

Case study #1: COVID19 + general ventilation systems

My AHU has a rotary heat exchanger: Should the rotor be turned on or off?

Remember



Good/healthy indoor air quality
More essential than ever

Correctly maintained/operated HVAC solutions → Key – not least because of COVID19

For more recommendations please email info@pacificventilation.com
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Hands-on recommendations

1

Keep rotary wheel turned on

Increased humidity can be achieved with running heat exchangers with humidity transfer ability
If regenerative heat exchangers are used:
• May lead to slightly higher leakage from extract to supply side
• This has neglectable impact on total system performance

2

Remember Systemair's core recommendation

Set relative humidity control to: Optimally 50% (minimum 40%, not exceeding 60%)

Practical example

Why should rotary wheel be turned on?

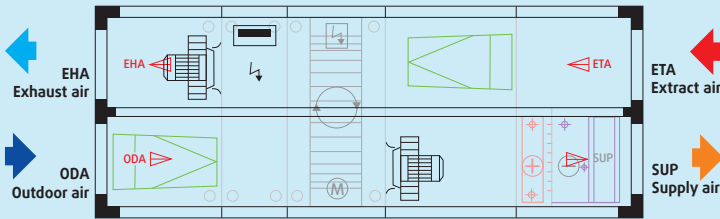
Example on next page shows different relative humidity (RH) levels:

- After rotor, before cooling/heating coil
- In the supply air depending if it is a sorption rotor, condensation rotor, or if rotor is turned off

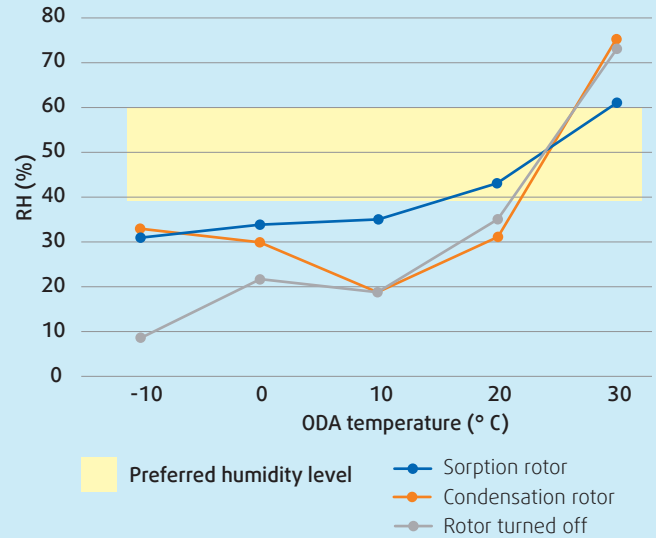
Example on next page highlights additional humidification needed to reach minimum recommended RH (40%)



Drawing of a typical AHU with rotor



Impact of ODA and rotor on RH level



Calculation data

Sorption rotor								
ODA		ETA		After rotor		After heating / cooling coil		Additional humidification needed (g/kg)
Temp (°C)	RH (%)	Temp (°C)	RH (%)	Temp (°C)	RH (%)	Temp (°C)	RH (%)	
-10	90	22	40	15,4	44	21	31	1,8
0	90	22	40	17,5	44	21	34	1,3
10	40	22	40	18,9	38	21	35	1,2
20	40	24	40	23,3	39	22	43	0
30	50	25	40	26,3	48	23	61	0
Condensation rotor								
ODA		ETA		After rotor		After heating / cooling coil		Additional humidification needed (g/kg)
Temp (°C)	RH (%)	Temp (°C)	RH (%)	Temp (°C)	RH (%)	Temp (°C)	RH (%)	
-10	90	22	40	15,7	44	21	33	1,5
0	90	22	40	17,7	37	21	30	1,9
10	40	22	40	18,9	22	21	19	3,6
20	40	24	40	21,6	36	22	31	1,5
30	50	25	40	26	63	23	75	-3,3
Rotor turned off								
ODA		ETA		After rotor		After heating / cooling coil		Additional humidification needed (g/kg)
Temp (°C)	RH (%)	Temp (°C)	RH (%)	Temp (°C)	RH (%)	Temp (°C)	RH (%)	
-10	90	22	40			21	9	5,2
0	90	22	40			21	22	3,2
10	40	22	40			21	19	3,6
20	40	24	40			22	35	0,8
30	50	25	40			23	73	-2,9

Good to know

If RH exceeds 60% → Dehumidification can be considered

- Rotor turned on → Additional humidification need = Lower
Rotor turned off
- Humidification need = Higher
- If AHU is equipped with sorption rotor → Additional humidification needed = Lowest throughout year

In summer conditions: Sorption rotor dehumidifies supply air before entering cooling coil

If system cannot achieve recommended humidity level → Ask our experts about possible solutions

