Willkommen
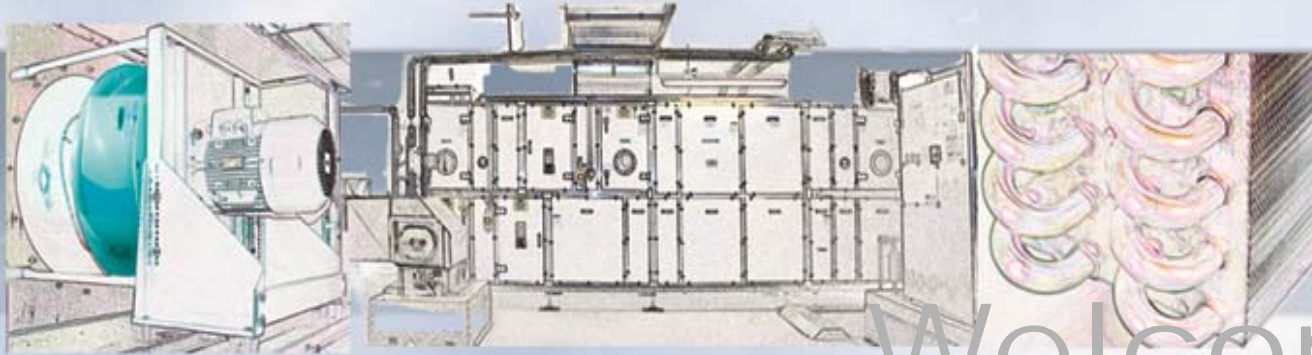
Welcome

Bienvenue

Free cooling of datacenters without mechanical cooling systems

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HOCHSCHULE TRIER
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Targets

Goals

o Use of free cooling

- ✓ direct free cooling, if outdoor air is clean

- ✓ Indirect free cooling (decoupled by heat exchanger)

o Optimization of heat exchanger

- ✓ High efficiency to maximize heat wast management

- ✓ optimizied indirect adiabatic cooling

o Optimization of temperatures

- ✓ Adaption of cold- und warm zones

- ✓ Control of indirect adiabatic cooling

- ✓ Abdication of mechanical cooling
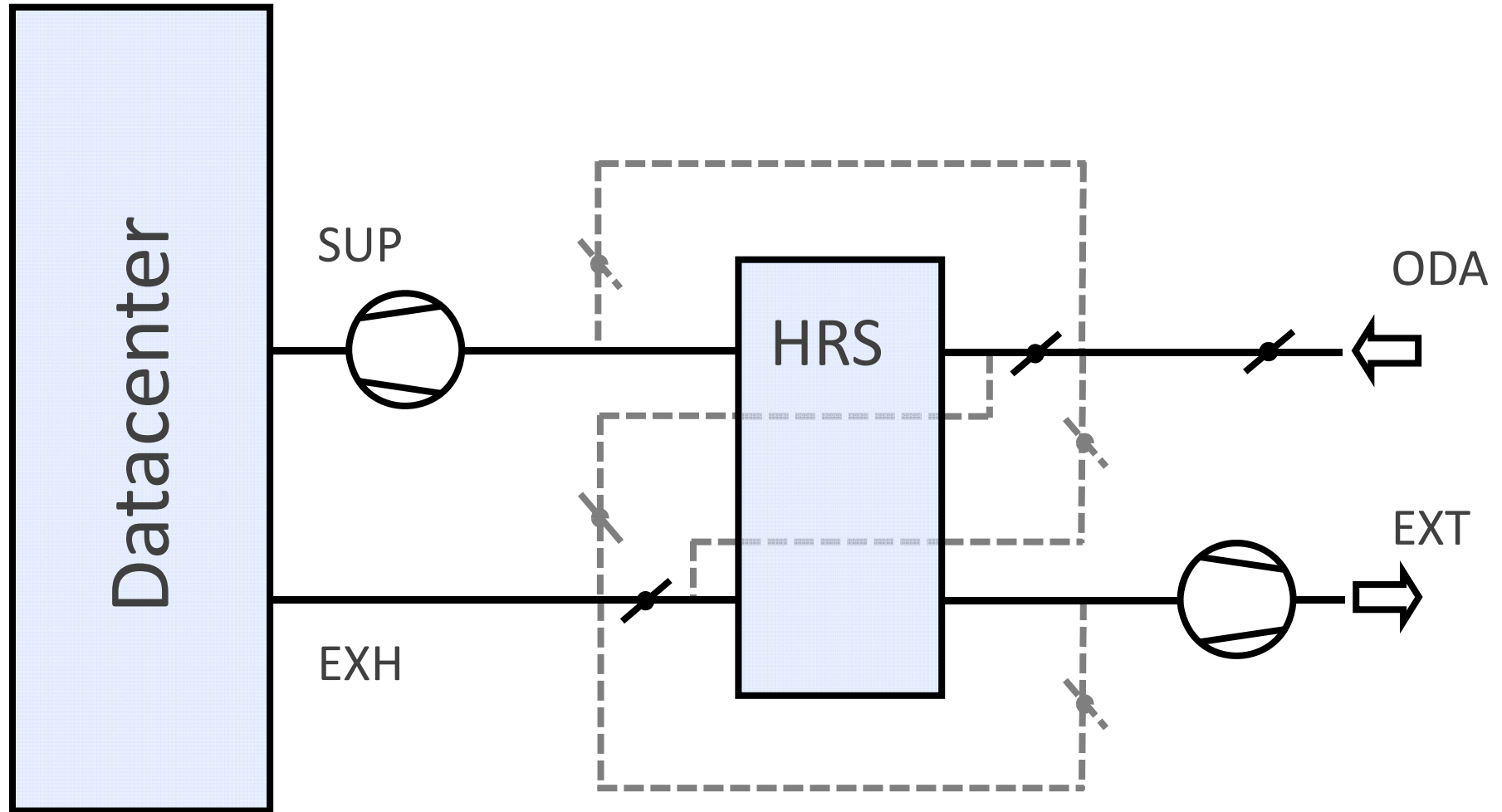
Recooling of datacenters
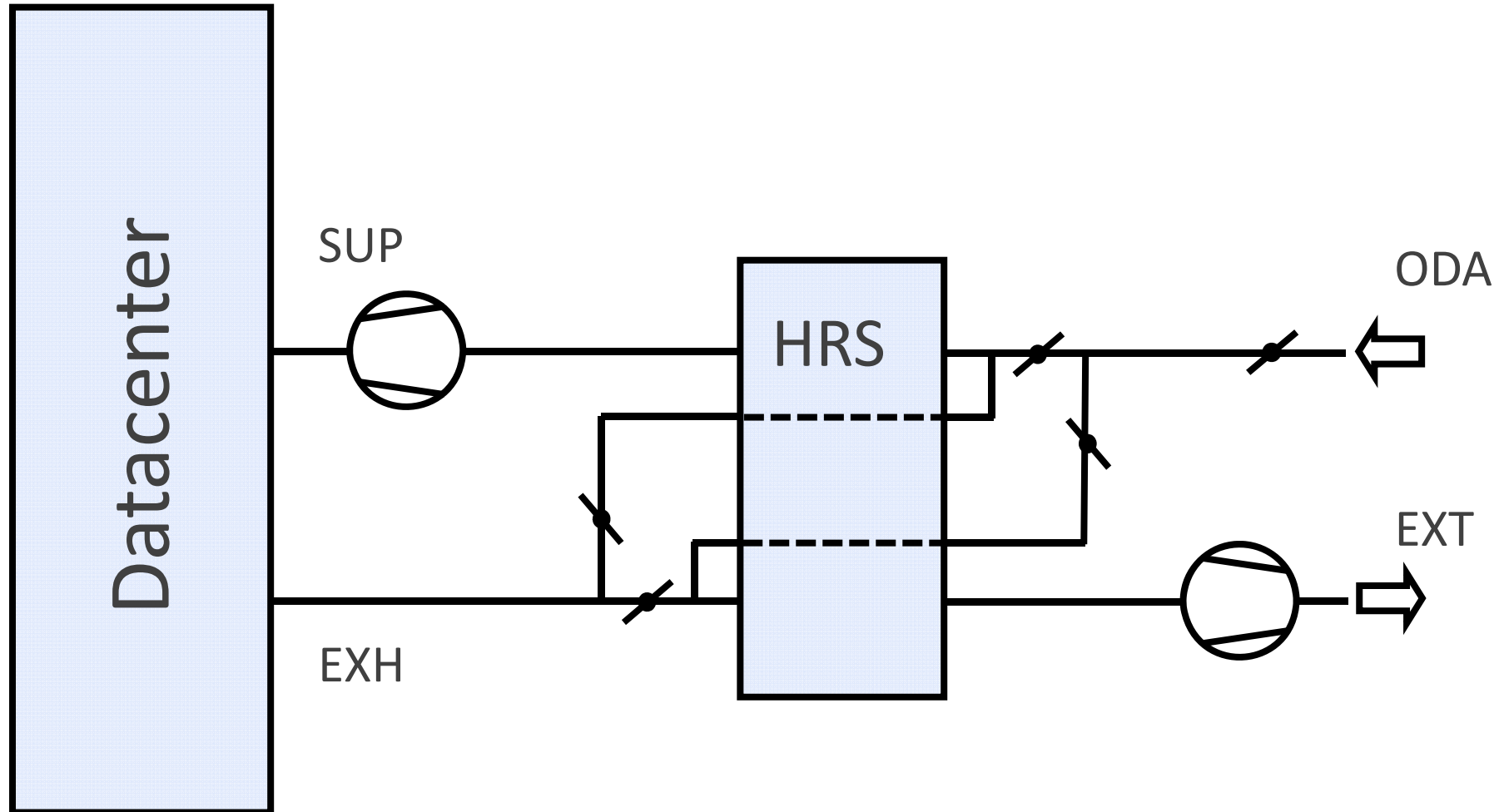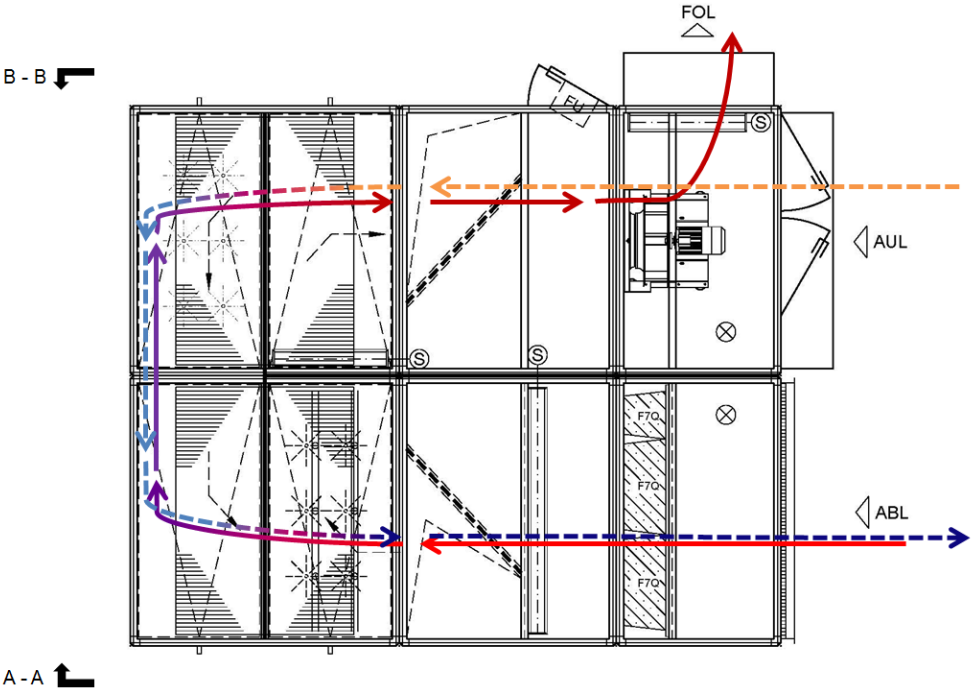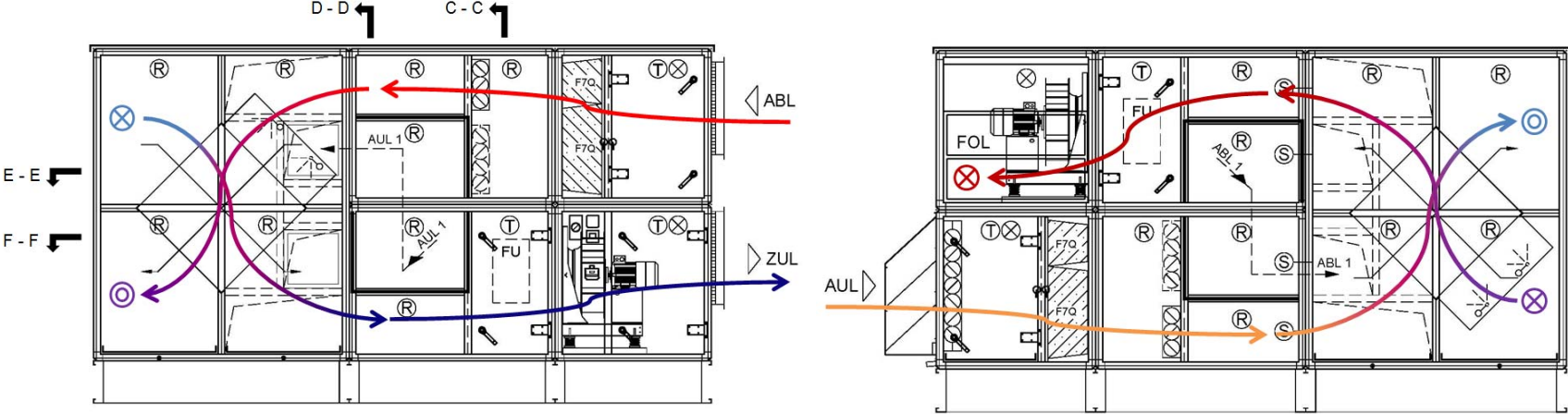

System concept

Recooling of datacenters
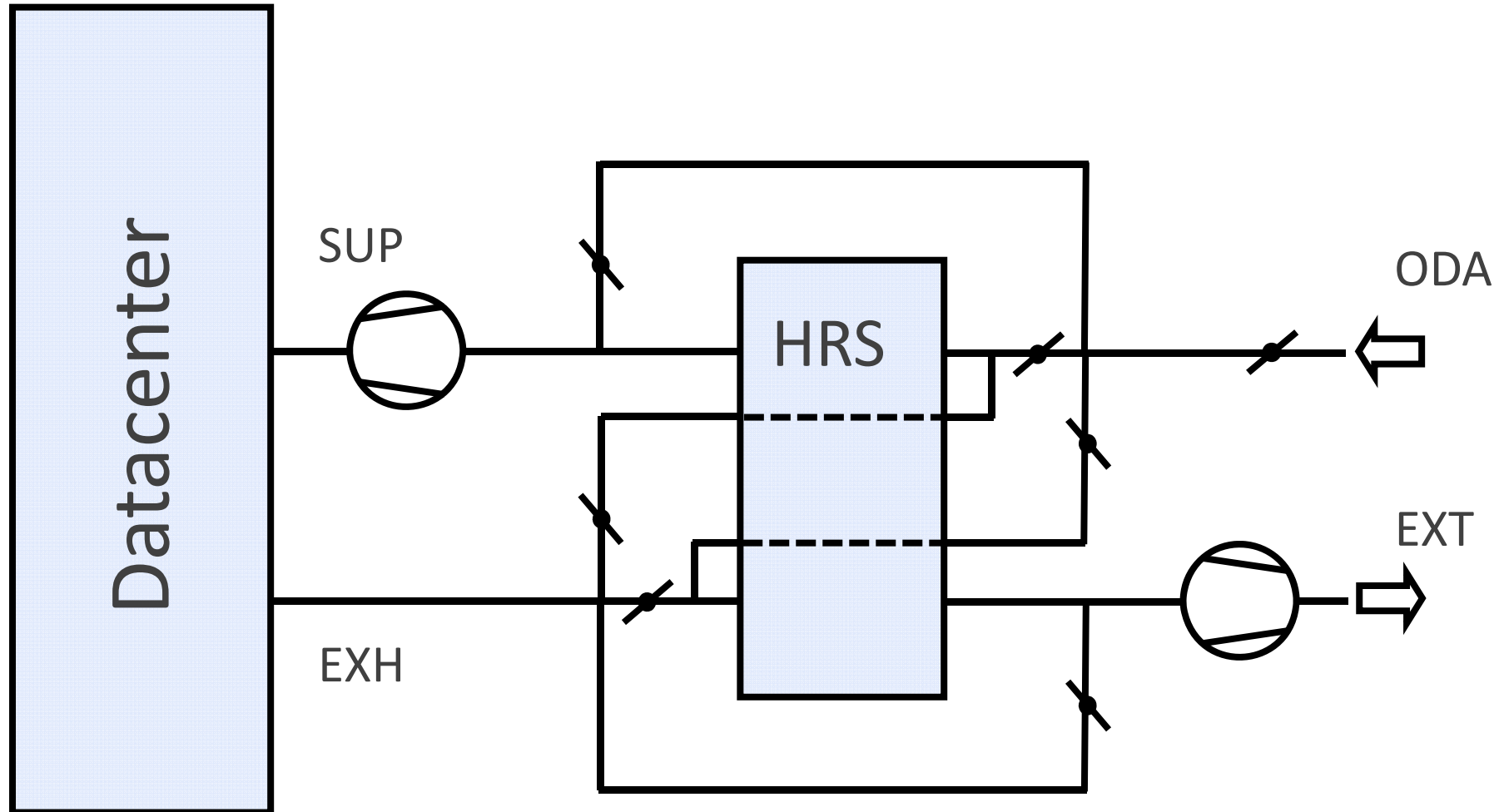
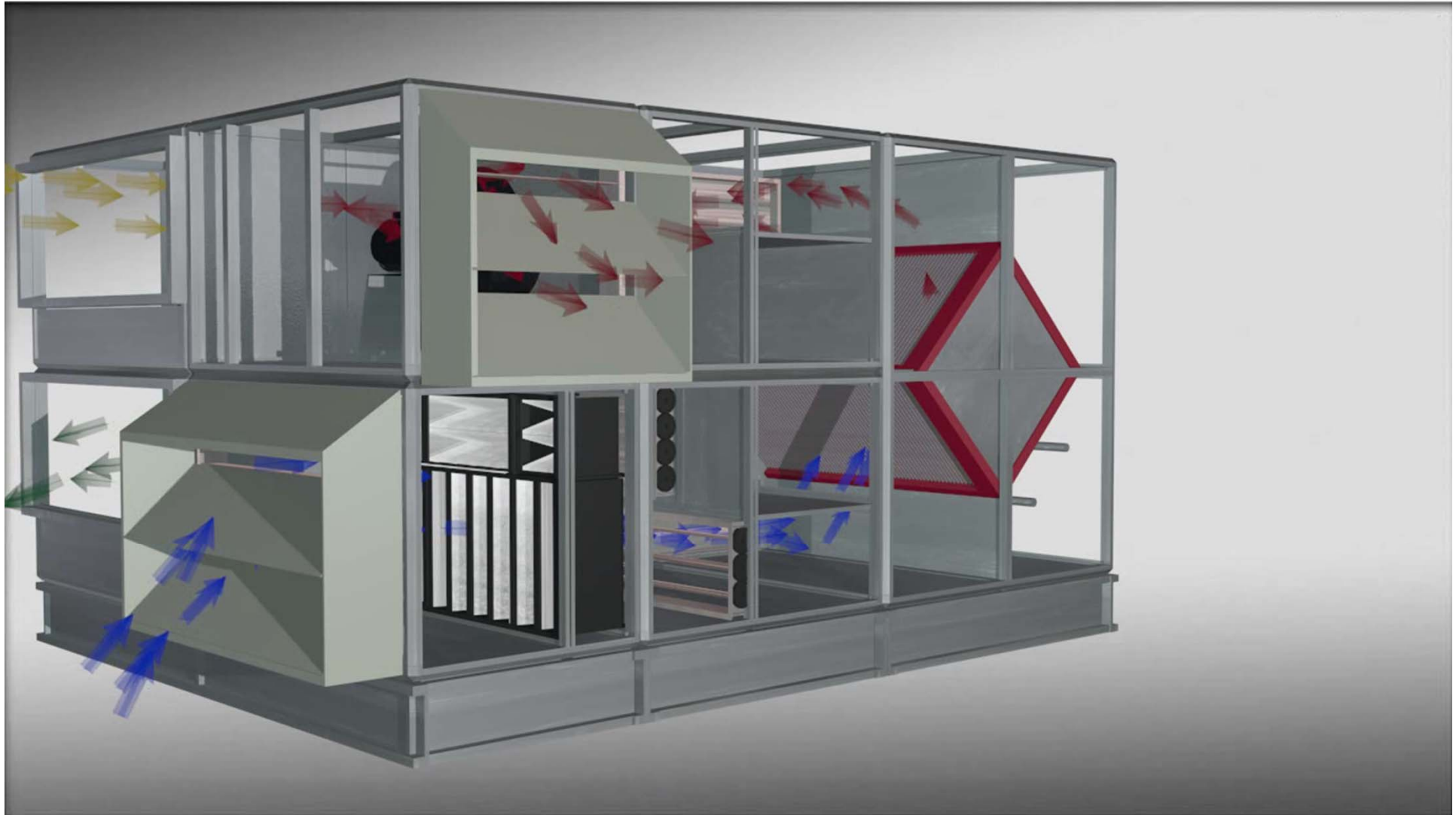

System concept with bypasses

Recooling of datacenters

HRS operation (ODA-mode with direct free cooling) ODA – SUP / EXH - EXT
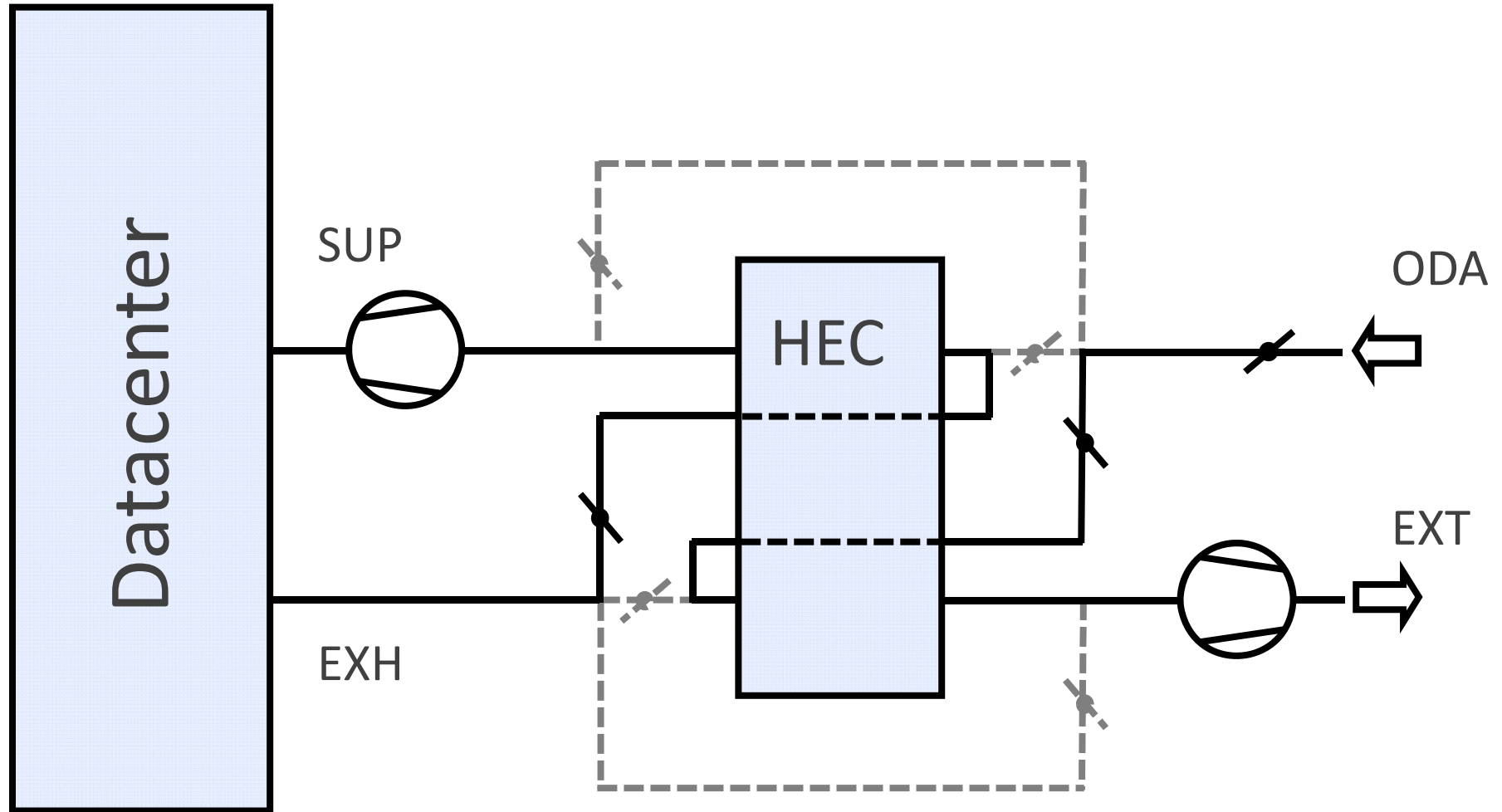
Recooling of datacenters

© Prof. Dr.-Ing. **Christoph Kaup**
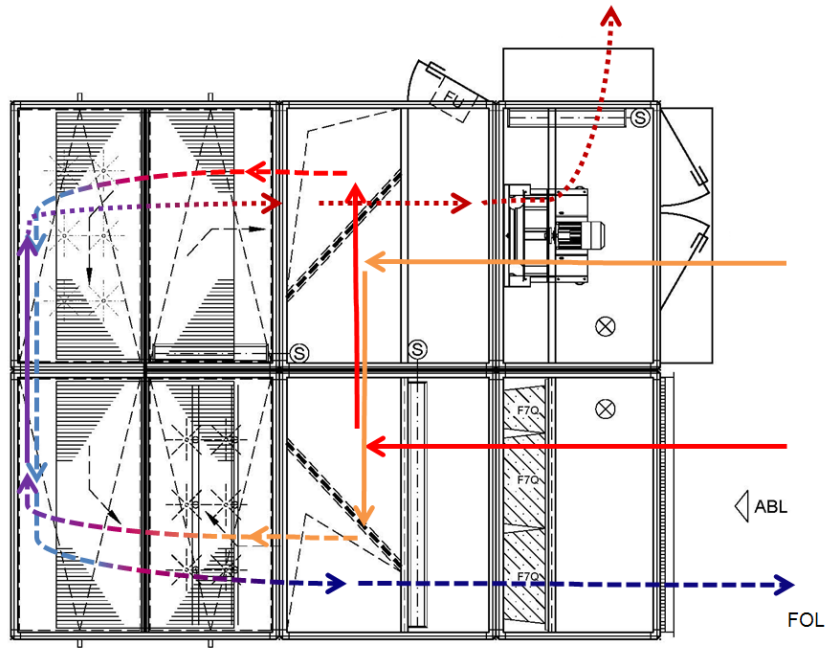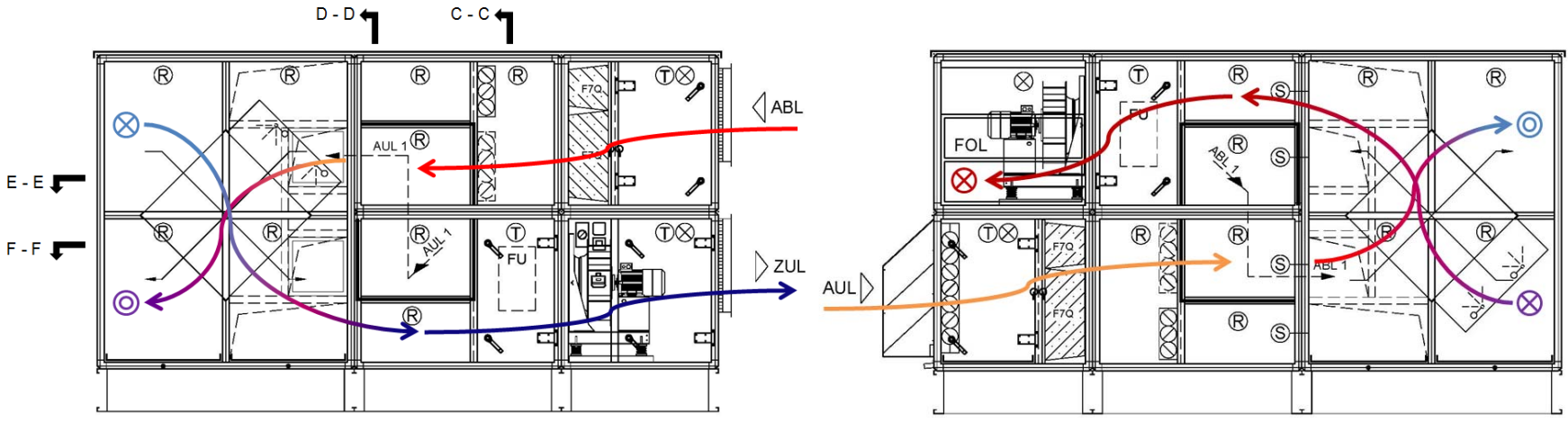
Recooling of datacenters

Recooling of datacenters

HRC mode (Recirculation with indirect free cooling) EXH – SUP / ODA - EXT

Recooling of datacenters

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Ansicht gleich Draufsicht

Recooling of datacenters
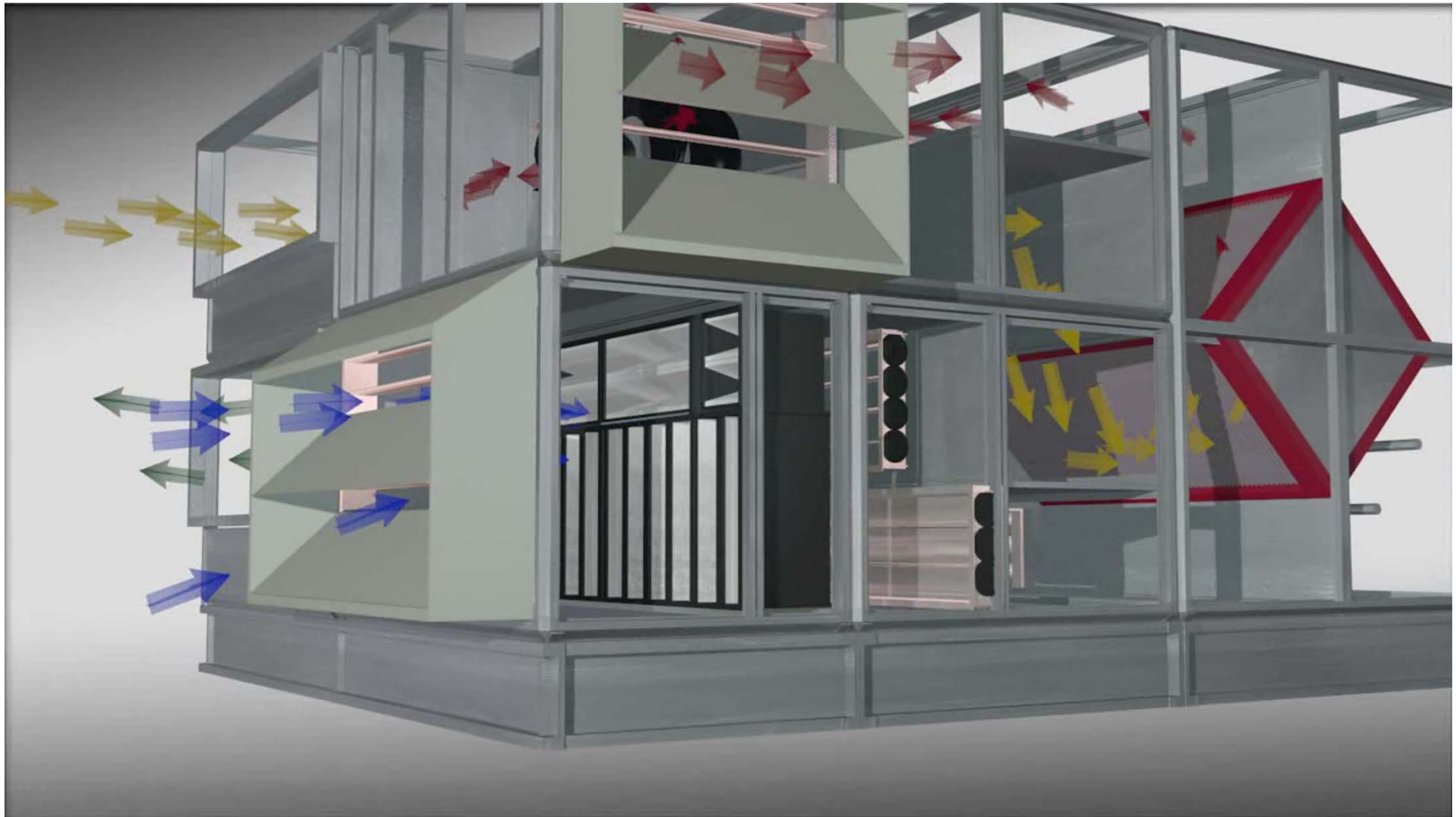
Recooling of datacenters

HRS operation (ODA-mode with indirect free adiabatic cooling)
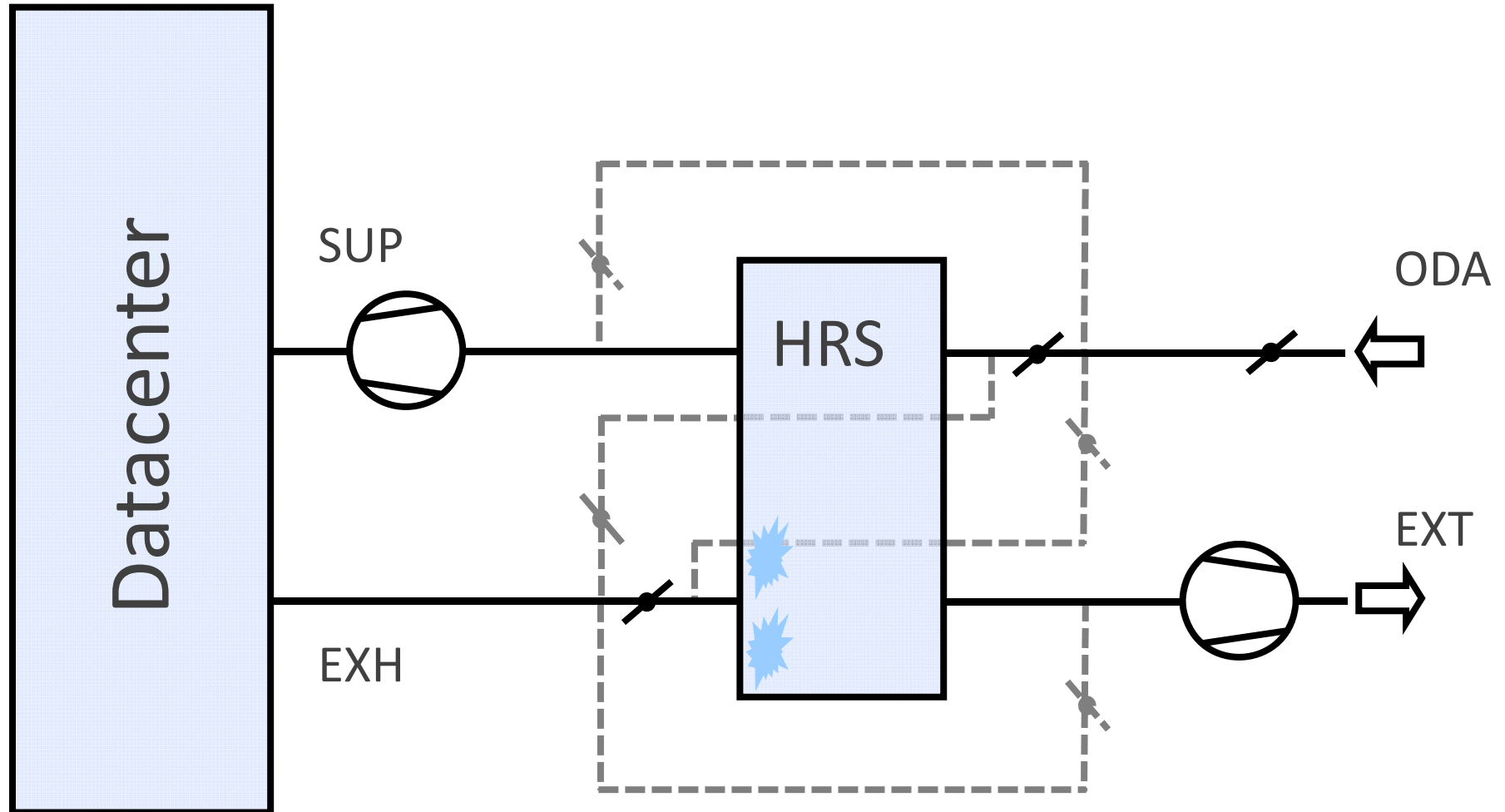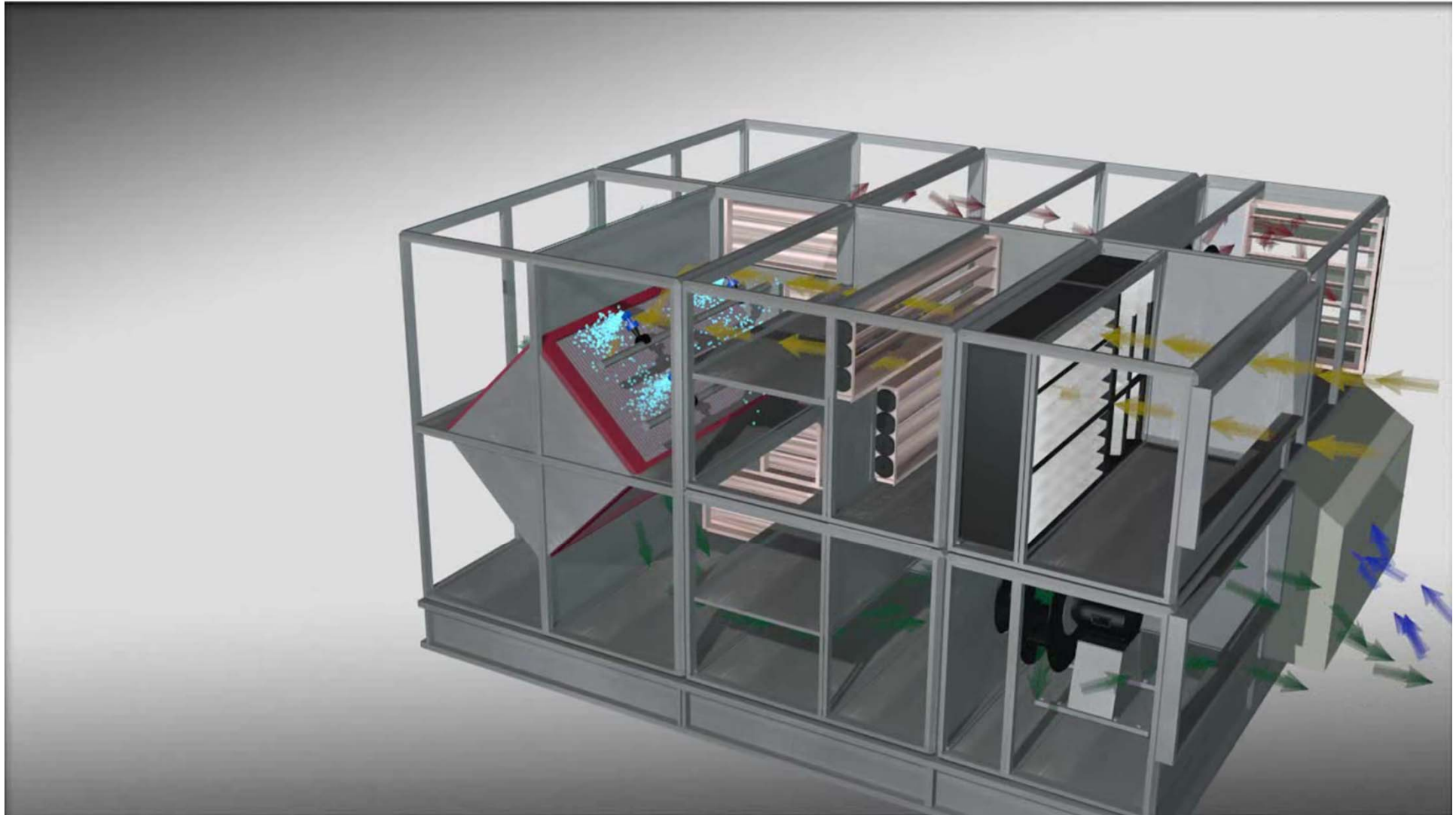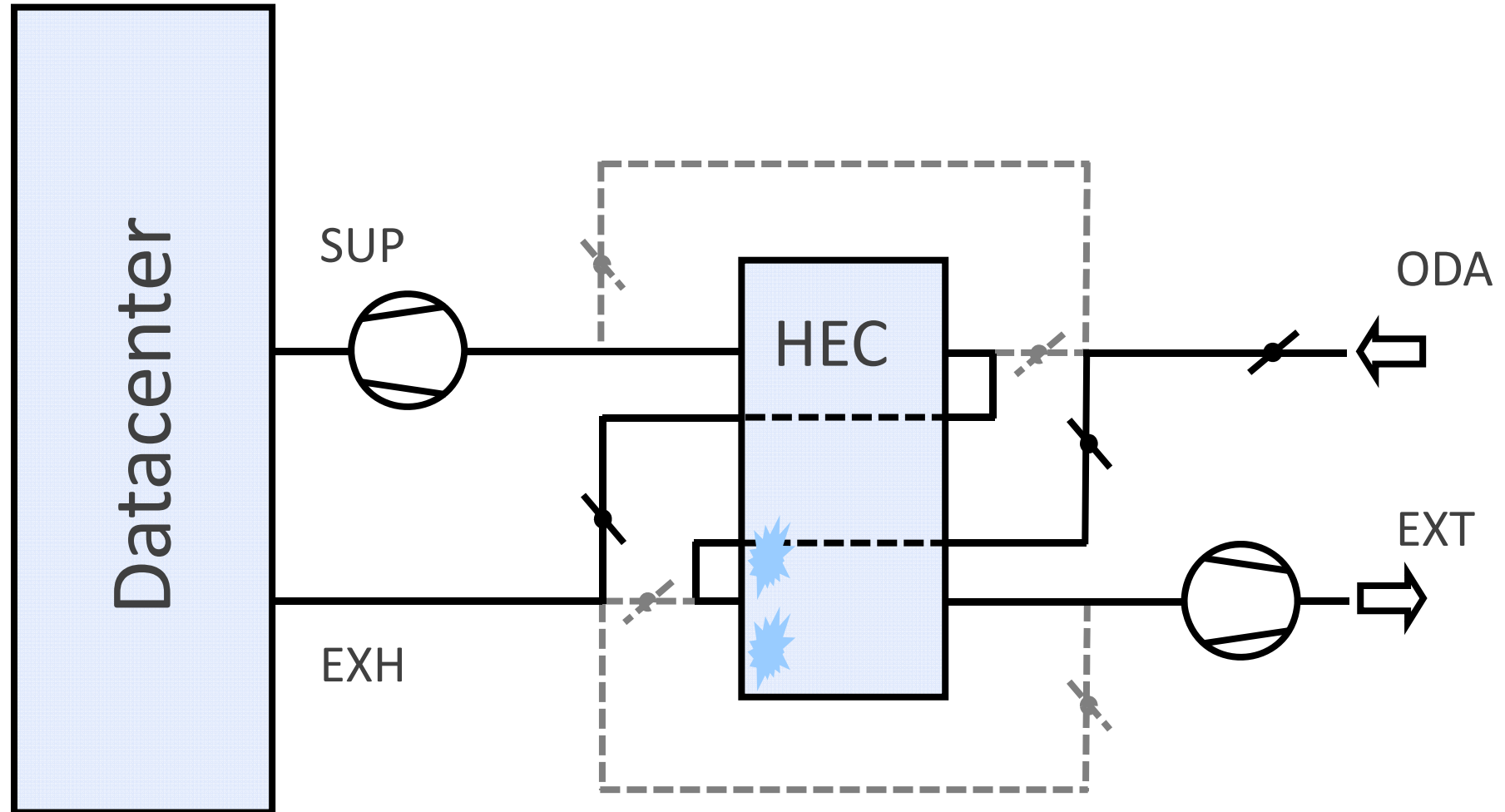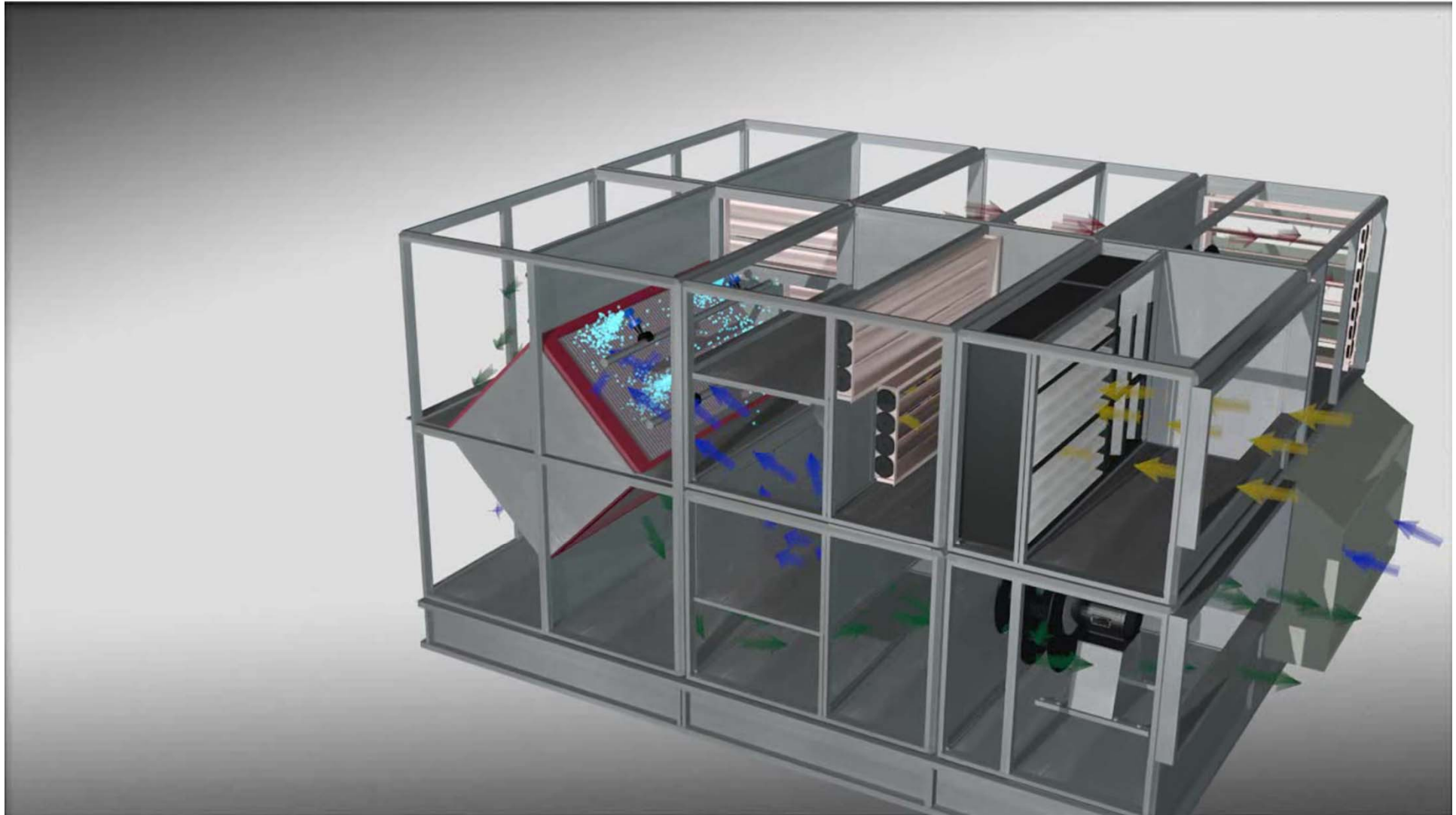
Recooling of datacenters
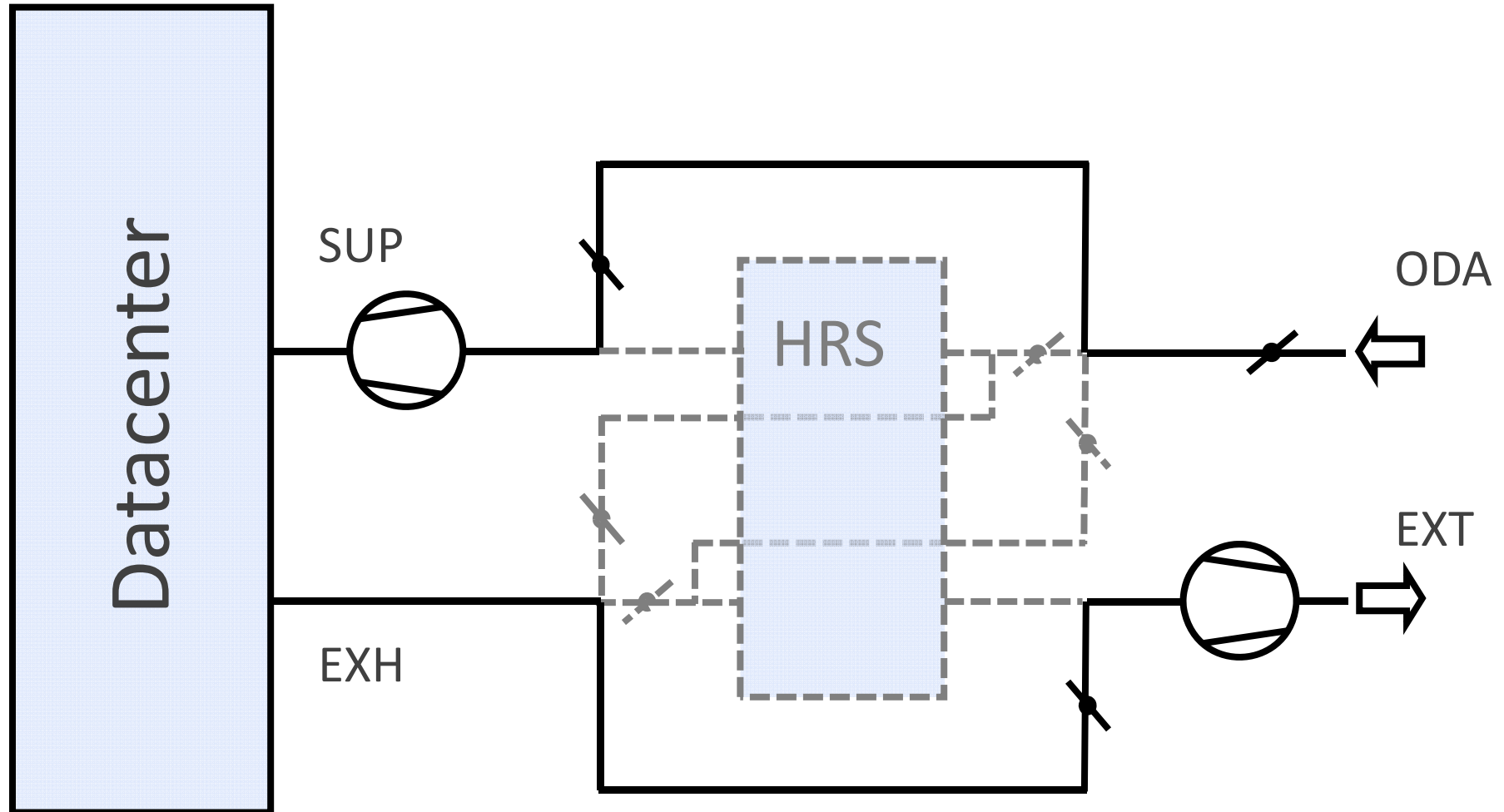
Recooling of datacenters

HRC operation (ODA-mode with indirect free adiabatic cooling)
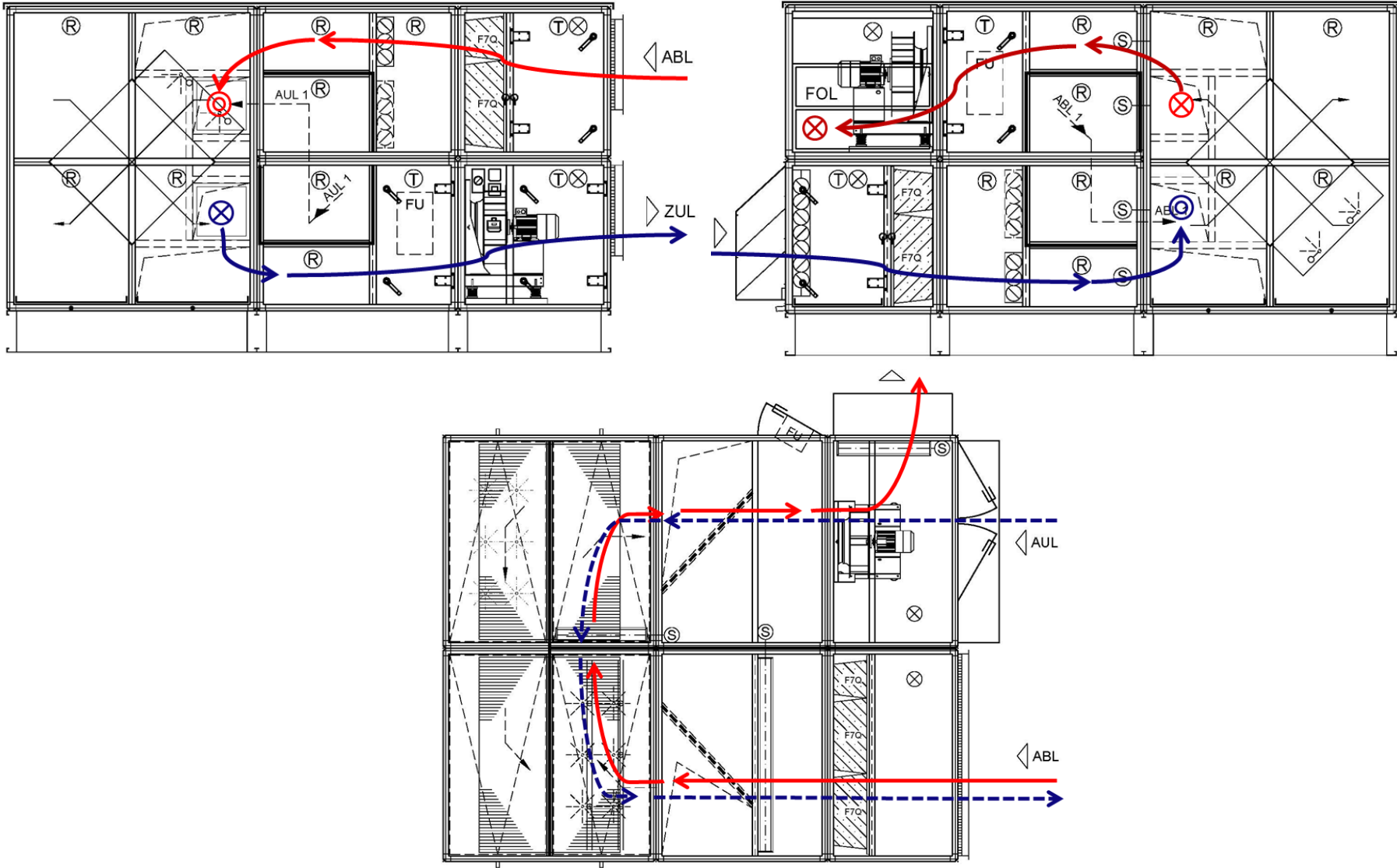
Recooling of datacenters
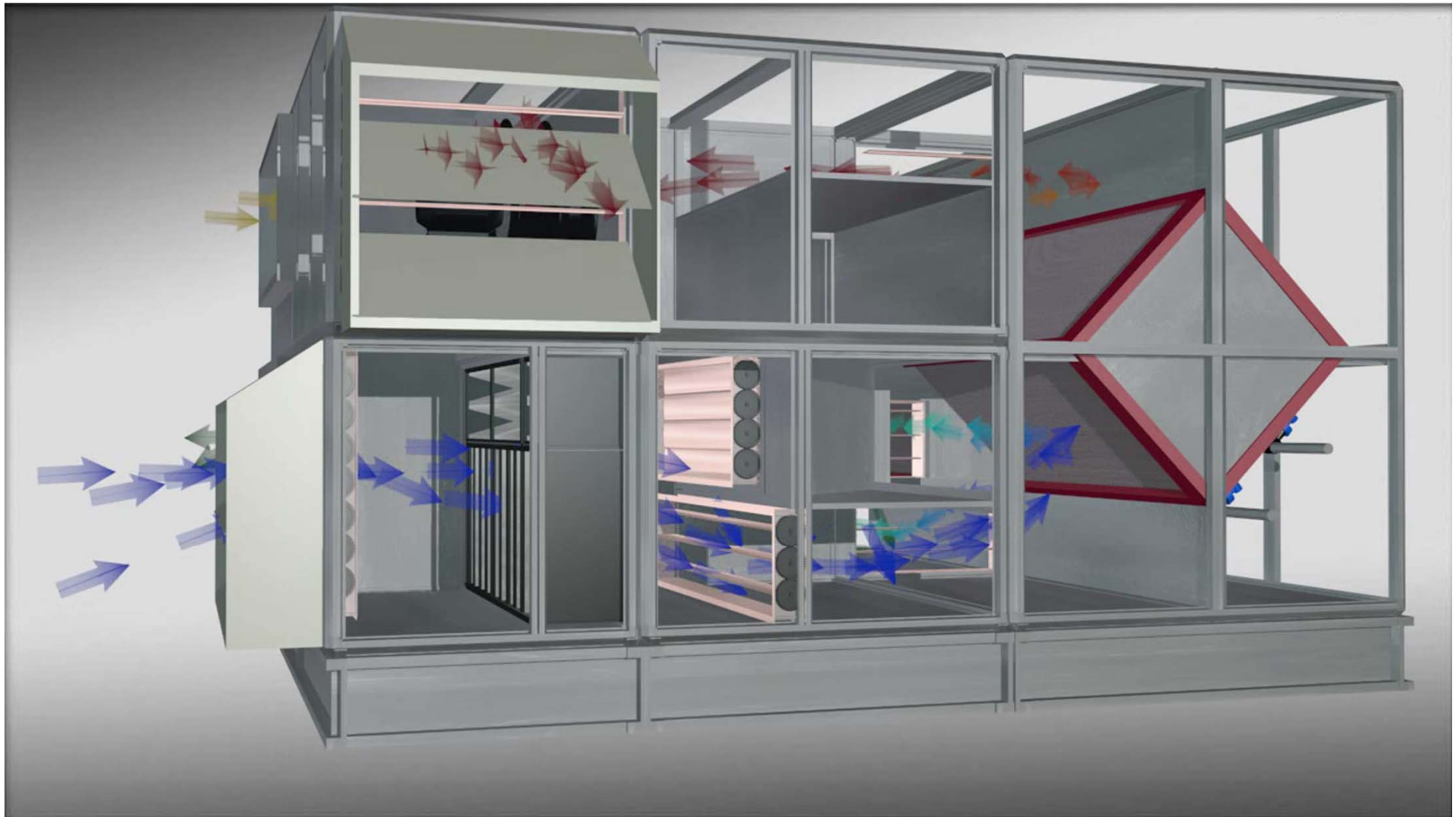
Recooling of datacenters

Bypass mode (Transition operation)
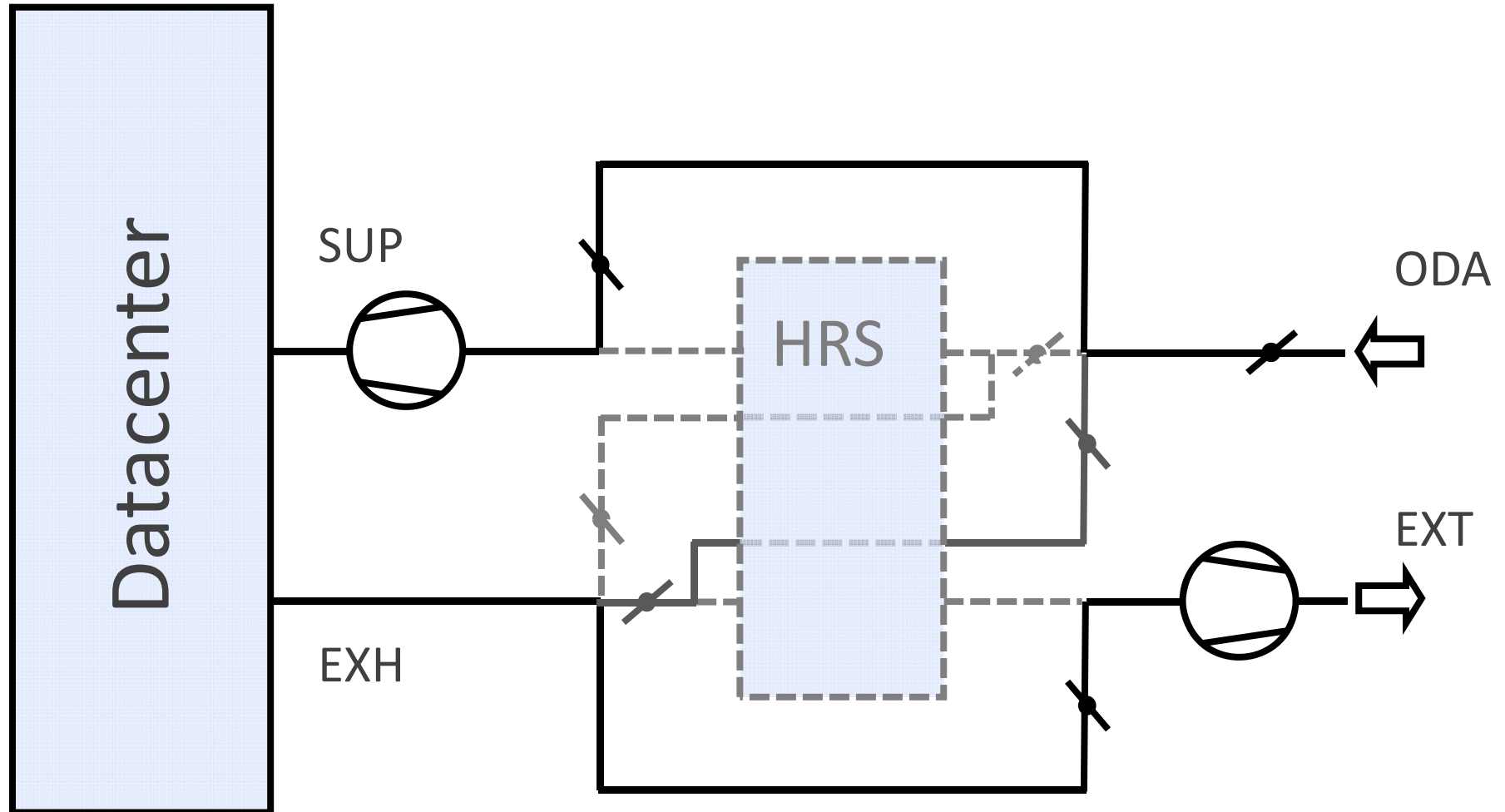
© Prof. Dr.-Ing. **Christoph Kaup**

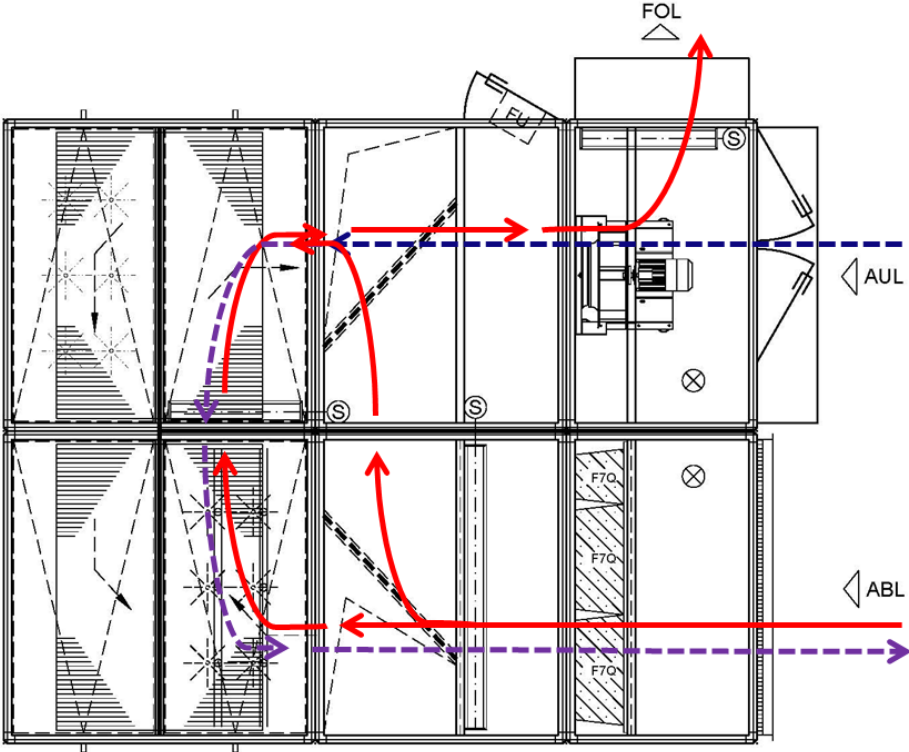# Recooling of datacenters

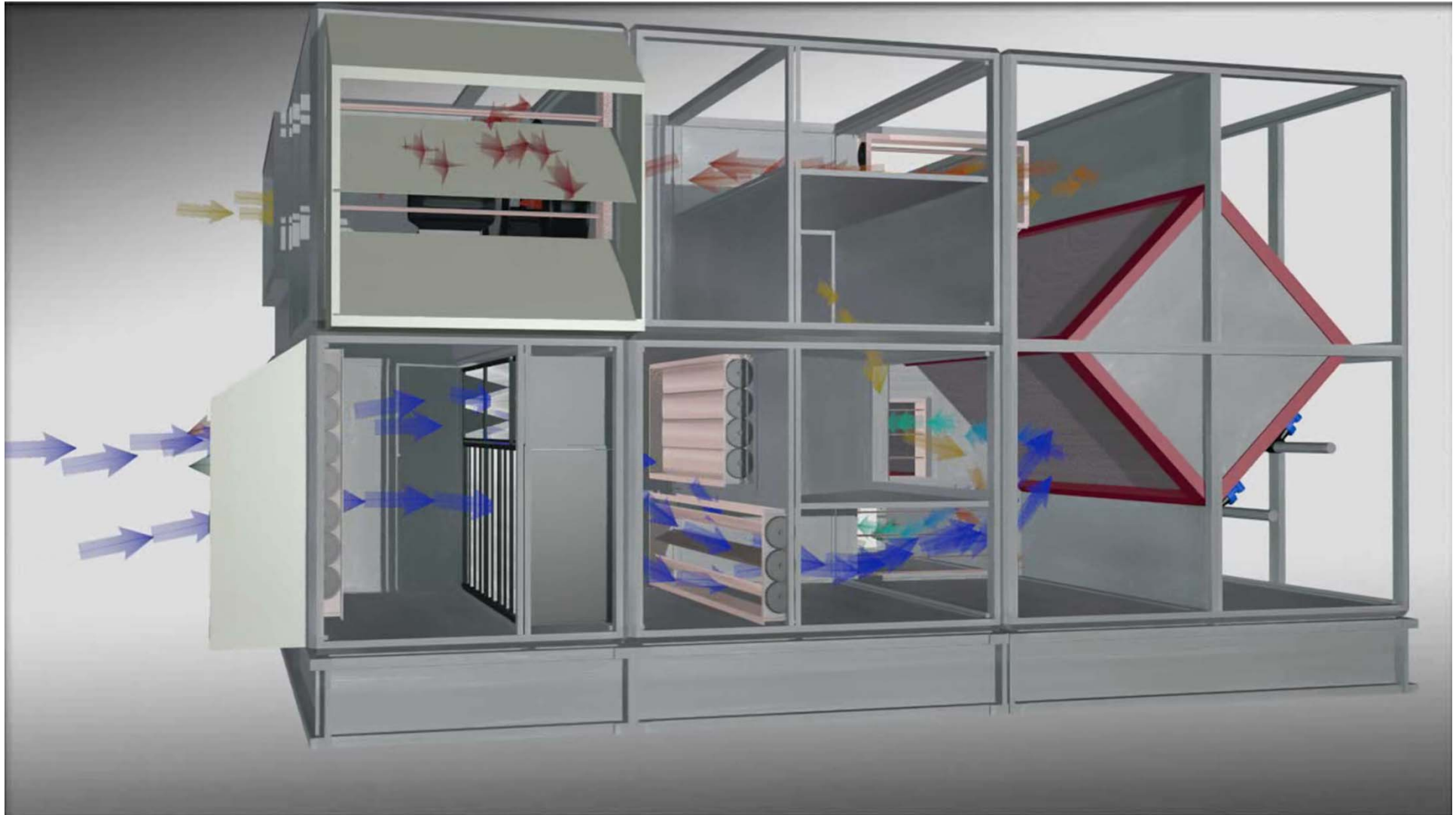# Recooling of datacenters

Recooling of datacenters

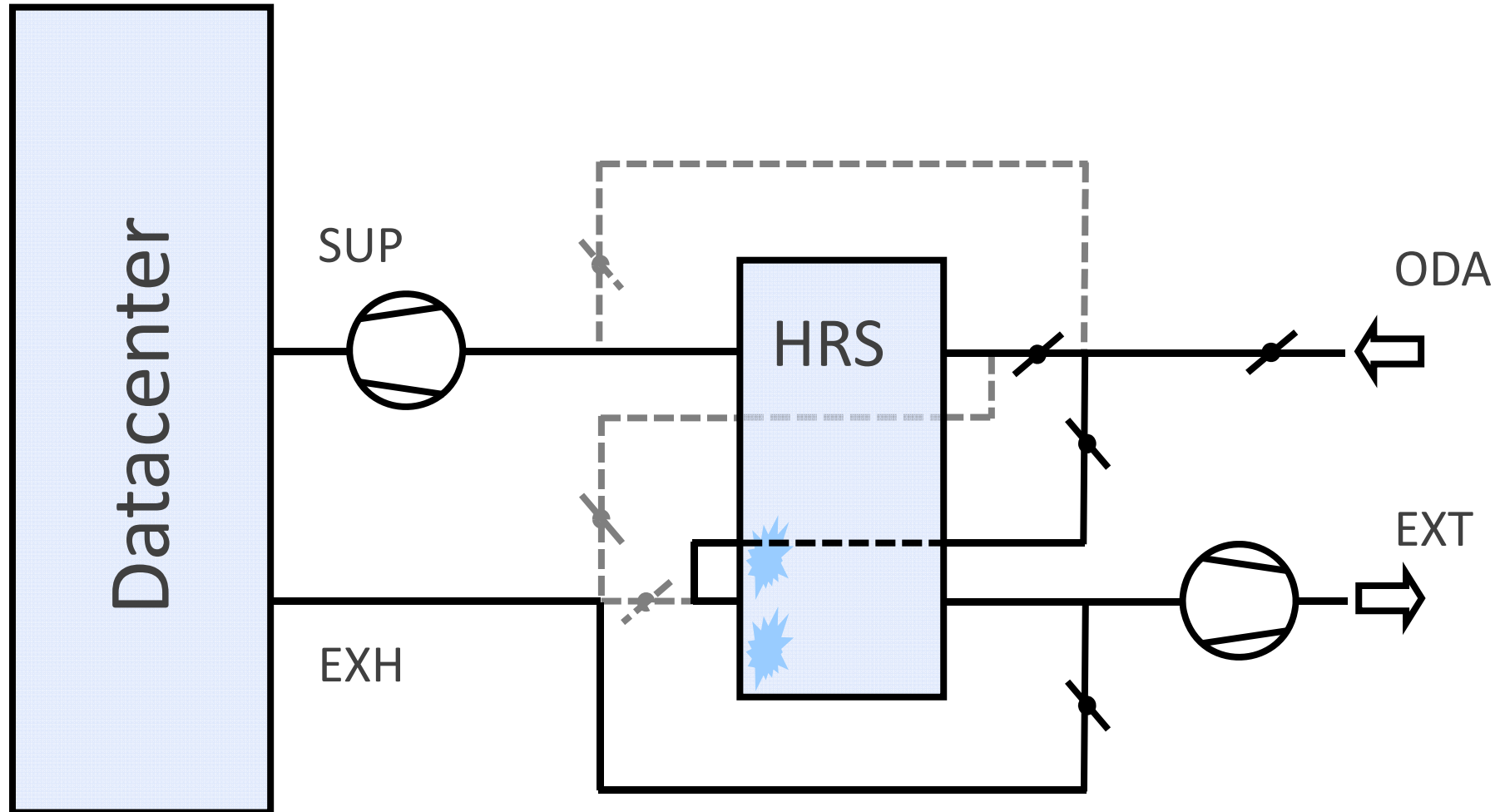Bypass- / mixing mode (Transition operation)

Recooling of datacenters

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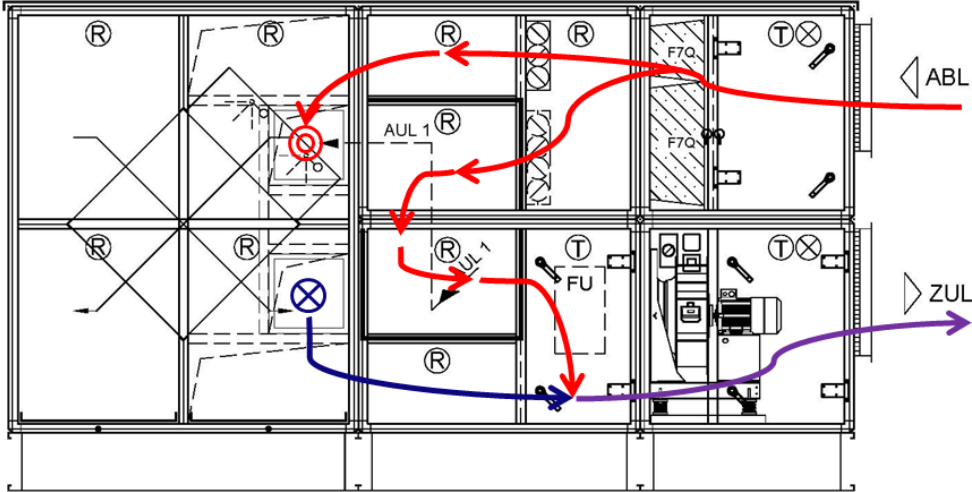
Recooling of datacenters

Recooling of datacenters

HRS operation (ODA-ODA mode with direct free cooling)

Effziency strategy

Efficiency startegy

o Use of free cooling

- ✓ direct free cooling, if outdoor air is clean

- ✓ Indirect free cooling (decoupled by heat exchanger)

o Optimization of heat exchanger

- ✓ High efficiency to maximize heat wast management

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Herzlichen Dank
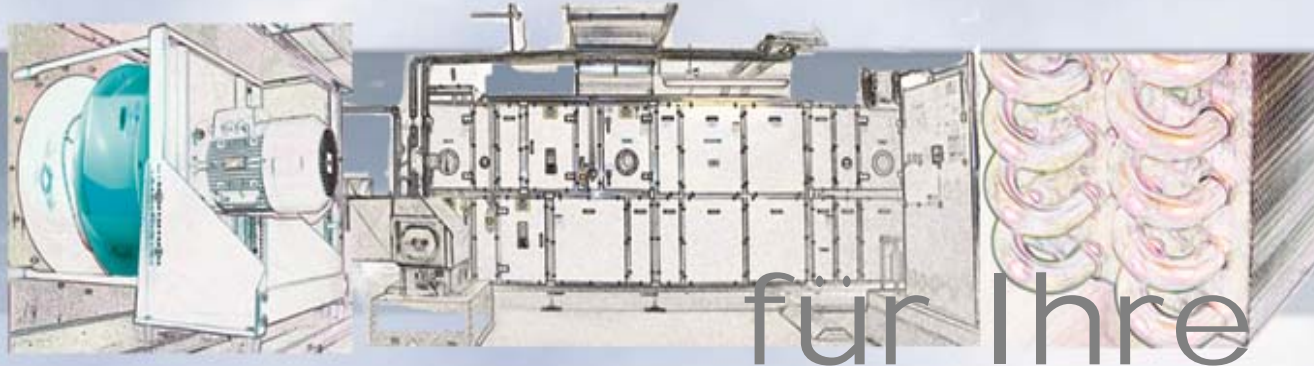
für Ihre
Aufmerksamkeit

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