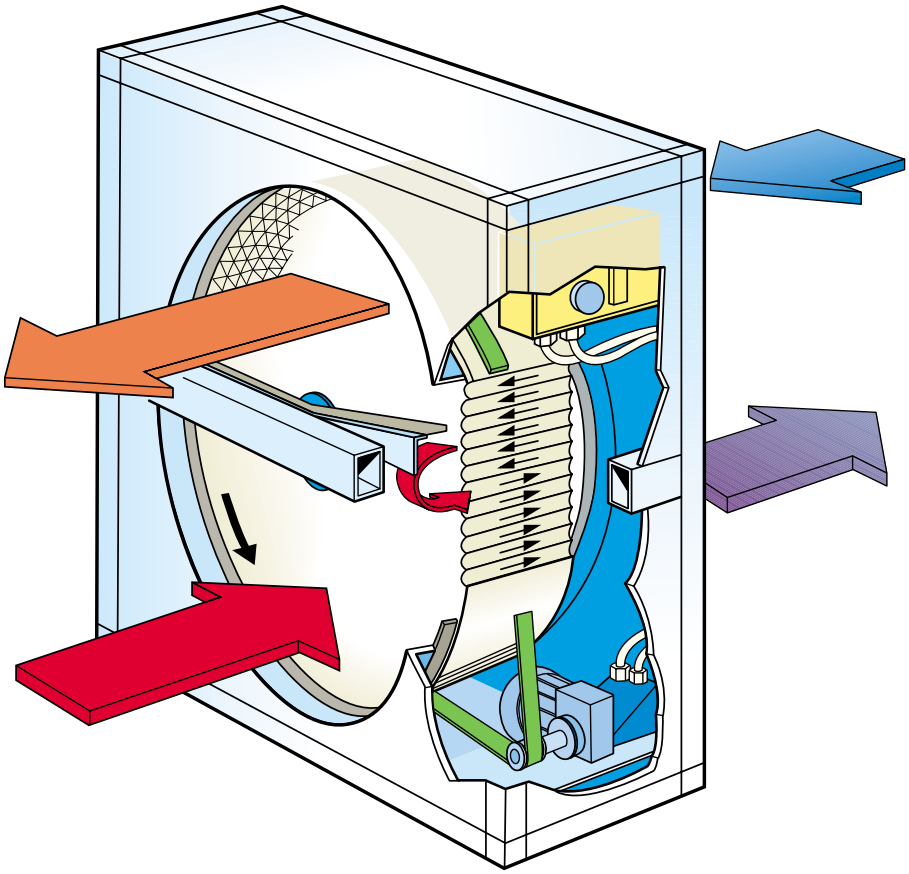
ECONOVENT ® – Rotary heat exchangers

Energy saving at its best

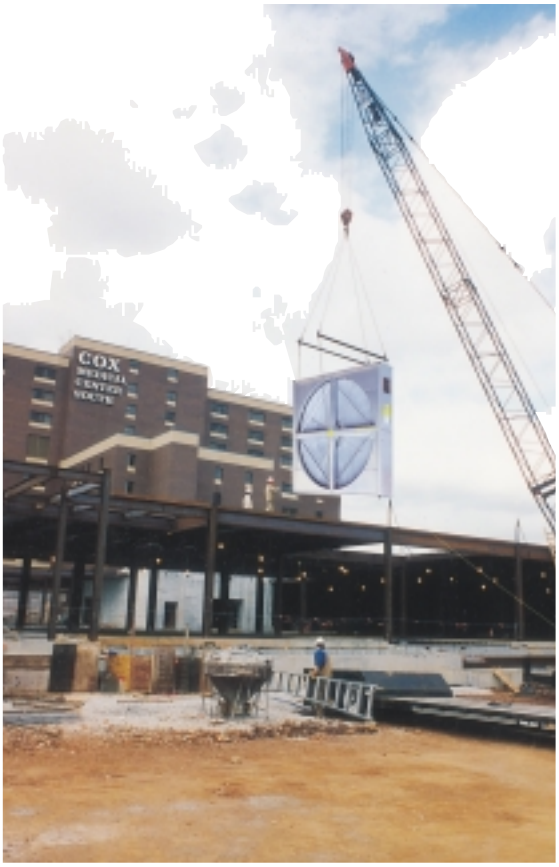


FläktWoods

Operating costs are our concern, are they yours?

We are one of the world's leading manufacturers of heat recovery systems. Our more than 30 years of experience in this field is reflected in the design of our heat recovery units. We offer a comprehensive range of heat recovery rotors for all fields of application.

ECONOVENT – THE WISEST CHOICE

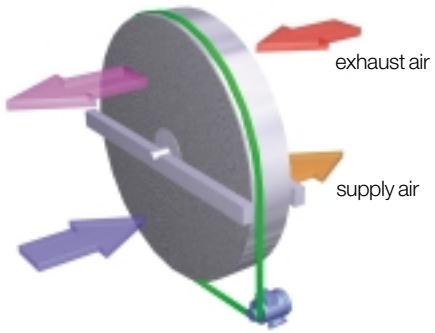


In hot climates, the heat exchangers work just as well in reverse, i.e. reclaiming cooling energy from the exhaust air to pre-cool, and dehumidify warm and humid incoming air. This reduces the overall cooling load and results in better cooling performance at a lower cost. ECONOVENT heat exchangers are easy to install and can be mounted either vertically or horizontally if a more compact installation is required.

Thanks to its high efficiency, the ECONOVENT unit can reduce the annual energy consumption for heating or cooling supply air in your AHU by as much as 90% as compared to a similar AHU without energy recovery. This will lower your initial capital costs since your heating or cooling plant need not be rated as high as otherwise.

Thousands of installations equipped with ECONOVENT throughout the world are proof of the high efficiency and substantial energy savings made possible by the ECONOVENT rotary heat exchanger.

An ECONOVENT energy recovery system can cut your investment costs by one half. A cooling system incorporating an ECONOVENT unit may even pay for itself before initial start-up by allowing installed cooling capacity to be halved.



The ECONOVENT heat exchanger is based on the principle of allowing warm exhaust air to heat one half of the rotory wheel which then turns until it comes in contact with the inlet air which is warmed. The efficiency of this process can be controlled by varying the speed of rotation.

The heat exchanger wheel may be either hygroscopic, which means that it is capable of recovering both heat and humidity, or non-hygroscopic, meaning that it transfers heat, but not moisture, from the exhaust air.

The ECONOVENT range covers air flows from 0.20 m3/s up to 45 m3/s with 20 standard sizes. Optional dimensions on rotors and casing are offered.

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ECONOVENT heat recovery systems have proven their worth under severe Arctic conditions where corrosive, saline sea air presents serious problems.

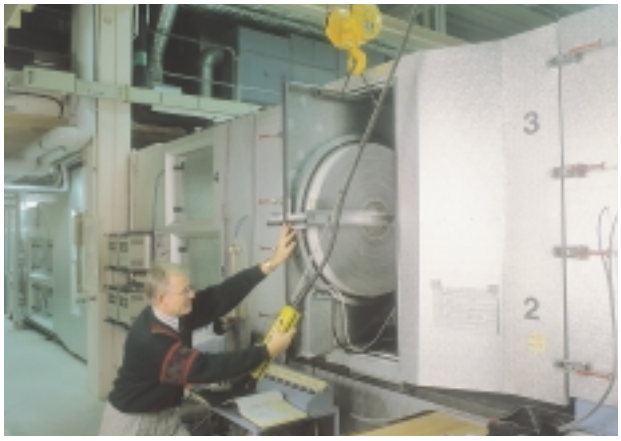
Thousands of ECONOVENT heat exchangers have been installed in hospitals, nursing homes, schools, offices, stores, shopping centers, hotels and factories.

Superior ECONOVENT quality: In a comparison made at a Norwegian University where cross-contamination and carry-over tests were conducted, an ECONOVENT heat exchanger was compared to another unit incorporating a wheel based on molecular-sieve technology. The ECONOVENT unit was a clear winner. N2O-gas, toluene, cigarette smoke and outdoor dust were used in the tests. In the ECONOVENT-unit, the incidence of crosscontamination is 22%–61% less than in the unit equipped with a molecular-sieve wheel.

ECONOVENT conforms to ISO 9001, ASHRAE 84–78, EN 29001 and BS 7550.

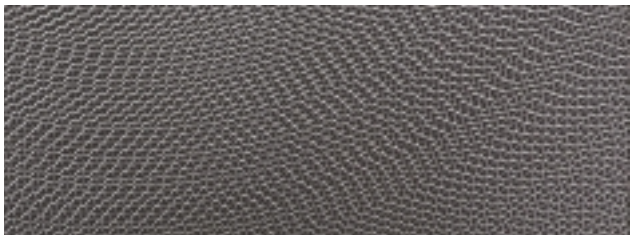
The moisture efficiency of ECONOVENT wheels will not be affected if they are cleaned with water, since no water-soluble salts, such as lithium nitrate or lithium cloride are used for achieving their hygroscopic properties.

ECONOVENT rotory wheels do not have any internal stay spokes which are known to collect dirt, boost the corrosion rate and shorten the useful life of the rotory wheel.



ECONOVENT also produces wheels of sturdier aluminum foil and with wider foil spacing for use in particularly corrosive and polluted environments.

ECONOVENT wheels are made of flat and corrugated aluminum foil of uniform width. This produces a smooth and robust rotor surface which reduces the leakage rate and edge corrosion.



ECONOVENT is the original rotary heat exchanger. It was invented in 1956. A product of relentless research and development, it is still the most widely installed and most trusted rotary heat exchanger in the world.

Guide specification

A type PUM(A–F) ECONOVENT Rotary Heat Exchanger, manufactured by Fläkt Woods – ECONOVENT
The Manufacturer shall be ISO 9001 certified.

WHEEL (rotor) – The wheel shall be made of layers of corrugated and intervening flat composite material or aluminum foil of uniform width to ensure a smooth surface. This wheel material is bonded together to form a rigid transfer medium forming a multitude of narrow channels thus ensuring a laminar flow. The wheels shall be of proven design (available on the market for at least 15 years). Corrosion protected wheels shall be able to withstand environments such as marine/coastal climates or industrial applications.

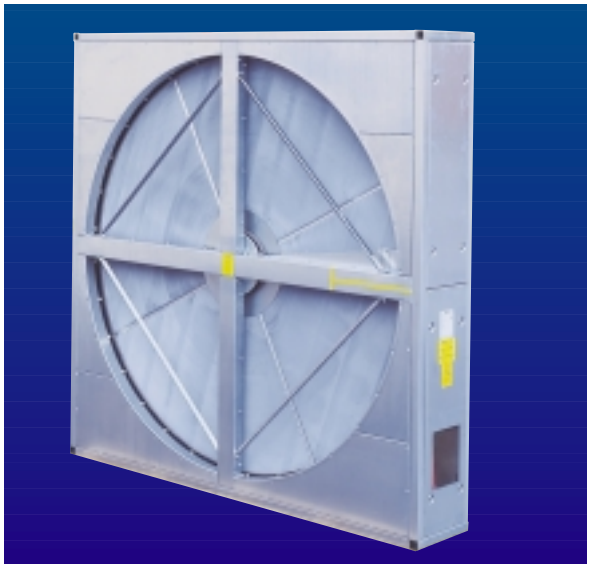
Type A: Non-hygroscopic aluminum wheel for recovering principally sensible heat.
Type B: Hygroscopic aluminum wheel for recovering sensible and latent heat.
Type C: Edge-reinforced non-hygroscopic aluminum wheel for recovering principally sensible heat.
Type D: Edge-reinforced hygroscopic aluminum wheel for recovering sensible and latent heat.
Type E: Epoxy-treated aluminum wheel for recovering principally sensible heat.
Type F: Hygroscopic composite material wheel with high corrosion resistance for recovering sensible and latent heat.

The wheel can be fully wound or, on larger units, sectorized, i.e. assembled in segments. In the latter case, the segments are assembled between rigid spokes thus ensuring structural longevity and allowing replacement of one or specific segments only; or all of the segments can be replaced without having to remove any spokes. The wheel shall be cleanable by spraying its face surface with compressed air, low temperature steam or hot water or by vacuum-cleaning (on type F wheels: compressed air or vacuum-cleaning only) without affecting its latent heat recovery properties. The wheels shall be tested in accordance with ASHRAE 84–78 method of testing air to air heat exchangers. Development and manufacture shall meet all quality assurance criteria specified in BS EN ISO 9001.

CASING – The casing shall be constructed as a single-skin, self-supporting, galvanized sheet steel structure and include rotary wheel support beams and a purging sector. The casing shall be supplied with access panels to facilitate inspection and service. Size 215 and larger shall be in two sections to facilitate shipping and handling. The smaller sizes can be delivered in a two-piece special version.

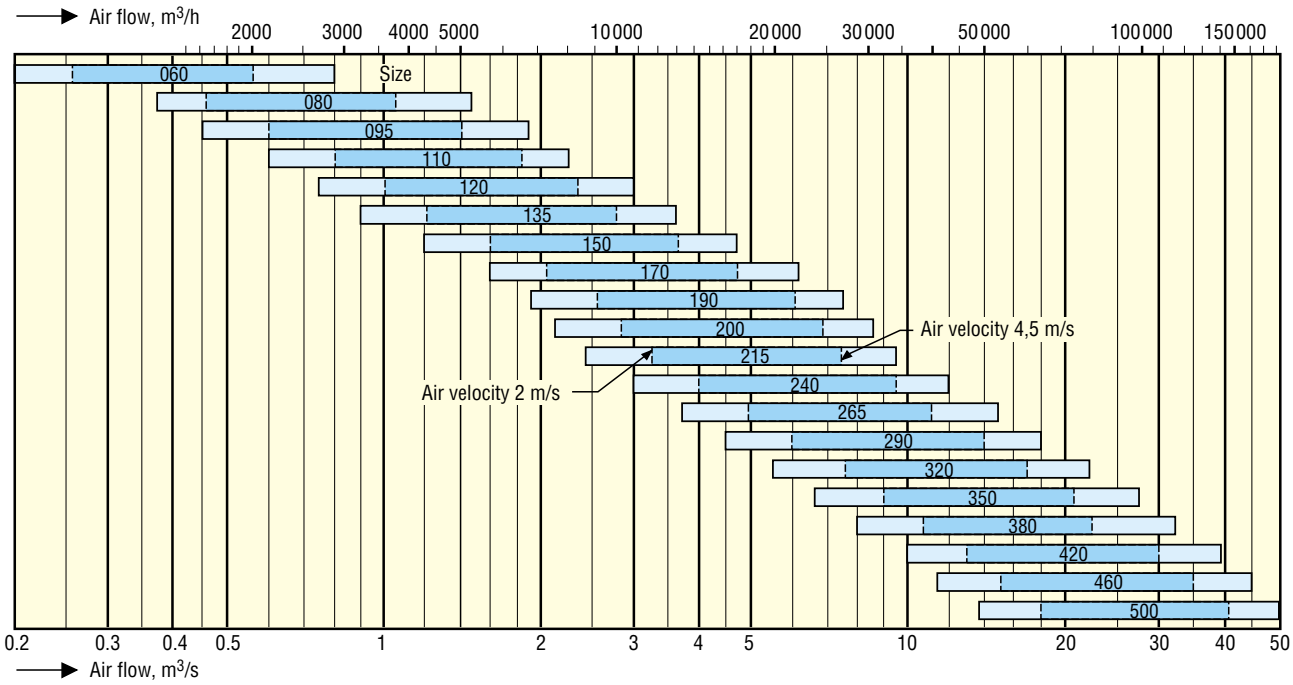
SEALS – The casing shall be equipped with adjustable brush seals which minimize carry-over to max. 0.05–0.2 %.

HUB and SPOKES – On one-piece rotor: Aluminium. On sectorized rotor: Hub made of steel, painted with anti-corrosion paint, galvanized sheet steel spokes.



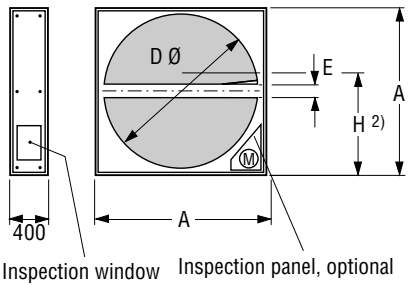
DRIVE – The wheel shall be belt-driven along its perimeter. A constant-speed or variable-speed, fractional hp drive motor shall be used. The motor shall be mounted on a self-adjusting base to provide correct belt tension. The variable-speed motor shall be specially manufactured for rotary heat exchangers and provide constant torque throughout the speed range. Moreover it shall include a slow-start feature and automatically index the wheel to keep it clean while the AHU is down or energy recovery isn't required. The drive unit shall be available with a differential thermostat for summer/winter changeover, a speed detector with alarm function and an interface for a central energy management control system and be able to accept all common control signals.

General survey – sizes – flow ranges (min. – max. air flow rates)



Dimensions & weights

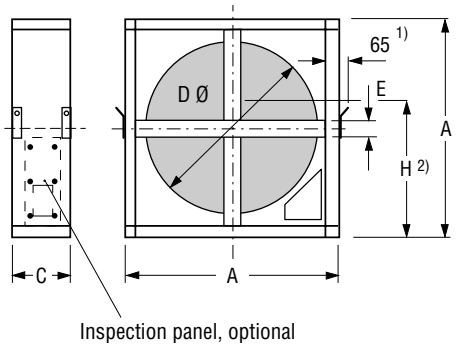
Size 060–240



2) Height H is the dimension for a split heat exchanger.

Size	A	D	E	H	Weight, kg Standard foil spacing	Wider foil spacing	Standard foil spacing industrial version
060	960	600	60	–	95	90	–
080	1100	800	60	–	130	125	–
095	1200	950	60	–	145	140	200
110	1400	1100	104	–	165	160	240
120	1500	1200	104	–	210	195	270
135	1600	1350	104	–	215	200	290
150	1700	1500	104	990	265	245	350
170	1900	1700	104	1090	305	275	395
190	2100	1900	104	1190	360	335	500
200	2200	2000	104	1240	415	355	550
215	2400	2150	104	1340	430	395	600
240	2640	2400	104	1460	530	480	740

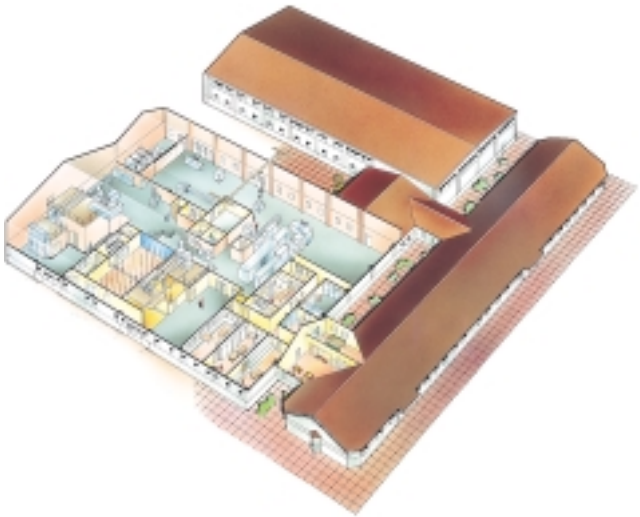
Size 265–500



Size	A	C	D	E	H	Weight, kg Standard foil spacing	Wider foil spacing	Standard foil spacing, Industrial version composite rotor
265	2900	430	2650	120	1800	870	770	970
290	3100	430	2900	120	1900	970	870	1100
320	3400	430	3200	120	2050	1200	1050	1350
350	3660	430	3460	120	2180	1300	1120	1450
380	4000	430	3800	120	2350	1500	1350	1700
420	4500	430	4200	120	2600	1800	1600	2000
460	4900	470	4600	185	2800	2900	2700	3500
500	5400	470	5000	185	2050	3500	3200	3800

1) Removable lifting lugs for sizes 265 to 500 inclusive.
2) Height H is the dimension for a split heat exchanger.

Fläkt Woods production and R&D facilities in Sweden



Visit our Technical Center – We have had 20 000 visitors since we opened this testing center. These facilities are perfect for renting for your own demonstrations, training courses, etc.

Most of us spend the greater part of our lives indoors. To ensure comfort and a sense of wellbeing, the air we breathe must be clean, and must also be at the right temperature and humidity. To most people, this is so self-evident that they don't give it a second thought. All over the world – in homes, offices, industrial plants, supermarkets, sports centers and many other premises – ventilation and air conditioning systems from Fläkt Woods in Jönköping, Sweden, are working backstage to give us the indoor climate we need.

Our products and systems are used in all types of environments – onboard ship, in the tropics and in arctic climates. The demands on air purity are sometimes exceptional, such as in surgical operating rooms and laboratories. Heat recovery is often specified for heating or cooling systems. Ventilation and air conditioning is a vast field which is focused on the well-being of people. Fläkt Woods is an environmental company with its sights firmly set on creating a good indoor climate.

You save much money by investing in an ECONOVENT®

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