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DRIVE, CONTROL AND REGULATION OF ROTARY HEAT EXCHANGERS

The heat exchanger drive consists of an electric motor with a gearbox, pulley and belt. KASTT offers its product range of rotary heat exchangers with standard AC motors, special AC motors and modern step motors controlled by a dedicated control unit - a driver.

The rotary heat exchanger output is controlled by changing the rotor speed. Speed control is possible using a frequency converter of an asynchronous motor or by changing the voltage of the control signal (0 to 10 V) in the step motor driver.

Types of drives offered

Standard AC motor with a worm-gear system

- ✓ motor speed controlled by a frequency converter (range of 18 to 87 Hz)
- ✓ minimum rotor speed 2 revolutions per minute
 - ▶ standard solution

Special AC motor with bevel-helical gear

- ✓ motor speed controlled by a frequency converter (range of 5 to 120 Hz)
- ✓ minimum rotor speed 0.5 revolutions per minute
 - ▶ energy efficient, low operating costs

Special AC motor for explosive environment

- ✓ for applications with a risk of explosion

Step motor + driver

- ✓ motor speed controlled by voltage (0 to 10 V), maximum motor speed from 0 revolutions per minute
 - ▶ optimal output control

Rotary heat exchanger control

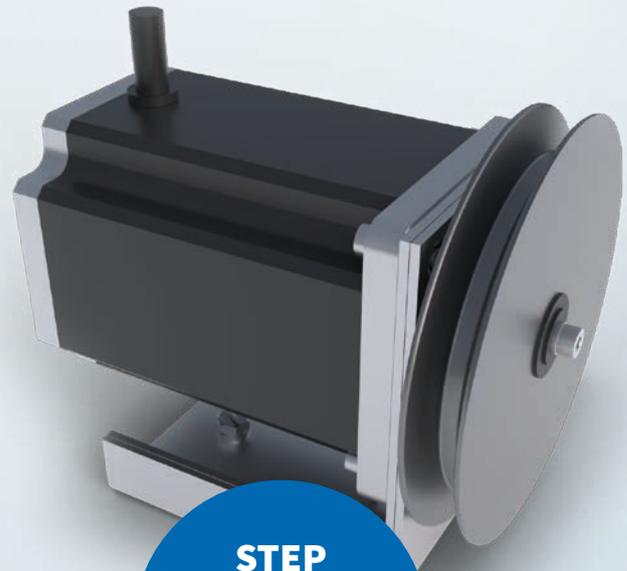
The rotary heat exchanger may be operated at constant speed (without speed control) or at controlled speed (with speed control). Variable speed is particularly desirable for heat exchanger output control, for starting high-diameter rotors or for leaning rotors using an automatic cleaning system. When necessary, reduced speed may be also suitable as anti-freeze protection of the heat exchanger (rotor speed under 1 revolution per minute).

Speed control is assured using

- a frequency converter (for asynchronous motors)
- a change of control voltage (0 to 10 V) in the step motor driver
- other concept solution within the air-handling unit or a higher-level system

For the purpose of step motors control, we developed our dedicated modern control unit - KASTT driver. The driver can be programmed independently so that the heat exchanger rotor speed corresponds to the required parameters.

Rotary heat exchangers can be further fitted with a speed sensor.



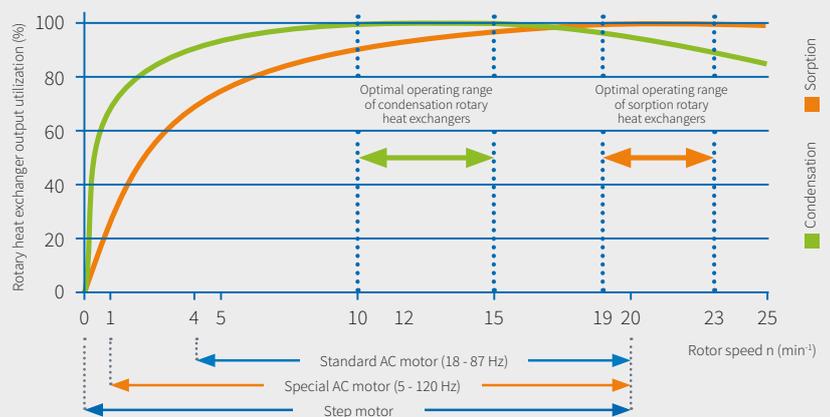
**STEP
MOTOR
+
DRIVER**



Rotary heat exchanger output control

Rotary heat exchangers reach approx. 80 % of their nominal output even at their minimum speed. Therefore, in order to control their output, special AC motors are used as they allow setting the speed within the range of 5 to 120 Hz or step motors that are characteristic by high torque even from a speed of 0 revolutions per minute.

Relative efficiency dependence on rotor speed



Note:

The graph is illustrative only. Exact parameters depend on the rotary heat exchanger type, size and specific operating conditions.



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