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Hans Östberg

Östberg is a Swedish company with roots all the way back to 1971 when Hans Östberg was one of the recognized inventors of the circular dunt fan. Today Östberg is one of the leading global players in ventilation and energy recovery.

We are good at creating leading ventilation system, energy recovery units HERU and rotary heat exchanger, Our products are widely used in various fields, such as office building, villa, apartment, school, hospital, commercial center, landmark building, luxury cruise-liner. Footprints of our product and service are all over Europe, America, Asia and Pacific

Footprint



Quality Insurance

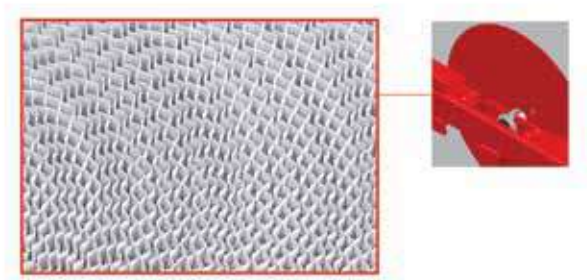


All Östberg operations are certified by ISO 9001 Standards

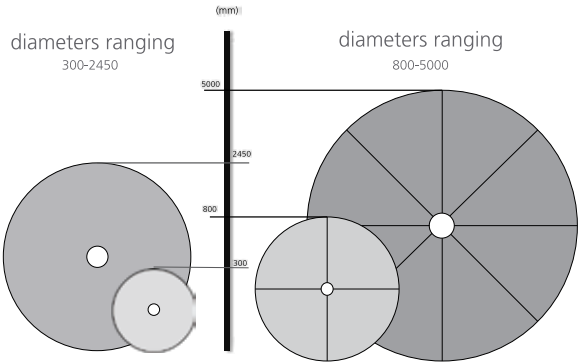


Östberg Energy Recovery Rotors are certified by EUROVENT
www.eurovent-certification.com

The rotor matrix is made for laminar airflow using alternating layers of flat and corrugated foil to provide a structure comprising small, triangular channels.

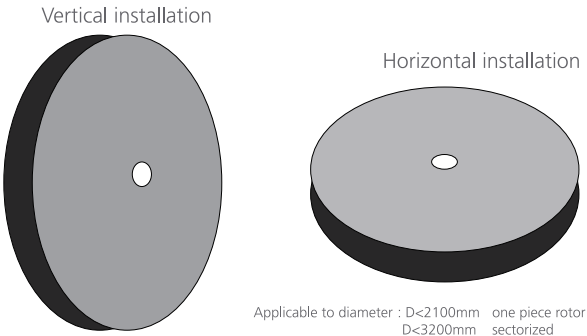


The rotor are either in one piece or sectorized. One piece rotor are made in diameters ranging between Ø300-2450 mm, while sectorized rotor have diameters ranging of Ø801-5000 mm. Sectorized rotor are divided into segments that are assembled when the rotor is installed.



The illustration above shows the number of segments for sectorized rotors of different dimensions.

The rotor are as standard manufactured for vertical installation, horizontal installation is an option and must be notified at ordering. One piece rotor up to Ø2100 mm may be installed horizontally, and sectorized up to Ø3200 mm.

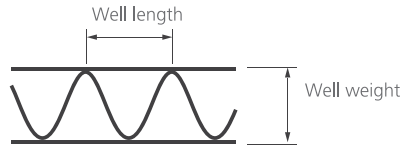


Applicable to all diameter rotors

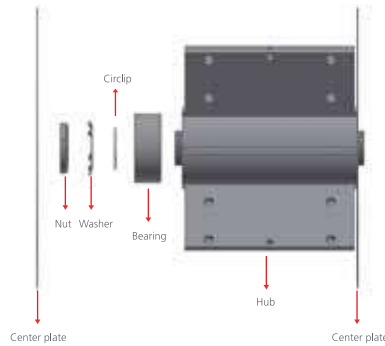
Applicable to diameter : D<2100mm one piece rotor
D<3200mm sectorized

Five different well heights are available to enable optimization of efficiency and pressure drop

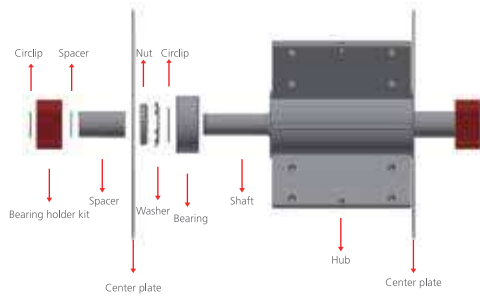
Rotor type	Well height
Extra Low (XL)	1.5 mm
Special Low (SL)	1.65mm
Low (L)	1.7 mm
Normal (N)	2.0 mm
High (H)	2.7 mm



Rotors are available in widths of 100, 150, 200 or 250 mm. in all type of foil. For large OEM customer a customized width can be provided.

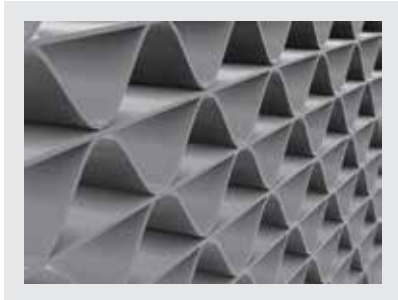


Sectorized Standard Hub, Shaft and Bearing



Sectorized Special Hub, Shaft and Pillow block

2.1.1 Foil/Media



Sorption rotor (OM)

100% of the media in this rotor is coated with molecular sieve 3Å which provide a MAXIMUM of humidity transfer capacity for MINIMAL Carry Over. The high humidity efficiency is constant throughout all climate conditions. Sorption rotors are especially designed for summer season cooling recovery and dehumidification of supply air. Therewith, it should always be used in humid and hot climates, with dry cooling systems (chilled beams) and when in winter time humidifiers are used. This substantially reduces the cooling and humidification demand of the HVAC system. The OM rotor also provides an extended corrosion protection and is therefore also suitable for marine applications.

Hybrid rotors (OH)

60% of the media in this rotor is coated with molecular sieve 3Å the remaining 40% is standard sensible media. The mix of sensible and Sorption rotor gives a HYBRID with extended support for humidity transfer. The OH have a performance slightly lower than OM, used for standard applications in comfort ventilation systems where extended need of humidity transfer is requested.

Hybrid rotors (OE)

20% of the media in this rotor is coated with molecular sieve 3Å the remaining 80% is standard sensible media. The mix of sensible and Sorption rotor gives a HYBRID with extended support for humidity transfer. The OE have a performance slightly lower than OM, used for standard applications in comfort ventilation systems where extended need of humidity transfer is requested.

Increased corrosion protection (OC, OK)

In an environment with aggressive components in the air it is either recommended to use a rotor with epoxy coating (OC) or a sea water corrosion resistant foil (OK) for better corrosion protection. Such applications can be, e.g. dairy industry, on ships or for coastal areas. Other applications for additional corrosion protection are adiabatic cooling and cooling rotors of Direct Evaporative Cooling (DEC) units.

Condensation rotors (Sensible), non-hygroscopic rotors (OT, OC, OK)

The condensation rotor is a cost-efficient solution to recover heat and is suitable for standard applications in comfort ventilation. Humidity is only transferred in cases when the dew point of one of the air streams is reached.

Type	Condensation	Hybrid	Sorption	Remarks
OM			x	3Å Molecular sieve
OH		x		3Å Molecular sieve and untreated aluminium foil
OH		x		Light 3Å Molecular sieve and untreated aluminium foil
OT	x			Untreated aluminium foil
OC	x			Epoxy-coated foil
OK	x			Seawater resistant foil (AlMg), 100µm

Casing is consist of a frame structure, purge sector and seals.

2.2.1 Structure

There are two different casing types; the slide-in model and the modular unit.

Slide-in model, (CS, OCS, DS)

Slide-in models fit into air handling units (AHU's) thus making a uniform AHU appearance possible. Slide-in casings are always uninsulated and have a large, exposed rotor surface in relation to casing size. Slide-in casings can be provided with one piece (max Ø2450 mm) or sectorized rotors (max Ø5000 mm).

CS type casing:

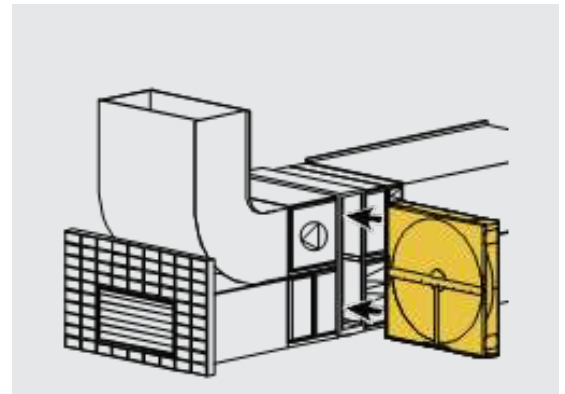
Slide-in casing light sheet metal casing for one piece rotor, Ø300-2450 mm.

OCS type casing:

Slide-in casing Heavy Duty casing for one piece rotor and sectorized rotors Ø 801 -2800 mm.

DS type casing:

Slide-in casing for sectorized rotors Ø2450-5000 mm.

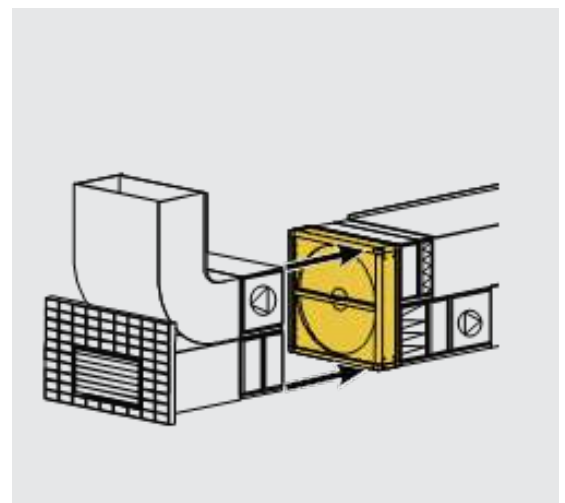


Modular units (OCS, D)

Complete units for connection to other parts of air handling unit or directly to ducting. The unit is modified so that connection can be carried out using e.g. connection panels or corner connectors. The modules are delivered with or without insulation. The modular unit can be made with a one piece casing (one piece rotors) up to Ø2450 mm and divided casings (sectorized rotors) up to Ø5000 mm. Accessories such as inspection window, ducted connection frame, lighting and condensate trays are available.

OCS type casing: Modular unit for sectorized rotors Ø801-2800 mm.

D type casing: Modular unit for sectorized rotors Ø2450-5000 mm.



2.2.2 Standard dimensions:

Östberg Energy Recovery units can be ordered in standard sizes, with price competitiveness and short delivery time. If the requested dimension is missing, Östberg can manufacture any dimension in between the standard sizes according to the customers demand.

All casing are dimensioned as requested.

A: Height (mm)

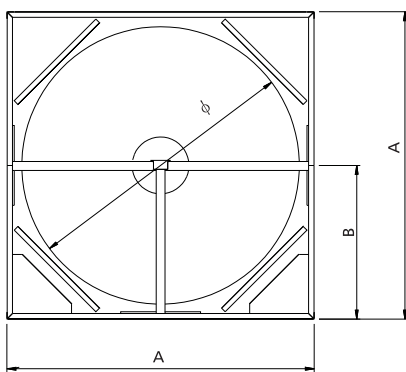
B: Center Height (mm)

C: Casing Depth (mm)

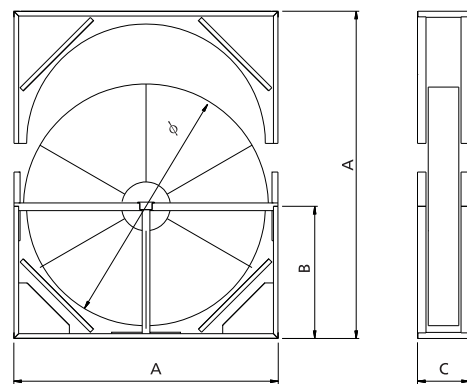
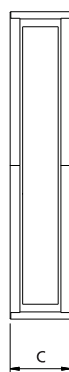
Ostberg Standard

Casing type OCS

Rotor depth Casing dimension Rotor ϕ	OCS - 250			OCS - 200			OCS - 150			OCS - 100		
	A(mm)	B(mm)	C(mm)	A(mm)	B(mm)	C(mm)	A(mm)	B(mm)	C(mm)	A(mm)	B(mm)	C(mm)
900	1030	515	390	1030	515	340	1030	515	290	1030	515	240
950	x	x	x	1080	540	340	x	x	x	x	x	x
1000	1130	565	390	1130	565	340	1130	565	290	1130	565	240
1050	x	x	x	1180	590	340	x	x	x	x	x	x
1100	1230	615	390	1230	615	340	1230	615	290	1230	615	240
1200	1330	665	390	1330	665	340	1330	665	290	1330	665	240
1300	1430	715	390	1430	715	340	1430	715	290	1430	715	240
1400	1530	765	390	1530	765	340	1530	765	290	1530	765	240
1500	1630	815	390	1630	815	340	1630	815	290	1630	815	240
1550	x	x	x	1680	840	340	x	x	x	x	x	x
1600	1730	865	390	1730	865	340	x	x	x	x	x	x
1650	x	x	x	1780	890	340	x	x	x	x	x	x
1700	1830	915	390	1830	915	340	x	x	x	x	x	x
1800	1930	965	390	1930	965	340	x	x	x	x	x	x
1900	2030	1015	390	2030	1015	340	x	x	x	x	x	x
2000	2130	1065	390	2130	1065	340	x	x	x	x	x	x
2100	2230	1115	390	2230	1115	340	x	x	x	x	x	x
2150	x	x	x	2280	1140	340	x	x	x	x	x	x
2200	2330	1165	390	2330	1165	340	x	x	x	x	x	x
2300	x	x	x	2470	1235	340	x	x	x	x	x	x
2400	x	x	x	2570	1285	340	x	x	x	x	x	x
2450	x	x	x	2620	1310	340	x	x	x	x	x	x
2500	x	x	x	2670	1335	340	x	x	x	x	x	x
2600	x	x	x	2770	1385	380	x	x	x	x	x	x
2700	x	x	x	2870	1435	380	x	x	x	x	x	x
2800	x	x	x	2970	1485	380	x	x	x	x	x	x



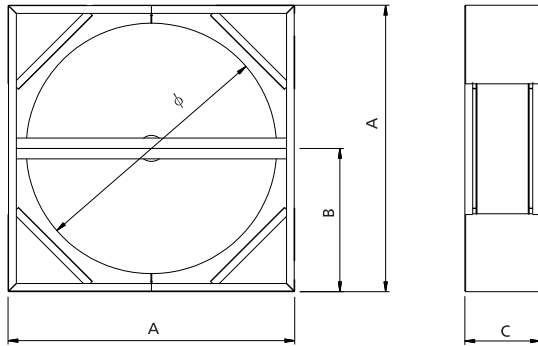
OCS Winded



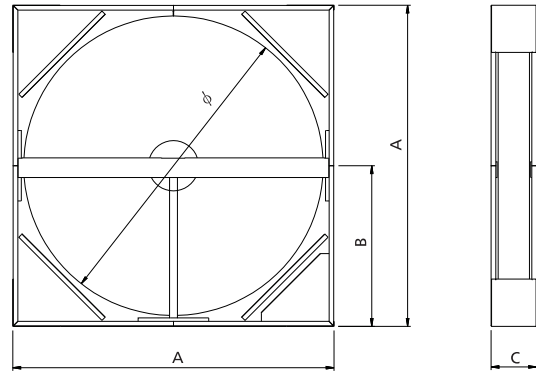
OCS Sectorized

Casing type CS

Rotor depth Rotor ϕ	Casing dimension	CS - 200			CS - 150			CS - 100		
		A(mm)	B(mm)	C(mm)	A(mm)	B(mm)	C(mm)	A(mm)	B(mm)	C(mm)
300		470	235	290	470	235	240	470	235	190
400		550	275	290	550	275	240	550	275	190
500		620	310	290	620	310	240	620	310	190
600		700	350	290	700	350	240	700	350	190
700		800	400	290	800	400	240	800	400	190
800		900	450	290	900	450	240	900	450	190
900		1000	500	290	1000	500	240	1000	500	190
1000		1100	550	290	1100	550	240	1100	550	190
1100		1200	600	290	1200	600	240	1200	600	190
1200		1300	650	290	1300	650	240	1300	650	190
1300		1400	700	290	1400	700	240	1400	700	190
1400		1500	750	290	1500	750	240	1500	750	190
1500		1600	800	290	1600	800	240	1600	800	190
1600		1700	850	290	x	x	x	x	x	x
1700		1800	900	290	x	x	x	x	x	x
1800		1900	950	290	x	x	x	x	x	x
1900		2000	1000	290	x	x	x	x	x	x
2000		2100	1050	290	x	x	x	x	x	x
2100		2200	1100	290	x	x	x	x	x	x
2200		2300	1150	290	x	x	x	x	x	x
2300		2400	1200	290	x	x	x	x	x	x
2400		2500	1250	290	x	x	x	x	x	x
2450		2550	1275	290	x	x	x	x	x	x



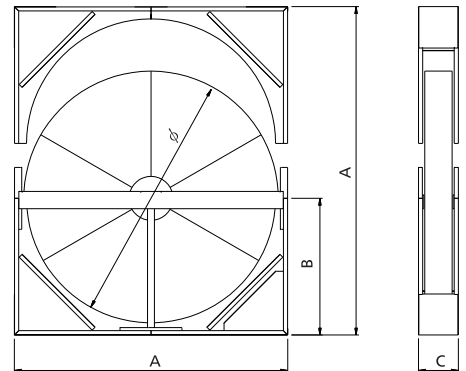
CS $\le 1000\text{mm}$



CS $\ge 1800\text{mm}$

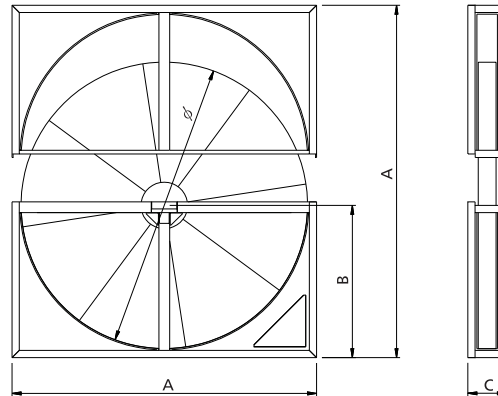
Casing type CSD

Rotor depth Rotor ϕ	Casing dimension	CSD - 200		
		A(mm)	B(mm)	C(mm)
800		940	470	290
900		1040	520	290
1000		1140	570	290
1100		1240	620	290
1200		1340	670	290
1300		1440	720	290
1400		1540	770	290
1500		1640	820	290
1600		1740	870	290
1700		1840	920	290
1800		1940	970	290
1900		2040	1020	290
2000		2140	1070	290
2100		2240	1120	290
2200		2340	1170	290
2300		2440	1220	290
2400		2540	1270	290



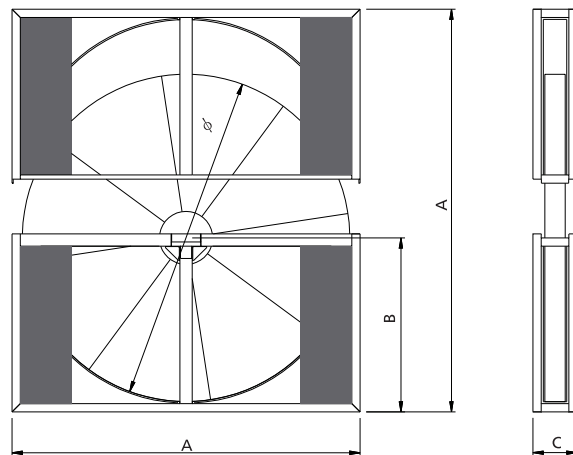
Casing type DS

Rotor ϕ	Rotor depth Casing dimension	DS - 200		
		A(mm)	B(mm)	C(mm)
2500	2700	1350	430	430
2600	2800	1400	430	430
2700	2900	1450	430	430
2800	3000	1500	430	430
2900	3100	1550	430	430
3000	3200	1600	430	430
3100	3300	1650	430	430
3200	3400	1700	430	430
3300	3500	1750	430	430
3400	3600	1800	430	430
3500	3700	1850	430	430
3600	3800	1900	430	430
3700	3900	1950	430	430
3800	4000	2000	430	430
3900	4100	2050	430	430
4000	4200	2100	430	430
4100	4300	2150	430	430
4200	4400	2200	430	430
4300	4500	2250	430	430
4400	4600	2300	430	430
4500	4700	2350	430	430
4600	4800	2400	430	430
4700	4900	2450	430	430
4800	5000	2500	430	430
4900	5100	2550	430	430
5000	5200	2600	430	430



Casing type D

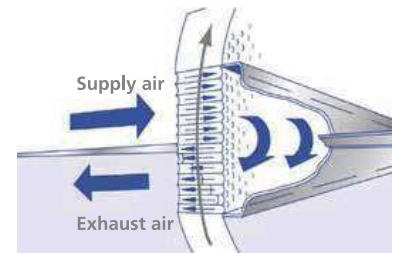
Rotor ϕ	Rotor depth Casing dimension	D - 200		
		A(mm)	B(mm)	C(mm)
2500	2730	1365	430	430
2600	2830	1415	430	430
2700	2930	1465	430	430
2800	3030	1515	430	430
2900	3130	1565	430	430
3000	3230	1615	430	430
3100	3330	1665	430	430
3200	3430	1715	430	430
3300	3530	1765	430	430
3400	3630	1815	430	430
3500	3730	1865	430	430
3600	3830	1915	430	430
3700	3930	1965	430	430
3800	4030	2015	430	430
3900	4130	2065	430	430
4000	4230	2115	430	430
4100	4330	2165	430	430
4200	4430	2215	430	430
4300	4530	2265	430	430
4400	4630	2315	430	430
4500	4730	2365	430	430
4600	4830	2415	430	430
4700	4930	2465	430	430
4800	5030	2515	430	430
4900	5130	2565	430	430
5000	5230	2615	430	430



2.2.3 Purge sector

To prevent exhaust air mixing with supply air by carryover, most installations have a purge sector. Its function is to flush the rotor matrix with outside air before it rotates into the supply air duct. In this way only outside air is present in the matrix and no carryover of exhaust air to supply air is possible. The purge sector is located on the supply side of the supply air duct.

Ostberg OCS casing is equipped with an adjustable purge sector for easy adjustment of the site request.



2.2.4 Seals

To achieve the best possible prevention from leakage between exhaust and supply air, the Ostberg Casing design offer multiple options of sealing system. For standard applications a brush sealing is installed on the rotor periphery (between the rotor matrix and the casing). For improved sealing a second sealing can be installed on the rotor periphery which give a "wrap-around" sealing system. The wrap-around sealing system provide the best possible sealing system to prevent leakage along the rotor periphery. See also "3.2 Leakage/Cross contamination".

Drive equipment is consist of motor, control unit and drive belt.

Rotors are driven by a motor mounted on a bracket inside the casing. All rotors are driven by the motor via a belt to the rotor periphery.

2.3.1 Constant drive

Constant drive means that rotor speed remains constant during operation, or is switched off to remain stationary – so called on/off drive.

Induction motors with reduction gearing are available in three-phase and single-phase versions.

Asynchronous motors with worm gears are available in three-phase and single-phase versions.



2.3.2 Variable drive

Variable drive enables rotor speed regulation and thus optimal control throughout the year.

The drive unit consists of a motor and control unit that regulates motor rpm in relation to an input signal.



MicroMax



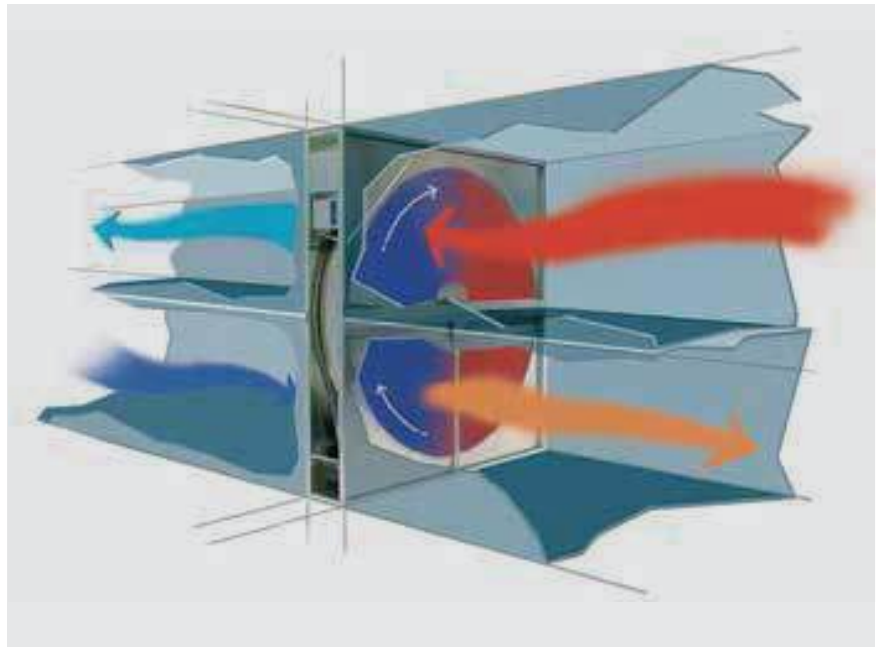
VariMax

Östberg rotary heat exchangers are classified as regenerative air-to-air energy recovery units.

Air-to-air energy exchangers can recycle more than 85% of the energy from conditioned building exhaust, or high temperature exhaust from industrial processes. Exhaust recovery ventilation utilizes energy from the exhaust air stream to precondition the outside air being introduced into the building. In the winter it provides free heating and in the summer free cooling.

Applying air-to-air energy recovery can help achieve a higher LEED® status, meet the requirements of ASHRAE 90.1, and save significantly on operating cost with a quick payback. Choose from stand-alone heat exchangers or pre-engineered, yet customizable modular units that incorporate heat recovery, humidity control, and other air treatment options.

Thanks to the alternating airflow direction, the rotor is self-cleaning and frost proof to a large extent.



Definition of leakage: leakage is the percent of air that's transferred from one airstream to another airstream.

OACF: percentage leakage from outdoor air to exhaust air (from P1 to P4).

EATR: percentage leakage from return air to supply air (from P3 to P2).

Leakage:

Leakage occurs either around the periphery of the rotor or via the middle beam dividing the airstreams. The positioning of the fans are vital for the percent of leakage, in a correct planned Air-handling Unit the fan positioning prevents the exhaust air to "leakage" over to supply air stream. The positioning of the fans is the responsibility of the designer of the ventilation system.

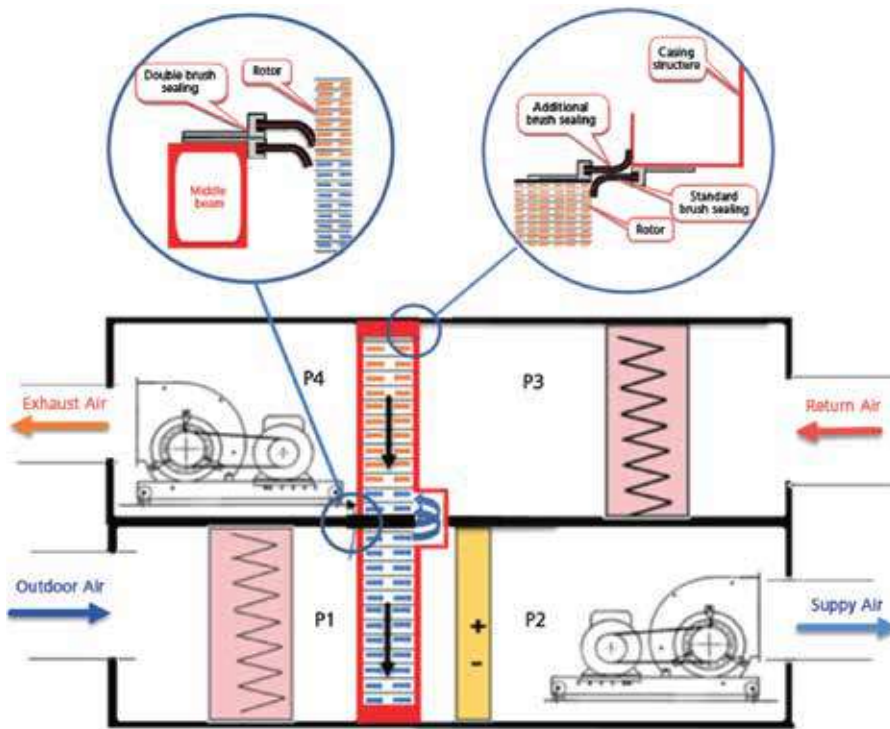
Periphery leakage:

The rotor is sealed-off from leakage around the periphery of the rotor. The standard application is a brush sealing attached to the casing that seals off the air toward the rotor surface.

Östberg offer the possibility to add an additional sealing along the rotors periphery. This sealing type is called "wrap-around sealing".

Middle beam leakage:

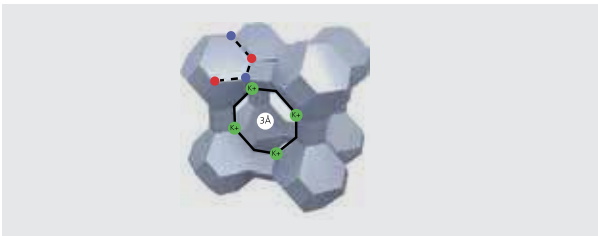
The rotor is sealed-off from leakage at the middle beam using a brush sealing. This gives under normal application enough sealing function. But if the Air handling unit have unfavourable pressure differences between the two airstreams an additional brushsealing can be applied to minimize leakage.



To ensure no leakage between the air-streams, pressure shall be higher in P1 (OA) than in P4 (EA) and higher in P2 (SA) than in P3 (RA).

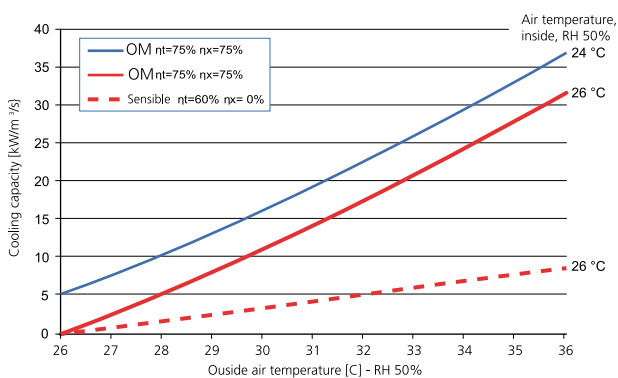
3 Knowledge

3.3 Molecular Sieves 3Å



A molecular sieve is a material with uniform pores size (very small holes). The molecular sieve is measured in ångströms (Å). Molecular sieve 3Å do not adsorb compounds with diameters larger than 3Å. The water vapor (humidity) is smaller than 3Å and is therefore adsorbed by the Molecular sieve 3Å. Installations and tests show that a 3Å molecular sieve is the best choice for eliminate the risk of odor transfer via the sorption coating.

COOLING CAPACITY SAVINGS



Sorption rotors

Östberg Molecular Sieve 3Å OM rotors provide exceptionally high humidity efficiency more than 85%. Sorption rotors provide an excellent method of cooling and de-humidifying outside air before it reaches the air handling unit cooling coil.

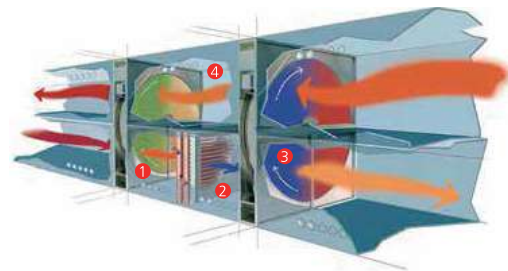
- Direct investment pay off
- Lower investment cost in cooling capacity
- Lower energy consumption in cooling period
- Better indoor air quality
 - Minimum Carry Over
 - Increased humidity in winter season
- Lower investment and running costs for humidification
- Better performance for dry cooling systems
- Increase cooling capacity in existing systems

Advantages of 3Å molecular sieves

<p>The Östberg OM Molecular Sieve 3Å provides high selectivity for water molecule absorption (2.7Å size)</p>	<ul style="list-style-type: none"> • Performance of 3Å technology is proven in several international and independent studies • It is recommended in cases where cross contamination needs to be minimized • Minimized Carry Over of VOC's from extract air to supply air
<p>Lower investment costs in cooling capacity both in AHU's and cooling system</p>	<ul style="list-style-type: none"> • The cooling capacity saving is 20 – 50% • The required cooling capacity will decrease by 10- 25 kW/m3/s air flow compared to sensible energy recovery systems • Smaller compressors, condensers or cooling towers or higher evaporation and lower condensing temperatures • Smaller electrical connection costs and power consumption in cooling system • Lower water flows to cooling coils and smaller pipe works and valves • Savings in cooling equipment investments are higher than additional cost of sorption treatment of the rotor
<p>Lower investment cost in supply air humidification</p>	<ul style="list-style-type: none"> • Supply air humidification equipment will be smaller, due to high rate of humidity recovery from the exhaust air
<p>Lower running costs of ventilation, cooling and humidification</p>	<ul style="list-style-type: none"> • Cooling recovery in summer time • Humidity recovery in winter time
<p>Better working conditions for dry cooling systems (chilled ceilings or beams)</p>	<ul style="list-style-type: none"> • Almost constant humidity efficiency provides effective dehumidification of outside air in extreme summer conditions • Smaller requirement for raised water temperature to unit
<p>Better indoor air quality during winter</p>	<ul style="list-style-type: none"> • High humidity recovery from exhaust air during winter season

In regions with high air temperature and humidity or buildings with dry cooling systems (chilled beams, chilled ceilings), the supply air needs to be cooled and dehumidified. Traditionally air dehumidification has been done by cooling the air to condense the humidity from the air and reheating it to the requested air temperature.

Compared to traditional systems the Double Wheel Concept is cooling, dehumidifying and reheating the supply air more energy effective.



The Double Wheel Concept comprises the following components and functions:

1. OM sorption rotor: The OM rotor dehumidifies and cools warm outside air very efficiently.
2. Cooling coil: Outside air is further dehumidified by the cooling coil until the preferred temperature is reached.
3. OT Condensation rotor: The condensation rotors warms the air to the required supply air temperature.
4. At the same time, exhaust air is cooled which means the OM rotor works more efficiently.

The Östberg Double Wheel Concept saves up to 60% of the total cooling capacity, remove the need of reheating and requires lower investment and running costs compared to traditional systems. As rule of thumb, the additional cost of the sensible wheel can be saved in the lower investment compared to traditional system components, coils, chillers, cold and hot water piping installation, pumps, valves, controls and electric power supply costs. Accurate total investment costs analyze of the complete installation will show major savings in initial costs. Both cooling and heating energy savings will be additional profit of the investment.

High corrosion risk

Great care should be taken when choosing materials in areas where there is a high risk of corrosion such as industrial use.

All casing parts can be powder coated to enhance corrosion resistance, or a stainless steel casing can be selected. All bearings are life-time lubricated and extra sealed for extended life. Vital parts such as bearing components are coated with tectyl for enhanced corrosion resistance.

Epoxy-coated foil (OC) should be selected. Epoxy-coated foil provides extremely effective protection against corrosion. Seawater-resistant foil (OK) with magnesium content is available; an alternative to epoxy-coated foil, it provides excellent corrosion protection.

Marine ventilation

In maritime environment there's a request of increased corrosion protection, both for parts and media.

Östbergs standard marine casing is in stainless steel and rotor media in OM for sorption performance and OK for sensible performance. Östberg standard OM for marine application have passed test with non-corrosion for a period of 10 years.

Östberg Rotor Cleaner - for cleaning of dry and light sticky particles.

- Trolley completely made in SST 304
- PLC- control for easy adjustment to the actual rotor diameter
 - Punch in the rotor diameter
 - Punch number of cleaning cycles (number of cleaning cycles depending on how dirty the rotor is)
 - Push start and the time for cleaning is shown (remaining cleaning time visible during the whole cleaning)
- Nozzle is driven by a 24V screw activator
 - The screw activator provides a precise movement of the nozzle, along the radial guarantee that all channels in the rotor has been cleaned.
- Screw Activator available in standard length
 - 950 mm, cleaning rotors from dia. 500mm to 1400mm
 - larger diameters can be cleaned by moving the positioning of the screw activator
 - Customized length of the screw activator available
- Dust collation tray available as accessory (to be connected to a vacuum cleaner).
- Recommended vacuum cleaner "Karcher NT 35/1 Eco 11848540"



Östberg Rotor Cleaner - - for cleaning of dry and light sticky particles.

PLC for automatic cleaning length

- 1) Rotor diameter
- 2) Number of cleaning cycles
- 3) Start

7m high pressed air tube
for connection to the Screw activator

②



①



③

Safe and convenient transportation
of the screw activator and collection
tray on the trolley
(collection tray accessory).

⑤

15m auto- rail for connection to high pressed air
15m auto- rail for connection to 220 V

④



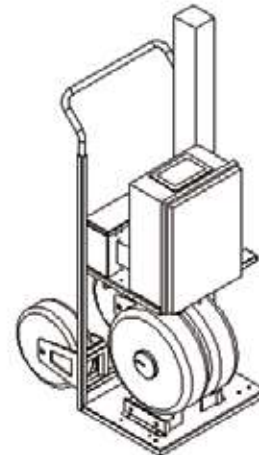
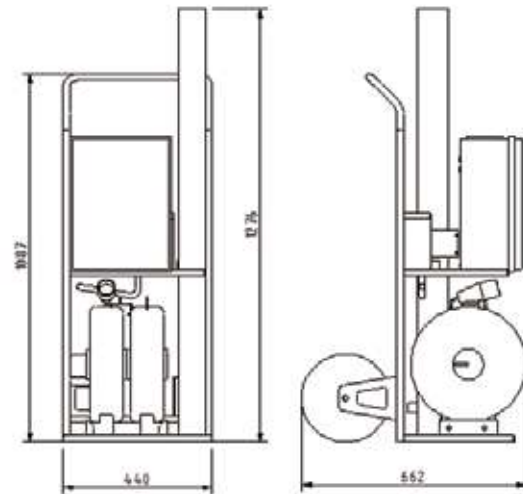
Large soft wheels for easy transportation
from unit to unit.



Östberg Rotor Cleaner - - for cleaning of dry and light sticky particles.

TECHNICAL DATA

Subject	Data	Unit
Air nozzle speed	36	mm/min
Cylinder stroke	650/950	mm
Voltage input	220-240/50/60	VAC/Hz
Power input	44	W
Max. Air pressure	10	Bar
Control box Working voltage	24	VDC
Control box Current	1.8	A
Air nozzle hole diameter	1	mm
Power supply cable length	15	m
Weight	52	Kg



Accessories

- Dust collection tray with Vacuum system
- Double nozzle (increases the cleaning speed)
- Rotor cleaner for movable version (service version, excl, air compressor)
- Rotor cleaner for movable version (service version, incl, air compressor)
- Quick klick (for movable service version, 1 quick click/Air Handling Unit)

DRIVE EQUIPMENT - TABLE SUMMARY

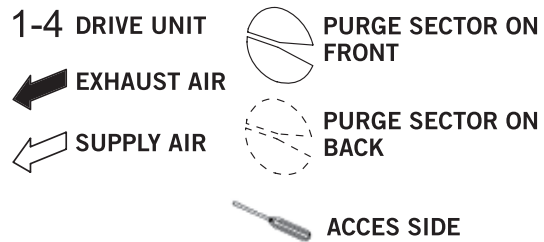
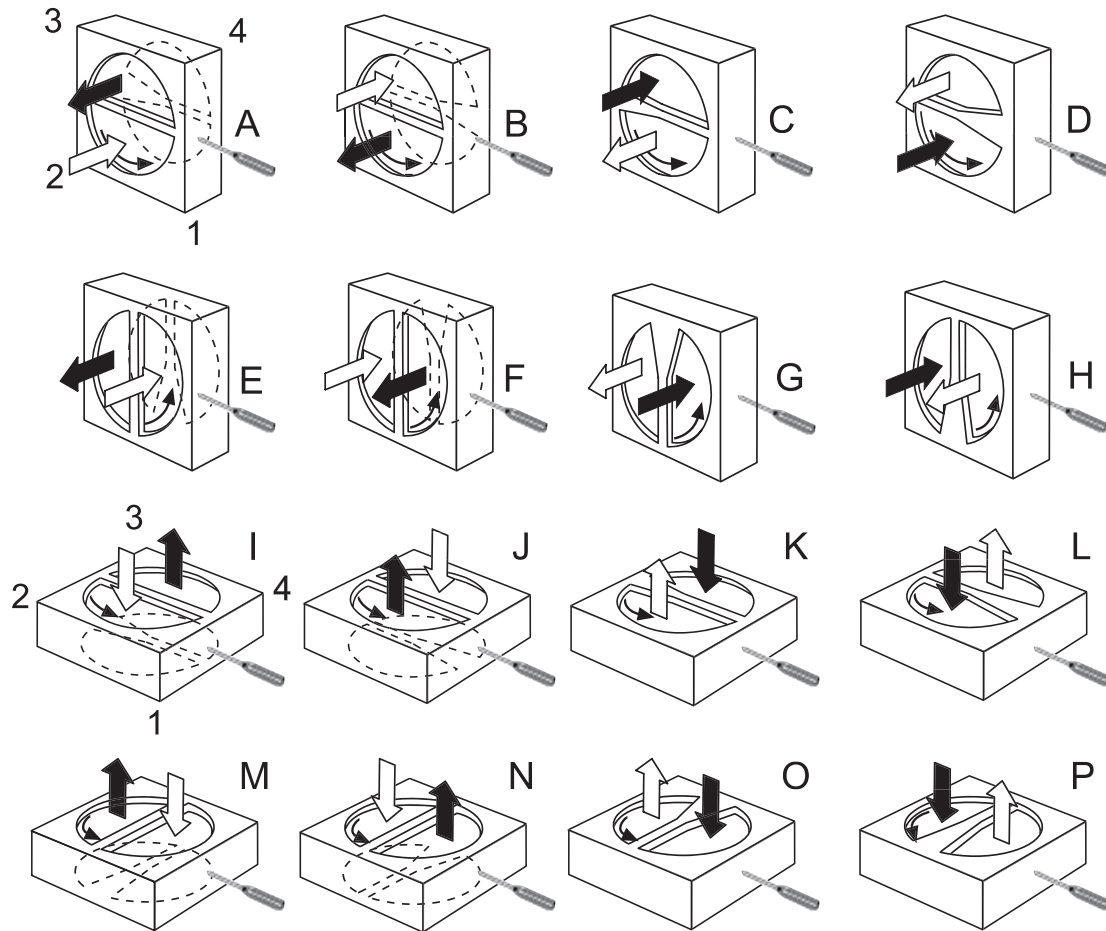
VARIABLE DRIVE EQUIPMENT - MICROMAX WITH MOTOR

DRIVE MOTOR		40V	AP56t	AP63t	AP71t	AP80t
Rotor diameter	mm	≤1000	<1500	1500-2399	2400-3549	3550-5000
Control unit		Micromax 180	Micromax 180	Micromax 180	Micromax 370	Micromax 750
Input voltage	V	3x230	3x230	3x230	3x230	3x230
Frequency	Hz	50/60	50/60	50/60	50/60	50/60
Motor power	KW	0,04	0,09	0,18	0,37	0,75
Rated current	A	0,39	0,74	1,10	1,92	3,34
Protection class		IP54	IP55	IP55	IP55	IP55
Weight (motor/control unit)	KG	3,4/<2,0	4,4/<2,0	5,4/<2,0	8,1/<2,0	12,6/<2,0

CONSTANT DRIVE EQUIPMENT

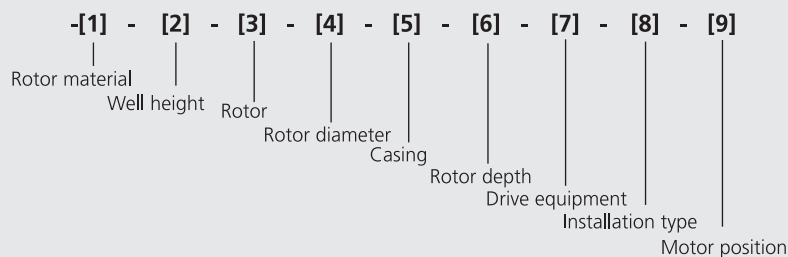
DRIVE MOTOR		40K	AP56	AP63	AP71	AP80
Rotor diameter	mm	≤1000	<1200	1200 - 1699	1700-2449	2450-5000
Input voltage	V	3x400	3x230/400	3x230/400	3x230/400	3x230/400
Frequency	Hz	50/60	50/60	50/60	50/60	50/60
Motor power	KW	0,04	0,09	0,18	0,37	0,75
Rated current	A	0,21	0,73/0,43	1,10/0,63	1,92/1,11	3,34/1,93
Weight	KG	3,4	4,4	5,4	8,1	12,6

INSTALLATION TYPE AND MOTOR POSITION



SPECIFICATION

HOW TO READ THE ORDER KEY



Example: Ostberg OM-N-W-1500-OCS-200-K-A-1

SYMBOLS

[1] Rotor material	OM	- 3A molecular sieve
	OH	- 3A molecular sieve and untreated aluminium foil
	OE	- Light 3A molecular sieve and untreated aluminium foil
	OT	- Untreated aluminium foil
	OC	- Epoxy-coated foil
	OK	- Seawater corrosion resistant aluminium alloy (5052) foil
[2] Well height	XL	- Extra Low
	SL	- Special Low
	L	- Low
	N	- Normal
	H	- High
[3] Rotor	W	- Winded rotor
	S	- Sectorized rotor
[4] Rotor diameter in mm		see "Dimensions"
[5] Casing	OCS	- In accordance with "Dimensions"
	CS / CSD	- In accordance with "Dimensions"
	D / DS	- In accordance with "Dimensions"
[6] Rotor depth in mm	250	250 mm
	200	200 mm (Standard)
	150	150 mm
	100	100 mm
[7] Drive equipment	V	- Variable drive, MicroMax
	K	- Constant drive
[8] Installation type	A,B,C,D,E,F...P ("Installation type and motor position")	
[9] Motor position	1,2,3,4 ("Installation type and motor position")	

Accessories

*Powder coated sheet metal, *Drain pan, *Insulation and *SST 304 complete casing

4 Specifications

4.4 Eurovent Certified CALCULATION program

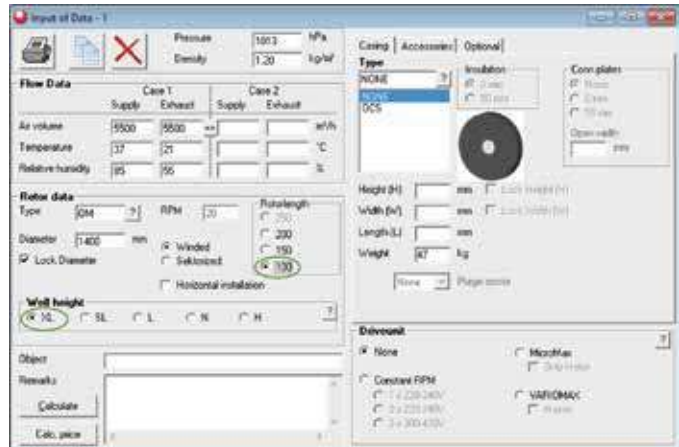
Östberg Calculation program is a user-friendly program providing all data for advanced calculation of Energy Recovery Rotors. The program makes it possible to tailor-make the energy saving unit to match the requested performance.

The calculations are based on theoretical performance for a Rotary Heat Exchanger adjusted in every detail by real Certifying test both at Eurovent and AHRI laboratories.

More than 15 years consecutive test results for all units available in the calculation guarantee that the user can size Fans, Cooling Coils and Heating batteries based on the output from Ostberg calculation.

Östberg Calculation is also available as an blackbox.dll (both in 32-bit and a 64-bit version) which today is widely used by large Air-Handling manufacturer today.

If you have any questions about the program, please do not hesitate to contact us.



Calculation results

Specifications	Supply	Exhaust	
Temperature efficiency	70.5	70.5	%
Humidity efficiency	76.9	77.9	%
Total efficiency	75.8	76.3	%
Pressure drop (std. density)	92	92	Pa
Velocity	2.0	2.0	m/s
Actual pressure drop	100	92	Pa

Incoming air	Supply	Exhaust	
Mass flow	1.8	1.8	kg/s
Density	1.20	1.20	kg/m ³
Absolute humidity	34.6	8.5	g/kg
Enthalpy	126.2	42.8	kJ/kg

Leaving air	Supply	Exhaust	
Temperature	25.7	32.3	°C
Relative humidity	69.9	62.8	%
Absolute humidity	14.5	28.8	g/kg
Enthalpy	63.0	105.4	kJ/kg

Energy recovery		
Energy transfer (enthalpy)	115.9	kw
Energy transfer (sensible)	20.9	kw
Mass transfer humidity	132	kg/h
Free water	0	kg/h



Project Name: National Museum of Chian

The National Museum of China (NMC) is located at the east side of Tiananmen Square, opposite the Great Hall of the People. NMC, an integrated national museum under the Ministry of Culture of China, draws equally from both history and art and is dedicated to its collections, exhibitions, research, archeology, public education and cultural communication. 2010, NMC carried out a project to expand the museum so that it now covers 192,000 square meters. Today NMC is the largest museum in the world, with first class facilities and capabilities.

National Museum of China used 45 sorption rotor as energy recovery equipment for transfer of sensible and latent energy.

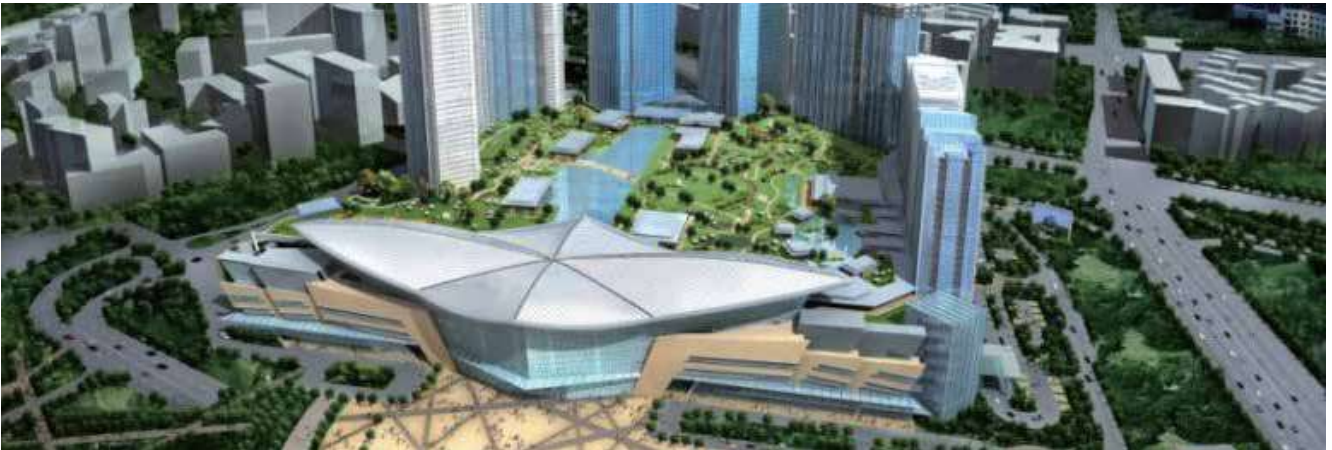
Taiwan National Convention Center

Singapore SBF Center

Indonesia World Trade Center 3

Malaysia General Hospital Kuala Lumpur





Project Name: New World Shenyang Convention and Exhibition Centre

NWSYCEC has a superior geographic location and is located at the southern starting point of Shenyang Golden Corridor. The NWSYCEC project covers 196 thousand sq m with the overall floorage of 1.32 million sq m. Being designed to be one of the largest city complexes nationwide, the project includes exhibition centre, retail, hotels, apartments, office buildings and entertainment place.

Östberg provided rotary heat exchanger to this building, it is an important part to get better energy recovery and green energy saving for the whole building.

Cambodia Landmark Square



Thailand Krungsri Tower



Vietnam German House



Singapore Tanjong Pagar Centre





Project Name: IKEA center China - LIVAT Wuxi

LIVAT Wuxi is the first shopping center of IKEA in China, located in the east of Xishan economic development zone, and north of Dong'an road, IKEA Centres China was established in 2009, and our regional headquarter is located in Shanghai. IKEA Centres partners with IKEA Store to develop future meeting places for the many people in China. "LIVAT" is the brand of our shopping centres in China. Business idea is "To create, together with IKEA stores and our tenants, inspiring and family friendly meeting places for the many people. "

LIVAT building used Östberg rotary heat exchanger, better quality, more efficient, more energy efficient .

Australia Corso North Lake

Thailand IKEA Nonthaburi

Thailand Central Plaza Nakomratchasima Thailand Ari Hills





Project Name: The Seminole Casino in Hollywood

The Seminole Casino in Hollywood offers 500 rock star suites, signature and award-winning restaurants, a 5,500-seat Hard Rock Live arena, a 4.5 acre tropical pool oasis & Beach Club, a full-service Rock Spa, fitness center, high-energy nightlife, boutique shopping and convention space.

The Seminole Casino in Hollywood use rotary heat exchanger from Östberg in the ventilations system to recover highest possible energy from the exhaust air. To ensure the best possible Indoor Air Quality the rotors is coated with Molecular Sieve 3Å.

Niagara Falls Casino



Mt. Airy Casino



Horseshoe Casino



Harrah's Casino





Project Name: InterContinental Shanghai Puxi

InterContinental Shanghai Puxi is strategically located in the Zhabei District, adjacent to a transportation hub and convenient for many attractions. The hotel boasts 533 rooms with 25 Executive Suites, three Penthouse Suites, one InterContinental Suite and two Presidential Suites plus a spacious Club InterContinental Lounge.

Östberg rotors not only used in InterContinental, but also can be found in many other five-star hotel hotels, such as Lincoln, those of the Hilton, Shangri-La, Marco Polo and Ritz-Carlton Hotel.

Myanmar Pullman Hotel Mandalay



Vietnam Le Meridien Hotel



Thailand Renaissance Pattaya



Malaysia Prince Hotel, Kuala Lumpur





Project Name: Volkswagen Automatic Transmission Tianjin Co., Ltd.

Volkswagen Automatic Transmission (Tianjin) Co., Ltd (VWATJ) is a wholly owned subsidiary of the Volkswagen (China) Investment Co. Ltd .VWATJ will launch three new types of transmission products. This new standard for efficient and comfortable transmissions represents the most advanced technology in the automotive industry.

Volkswagen choosed Östberg rotor which is also the advanced technology in energy recovery.

Indonesia Jotun



Philippines SPT CLARK



Geely's new factory



Dongyue GM project





Project Name: Celebrity Silhouette

Östberg Rotors has been successfully used in many Luxury liners. The energy is more expensive to produce on a vessel than on a land based power plant. This makes it very important for the ship owner to maximize the energy recovery on the vessel. Östberg OH has been chosen by many ship owners due to its extremely high energy recovery but also because the high corrosion resistance. The unique combination of high performance and corrosion resistance gives not only a fast payback of investment but also an extended life time of the investment.

Disney Magic



Celebrity Equinox



Celebrity Solstice



Celebrity Eclipse



Project Name	Type	Year	Item Category
Saudi Arabia Najran Uni	OM	2016	Governmental project
Malaysia Pusat Perubatan Universiti Malaya (PPUM)	OM	2015	Governmental project
Malaysia Tropicana Medical Centre Ipoh	OM	2016	Governmental project
Australia Campbell Barracks	OM	2016	Governmental project
Malaysia Fatimah Hospital, Ipoh (Catheterization Lab)	OM	2015	Governmental project
General Hospital Kuala Lumpur (Papua new Guinea)	OM	2015	Governmental project
Thailand Heart Disease Hospital	OM	2011	Governmental project
Malaysia Naluri Hospital, Wangsa Maju	OM	2013	Governmental project
Indonesia RS Columbia Hospital	OM	2013	Governmental project
Malaysia Acson KLCC Exhibition & Training Unit	OM	2014	Governmental project
Vietnam Megastar GS Cao Tang	OM	2014	Commercial project
Vietnam Megastar Quy Nhon	OM	2014	Commercial project
Malaysia Sunway Pyramid 3	OM	2014	Commercial project
Malaysia UTP (University Technology Petronas)	OM	2014	Commercial project
Vietnam Vivo city	OM	2014	Commercial project
Papua new Guinea MOI	OM	2015	Commercial project
Vietnam Kiem Toan	OM	2017	Commercial project
Vietnam 89 LANGHA COMPLEX	OM	2015	Commercial project
Vietnam Discovery Cau Giay	OM	2017	Commercial project
Singapore SBF Lot 5	OM	2015	Commercial project
Bangladesh BDDE	OM	2015	Commercial project
Singapore PECK SEAH BUILDING	OM	2015	Commercial project
Vietnam Sheraton Danang	OM	2017	Commercial project
Myanmar Pullman Hotel Mandalay	OM	2016	Commercial project

Project Name	Type	Year	Item Category
Vietnam CGV Hoang Van Thu	OM	2016	Commercial Project
Vietnam CGV ARTEMIS	OM	2016	Commercial Project
Vietnam CGV SAIGONES	OM	2016	Commercial Project
Cambodia Landmark Square	OM	2016	Commercial Project
Indonesia JW Marriot	OM	2016	Commercial Project
Vietnam CGV VINCOM CAN THO LOT 2	OM	2016	Commercial Project
India ITC Kolkota	OM	2017	Commercial Project
Thailand Patipan Star Telekom	OM	2017	Commercial Project
Singapore Euro Fragrance	OM	2015	Industry Project
ExxonMobil (Shanghai) R&D center	OM	2011	Industry Project
Vietnam Unilever	OM	2016	Industry Project
Malaysia HLH Factory Showroom Klang	OM	2012	Industry Project
Shanghai automobile Commercial Vehicle Co., Ltd. No.3 workshop	OM	2014	Industry Project
China Construction Bank Beijing Data Center	OM	2013	Industry Project
China Agricultural Bank Beijing Data Center	OM	2015	Industry Project
Institute of physics, Chinese Academy of Sciences	OM	2011	Industry Project
China National Center for Biotechnology Development	OM	2012	Industry Project
Solvay (Shanghai) R&D Center	OM	2012	Industry Project
Novartis (China) biomedical research center	OM	2013	Industry Project
Philippines SPT Clark (IND BUILDING & OFFICE)	OM	2012	Industry Project
Datang telecom Beijing research and development center	OT	2016	Industry Project
Passive room in Qingdao zhongde eco-park	OM	2016	Industry Project

energy
efficient
ventilation

ÖSTBERG 

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