the separate product data sheet.

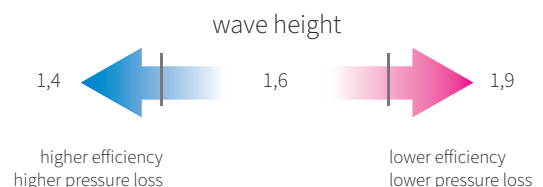


## Winding composition and geometry

- Winding geometry depends on the wave height, wave length and aluminum foil thickness.
- Wave height is selected so that the heat recuperation is the most efficient both in terms of transfer of energies as well as in terms of pressure loss. The wave height selection also depends on the purpose and location of heat exchanger use.
- At customer's request, we are able to manufacture a rotor for the winding width of 200 mm, with wave height from 1.4 to 2.0 mm.

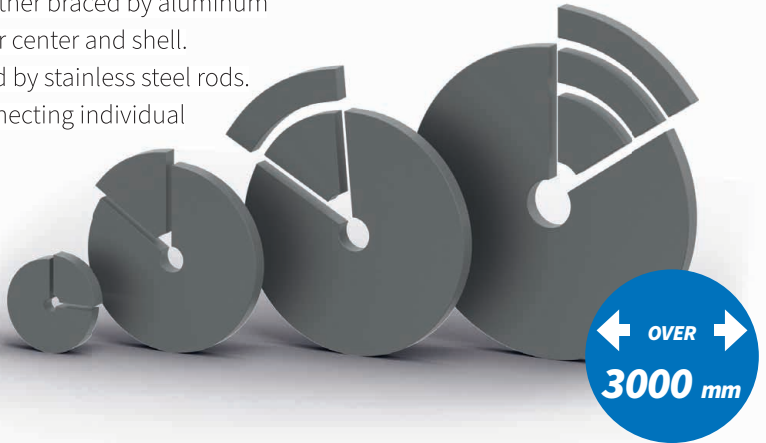
winding width [mm]	200		
wave height [mm]	1,4	1,6	1,9
foil thickness [mm]	0,04–0,075		

We also now produce rotors with a winding width of 120 mm.



## Rotor design

- Rotors up to  $\varnothing$  3000 mm can be produced as a one-piece, while larger rotors up to  $\varnothing$  5000 mm are supplied divided. Bigger rotors with diameter of up to 5000 mm are supplied divided. In order to facilitate assembly, transport or positioning, rotors of lower diameters may be also supplied divided.
- For horizontal versions of heat exchangers, rotors shall be divided starting from a diameter of 1800 mm.
- In order to assure maximum rigidity and service life, all rotors are reinforced by gluing the individual sheets together. They are further braced by aluminum round or flat rods that are firmly attached to the rotor center and shell. For special applications, aluminum rods are replaced by stainless steel rods. Divided rotors are further braced by spokes interconnecting individual rotor segments.
- For rotors over  $\varnothing$  4200 mm inclusive, the winding is divided into two segments so that the individual parts of the winding do not exceed the permissible weight for easy handling and assembly.



## Rotor sealing

The purpose of rotor sealing is to avoid unwanted mixing of supply and exhaust air and also to prevent from its escape out of the heat exchanger. We offer three different sealing options.

### Sealing options

#### **a** Contactless sealing – felt

This type of sealing is particularly intended for frame design of rotary heat exchangers.

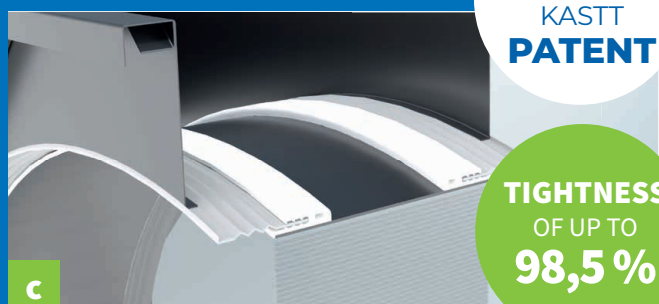
#### **b** Contact sealing – brush

This type of sealing is particularly intended for BASIC design.

#### **c** Special sealing – labyrinth

For rotary heat exchangers with requirement for the highest quality of inner environment. The patented KASTT labyrinth sealing considerably reduces overall rotor untightness. With maximum untightness of less than 1.5 % of air volume, this is the most efficient sealing of heat exchangers in the market.

 For more details on KASTT labyrinth sealing, see the separate product data sheet.



  
KASTT  
PATENT

TIGHTNESS  
OF UP TO  
98,5 %



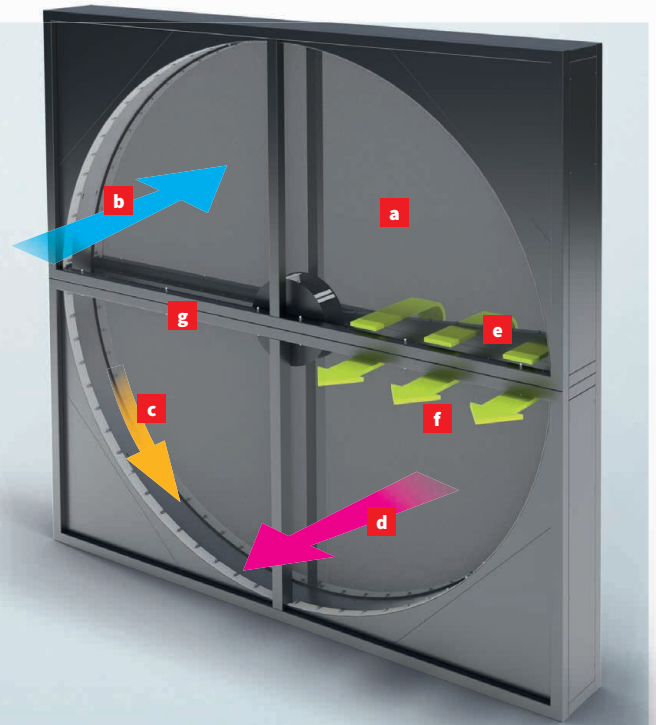
## Rinsing chamber

- Minimizes contamination of supply air by contaminants from exhaust air due to exchanger rotor rotation (so called carry-over effect).
- Is a wedge-shaped sheet metal part that forms - in the dividing plane of RHE - cut off between the supply and exhaust channel.
- Displaces a part of supply air to exhaust air.

## Rotary heat exchanger drive

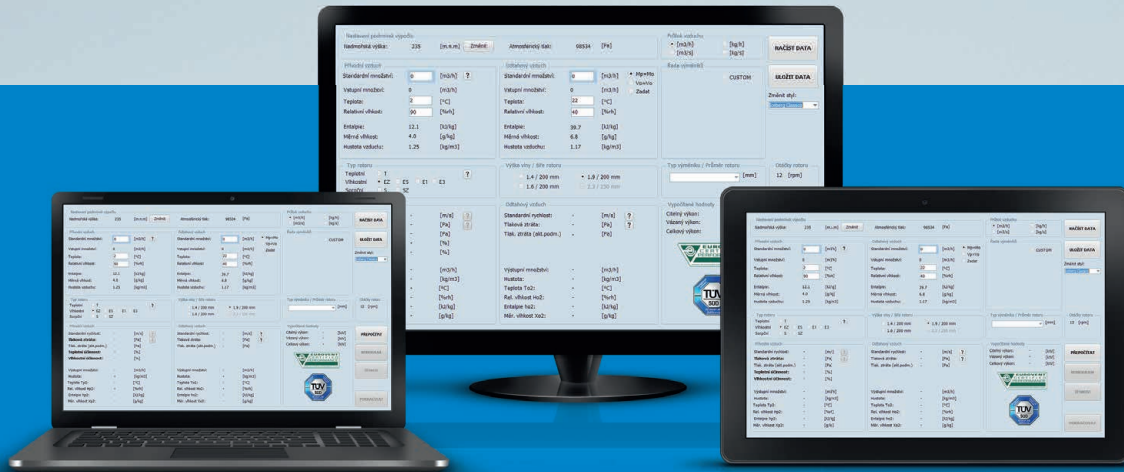
The drive consists of electrical motor with gear, pulley and belt.

KASTT rotary heat exchangers may be fitted with standard AC motors, special AC motors or advanced step-motors controlled by their own dedicated control unit.



- a** Rotor
- b** Supply air
- c** Direction of rotation
- d** Exhaust air
- e** Rinsing chamber
- f** Part of supply air
- g** Dividing plane

➤ **For more details on drives, controls and regulation of KASTT rotary heat exchangers, see the separate product data sheet.**



## Design software

### The design of RHE is based on multiple parameters:

Amount of air, its temperature and humidity, air flow rate, winding wave height, rotor diameter, rotor speed, fan position and layout.

KASTT rotary heat exchangers have been continuously developed. This is why we are also regularly updating our own design software. The software allows fast and easy design of rotary heat exchanger with the required parameters, dimensions and specifications. The software has been regularly tested and certified by Eurovent and TÜV SÜD.

➤ **Should you be interested in KASTT design software or technical support, please, send us an e-mail to: [info@kastt.cz](mailto:info@kastt.cz)**



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