

The Role of Custom AHUs in Hyperscale World

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STULZ Welcome's All

Extensive Range and Configurable Solutions

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Hyperscale Data Centers

What & Why, Influencing factors

- Hi-speed software applications/ servers
- Interdependent super computing (PFLOPS*)
- Internet, Web based businesses
- Birth of Cloud Services / Hyperscale

- Up time (99.9999%)
- Redundancy / Back up / Virtualization
- Data Center Technology / Architecture
- Scale As You Grow – CapEx / OpEx

- Customization – Location specific
- Efficiency
- Reliability of infrastructure
- Scalability of infrastructure

*PFLOPS: Peta FLOPS → PETA Floating Point Operations Per Second, 1 PETA = 1000 Tera Bytes – Method of computing measurement

Why Custom AHUs?

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Why Custom AHUs for Hyperscale?

Meeting the Evolving Needs of Data Centers

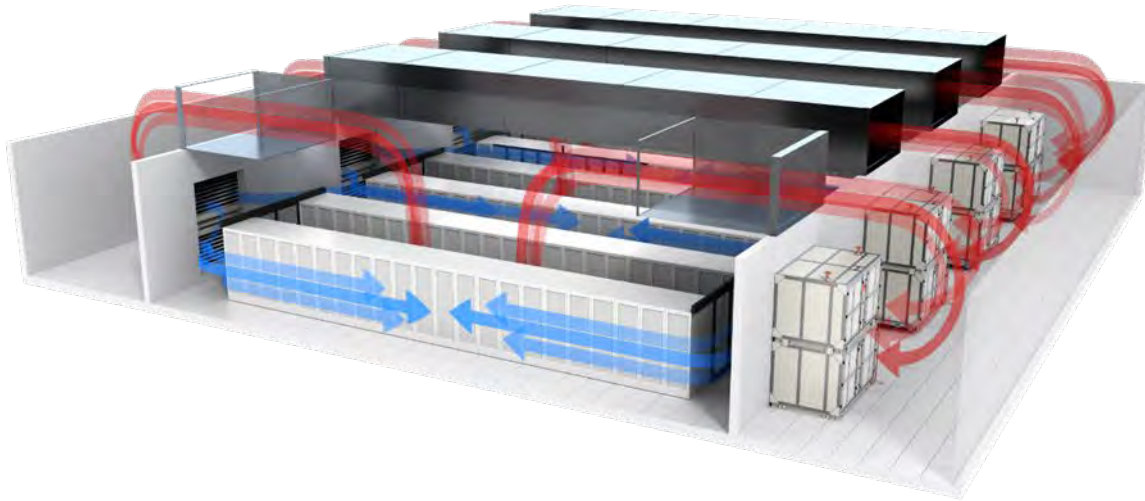
- High heat load / density but no space
- Taller / Unique server racks
- Most conventional system reached limits
- Meet PUE target
- Manage site constraints
- Meet Service Level Agreement (SLA)
- No raised floor required

- Reliability
- Prepared for the future – Scalability
- Work close with your equipment vendor
- Meet Standards (availability)
- Purpose built / Designed to fit
- Best utilization of available space
- Customized Options

Custom Indoor AHU

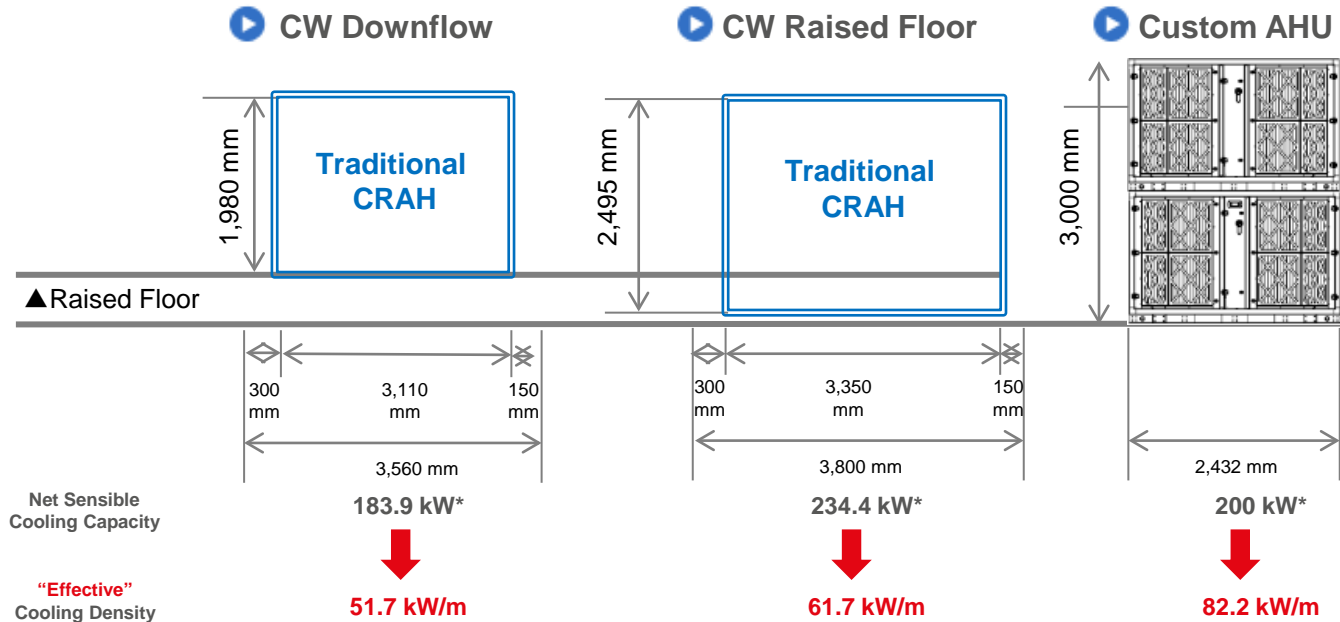
New Cooling Design – Enhanced White Space – Maximum Cooling Density

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CRAH vs. Custom Indoor AHU

Specific Requirements - Optimized Foot Print



Space (Width) Efficiency Depends on Cooling Type and Airflow Type

* Conditions: RA / SA = 35degC / 21 to 23degC, CW Temp = 15degC/24degC, ESP = 100Pa

Custom Indoor AHU vs. CRAH

Custom Indoor AHU vs. Traditional CRAH

Custom Indoor AHU	Parameter	“Classic” CRAH
Capital Cost (CAPEX)		
\$	Cooling units	\$
\$	Installation	\$\$
\$\$	False ceiling	\$\$
\$	Raised Floor	\$\$\$
Operating Cost (OPEX)		
\$	Service/Maintenance	\$
\$	Power consumption	\$

Custom AHUs - Types

Configurable across wide range

CW / WW: Chilled / Warm Water

- Chilled Water

Direct Evaporative

- Direct Evaporative
- CW or DX backup, full or capacity assist

leCE- Indirect Evaporative

- leCE – Indirect Evaporative
- CW or DX backup, full or capacity assist

DX – Direct Expansion

- Direct Expansion
- In combination with free cooling options, preferably water / glycol cool systems

Customizable Modular Designs

User Driven – Custom Designed – Purpose Built

- Each Hyperscale data center is unique in
 - Location, Ambient Conditions
 - Design Conditions, Operations etc



Requiring

- **Custom Designed** and
- **Purpose Built** Equipment

Horizontal Stackable
Fan Coil Unit Design



Modular Split Sectional AHU
DX & CW with Economization Options



Horizontal AHU
CW / DX Split



STULZ Custom Indoor AHU

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Standardized Horizontal Air Pattern Model CAH-0200

- Based on a highly successful custom design
- Deployed in multiple locations
- Standardized design enables shorter delivery times
- Offering various options or individual customization.

Technical Data		CAH-200	CAH-400
Cooling Capacity	kW	200	400
Airflow	m ³ /hr	50,000	100,000
Dimensions (W x H x D)	mm	2,400 × 3,000 × 1,560	4,800 × 3,000 × 1,560
	in	157.5 × 118.1 × 61.4	189 × 118.1 × 61.4

* Return air conditions: 34 °C/93.2 °F/27 % r.h.



Front side of the unit



Rear side of the unit

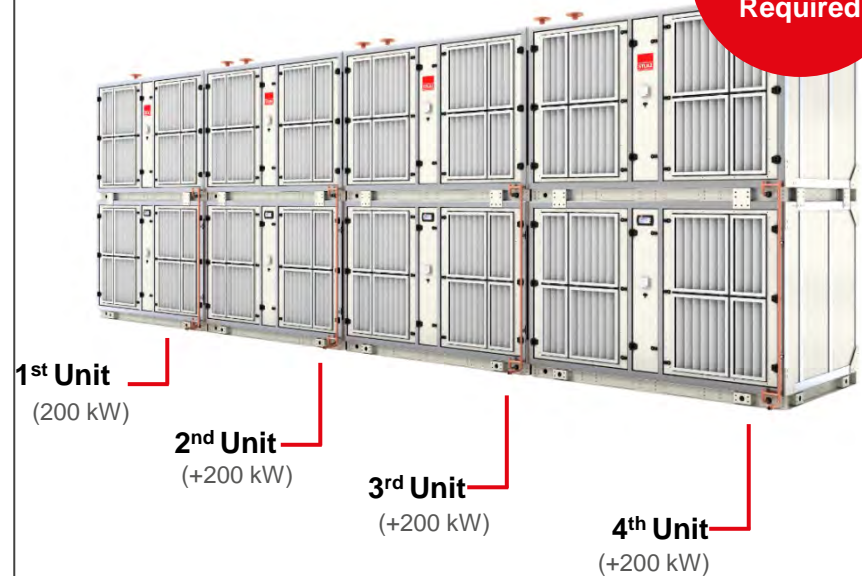
Modularity for Max Cooling Density

Easily Scalable, Deployable Modular Designs

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ZERO
Side Access
Required

- Zero clearance **space-efficient design** for higher heat density DC
- **Easy maintenance** from the rear (RA) side
- Supply air temperatures within the range recommended by **ASHRAE TC9.9 guideline**
- Blow through / Draw through Airflow Options
- Suitable for **taller server racks & higher loads**
- Optional Thermal break
- Lower noise level due unique design





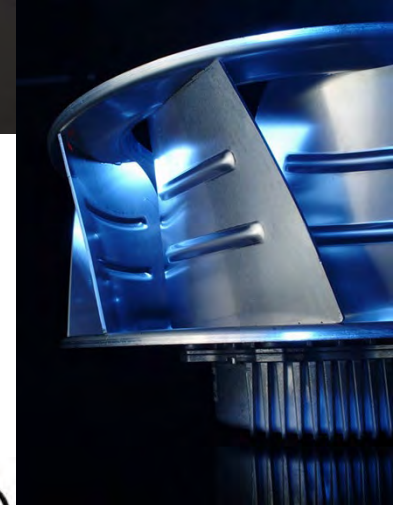
STULZ Custom Indoor AHU

Controls and Monitoring – Control Panel

- Backlit LCD alphanumeric display for visual indication
- Operated via 6-key menus, in five different modes
- Unit functions for cooling, heating, humidifying and dehumidifying
- Configurable operating modes for maximum efficiency and reliability
- Multiple I/O capabilities for all major components and sensors to optimize control for reliability and energy savings
- Suitable for connection to common BMS systems
- Smart unit networking and group control



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A Cool Megawatt

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Highest Cooling Capacity perimeter unit in the Industry



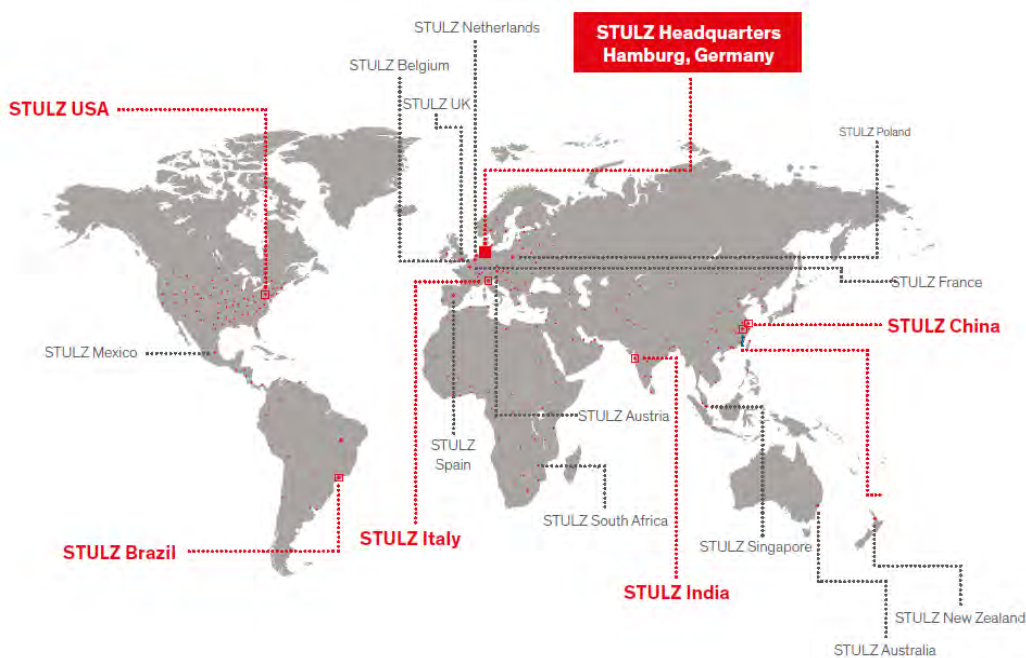
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Thank You!

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