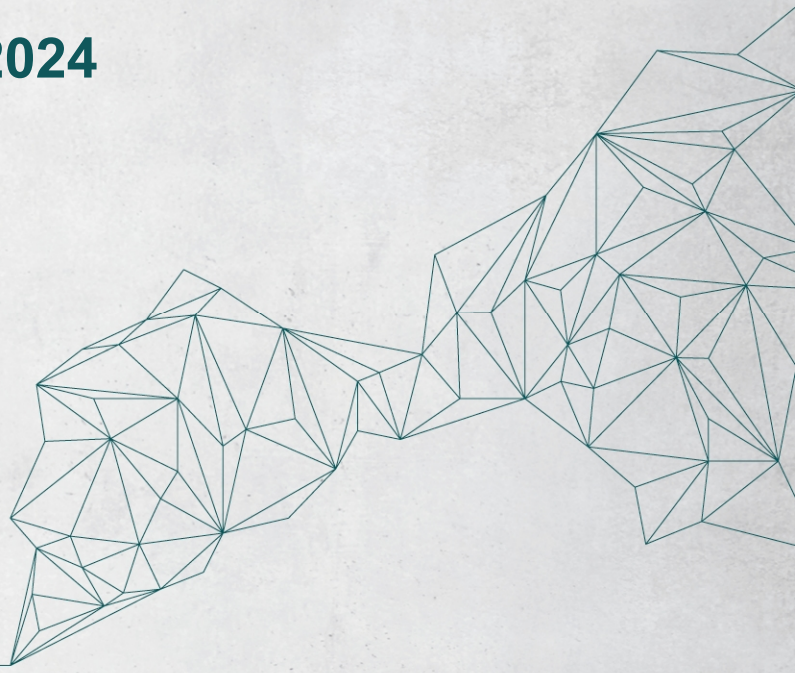
Hall 4A

CHILLVENTA

Chillventa Specialist Forums 2024
Chillventa Fachforen 2024

CONNECTING
EXPERTS.



Innovative Climate Control Solutions by Klingenburg GmbH

Temperature and Humidity Control **done right**

CHILLVENTA

REFRIGERANT

DIGITALISATION

ENERGY

PERFORMANCE

CAREL

DRIVEN BY THE FUTURE

Martin.A.Kohler

10/2024

Innovative Climate Control

In hot and humid areas, precise control of

→air temperature and
→humidity

Designed by Freepik

is essential for **humans**
as well as for
Industrial **production**.

Designed by HiClipart

Innovative Climate Control

Possible technical solutions available today :

→Natural Solutions (architectural approach)

→Mechanical Solutions (classical approach)

→Technical Solutions (energy saving approach)

Focus for today will be mechanical and technical!

Innovative Climate Control

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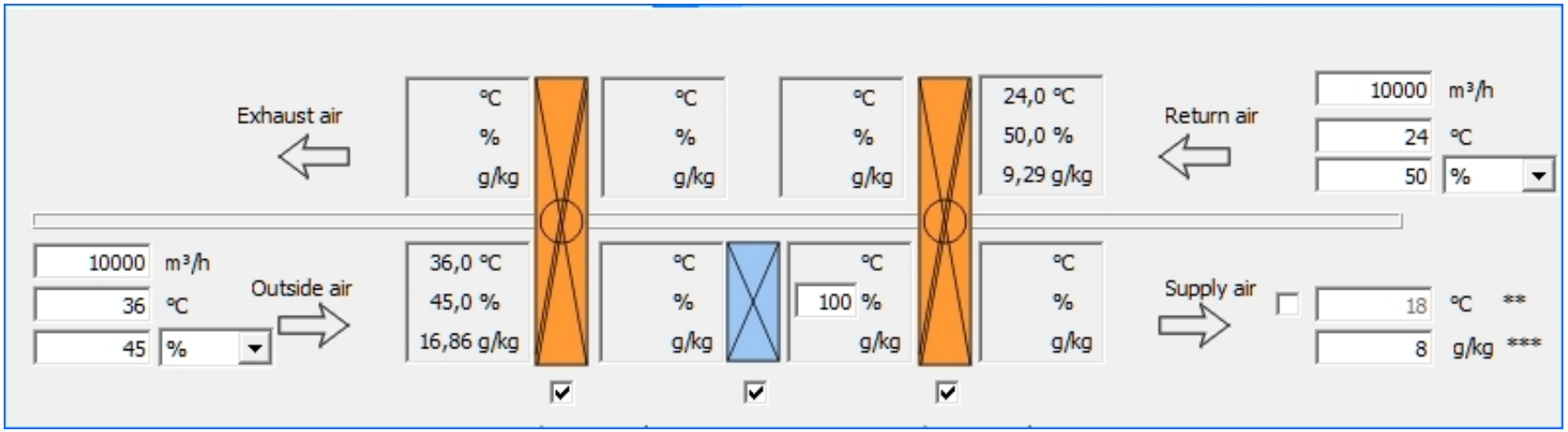
Klingenburg GmbH has developed a
double rotor system with mechanical cooling.



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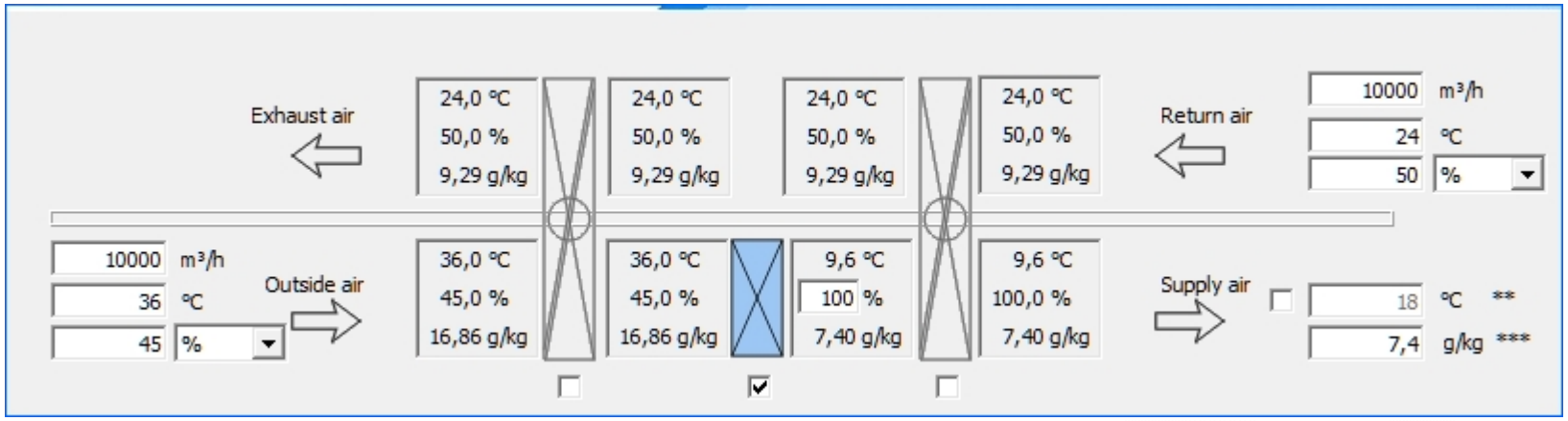
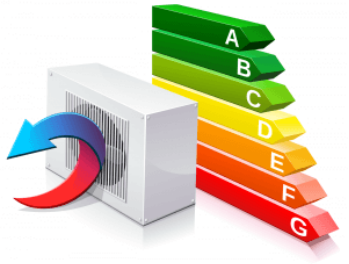
Step by Step -- Starting only with a Chiller



Mechanical Cooling only @170 kW(!)
Post-Heating needed @ 28 kW(!)



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Step by Step -- Starting only with a Chiller

Design	Chiller 170 kW	Heater 28 kW	Intelligence
Simple (!) Basic design NOT considering energy saving	Control strategy basic, using a few parameters	Control strategy basic, using a few parameters	No additional intelligence included. Maximum energy consumption

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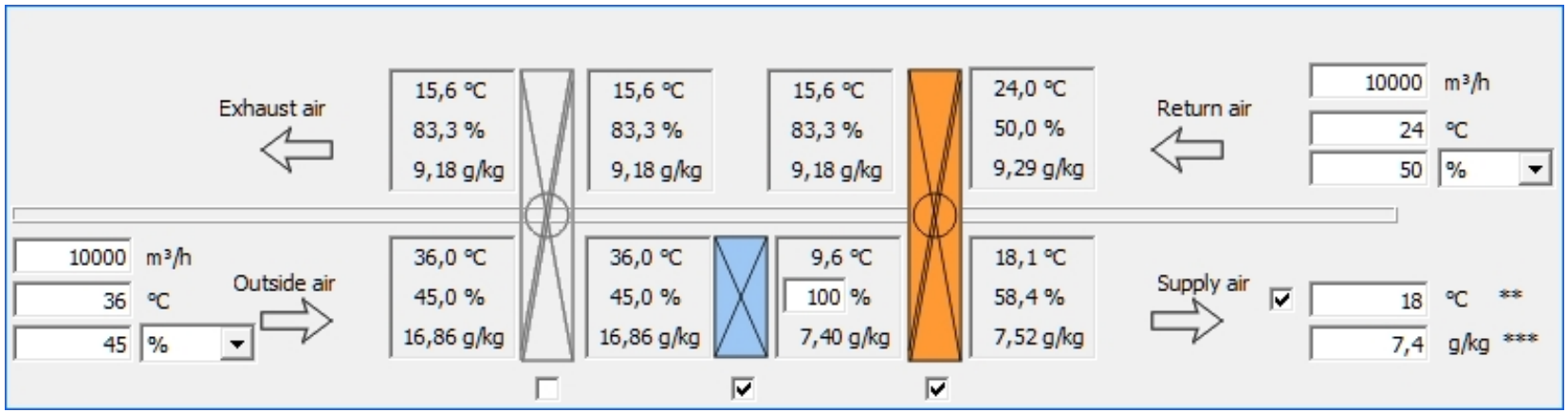
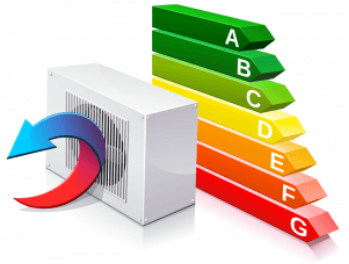
Step by Step – Adding Energy Recovery



Mechanical Cooling, „still“ 170 kW (!)
Heating by rotating HX @ 0,37kW (!)



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Step by Step -- Starting only with a Chiller

Design	Chiller 170 kW	Heater 0,37 kW	Intelligence
Simple, but with sensible energy recovery.	Control strategy basic, using a few parameters	Control strategy more complex. On the given example, **no** additional source of heat needed, this may vary. Controls strategy needs to cover „all“ heating parts.	integrated intelligence this system is able to actively support the reduction of energy consumption.

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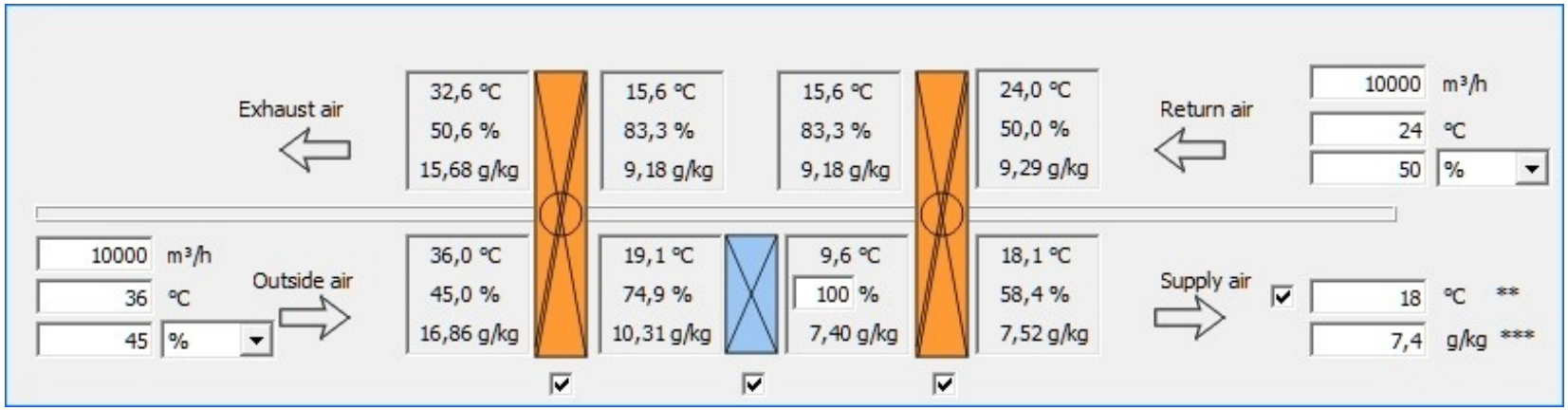
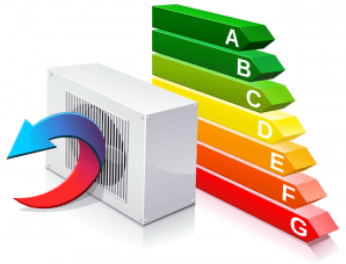
Step by Step – Adding Sorption Rotor



Reduction of Cooling Capacity(!)
Highest Precision and Lowest OPEX(!)



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Step by Step -- Adding Sorption Rotor

Design	Chiller 57 kW	Heater 0 kW	Intelligence
More Complex. Two different types of rotors and chiller need to be monitored!	Control strategy needs to monitor all involved components. Lowest energy consumption prioritized!	Control strategy more complex. On the given example, **no** additional source of heat needed, this may vary. Controls strategy needs to cover „all“ heating parts.	Integrated intelleigence treating sensible and latent efficiency to meet target on BOTH!

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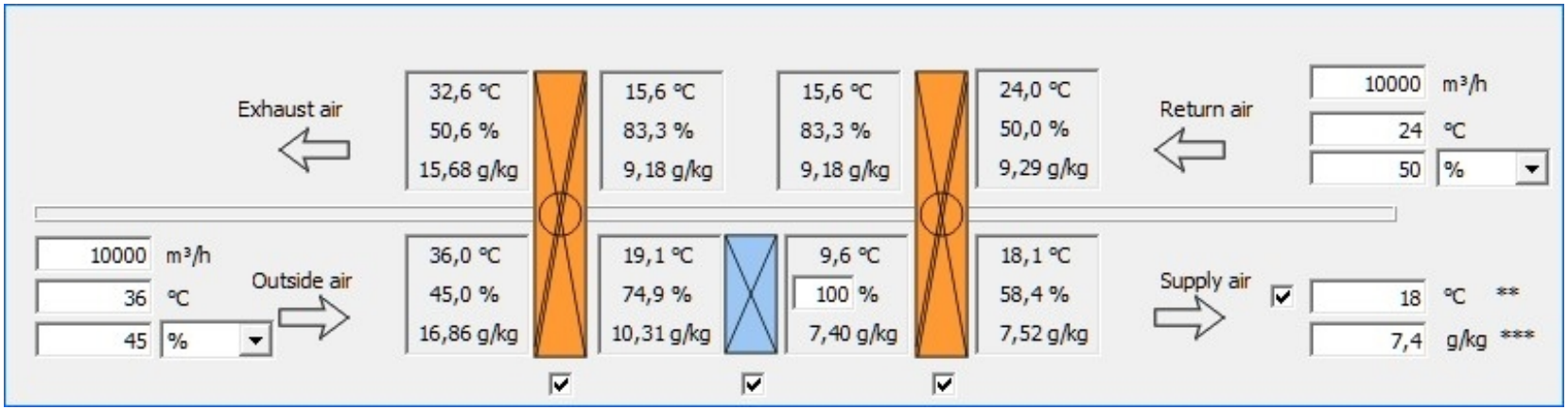
Conclution

Simple Solution	Advanced Solution	Optimized Solution
Low CAPEX	Average CAPEX	High CAPEX
Low complexity	Increased complexity	High complexiy
No Energy Recovery	Incl. Energy Recovery	Opt. Energy Recovery
High OPEX	Mid-Range OPEX	Lowest OPEX

What do you need?



- Latent and Sensible **Energy Recovery**
- Air-Volume / Massflow **monitoring**
- Temperature **monitoring**
- Humidity **monitoring**

- Intelligent Software to link all these parameters together

What do you need?

- Latent and Sensible **Energy Recovery**
  - Air-Volume / Massflow **monitoring**
  - Temperature **monitoring**
  - Humidity **monitoring**

  - Intelligent Software to link all these parameters together

Product	Use	Monitor
RRU(eco) N E16 2050/2050-290-2000	➢ Sorption Wheel ➢ Latent Recovery ➢ „Chiller-Support“	➢ Revolition-speed ➢ OFF-Humidity ➢ OFF-Tempeature
RRU(eco) P E16 2050/2050-290-2000	➢ Condens. Wheel ➢ Latent Recovery ➢ „Chiller-Support“	➢ Revolition-speed ➢ OFF-Humidity ➢ OFF-Tempeature

What do you need?

- Latent and Sensible Energy Recovery
- **Air-Volume / Massflow monitoring**
- **Temperature monitoring**
- **Humidity monitoring**
- Intelligent Software to link all these parameters together

Product	Use	Monitor
µ-Aria / k.Air / c.pCO	➢ Probes / Sensors for each component installed ➢ Centralized data collection ➢ Communication to all devices ➢ „Link“ between data-collection and human UI ➢ Programmable, highly adjustable	➢ Dampers ➢ Fans ➢ Chillers / RaC ➢ Room-Terminal ➢ Humidifiers ➢ Filters ➢ CO2 / VOC / IAQ

The Competence

CHILLVENTA

Halle 5 / Standnummer 5-306
Hall 5 / Boothnumber 5-304

CAREL INDUSTRIES S.p.A.

HYGROMATIK
WE HUMIDIFY THE AIR

https://www.hygromatik.com/de

Air is our element
KLINGENBURG
energy recovery our passion

https://www.klingenburg.de/

enginia
engineering air solutions

https://www.enginiasrl.com/

RECUPERATOR
THE HEAT EXCHANGER

https://www.recuperator.eu/en/

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Hall 4A

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Chillventa Fachforen 2024

Thank you!

Looking forward to continue together with you on

Booth 5-306 in Hall 5

CONNECTING EXPERTS.

Me and my freinds from CAREL Group are looking forward to welcome you!

Martin A. Kohler
10/2024

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