

OCP Cooling Environments and ASHRAE TC9.9

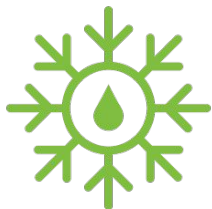
Roadmap for the Future Collaboration



OCP
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SUMMIT

OCT 15-17, 2024
SAN JOSE, CA



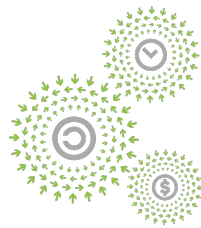


COOLING ENV

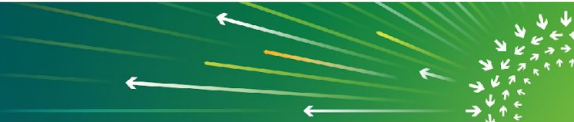
OCP Cooling Environments & ASHRAE TC9.9 Roadmap for the Future Collaboration

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bp/Castrol & OCP CE Co-Lead
NVIDIA & OCP CE Co-Lead
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OPEN
PLATINUM™



What is ASHRAE TC 9.9

TITLE

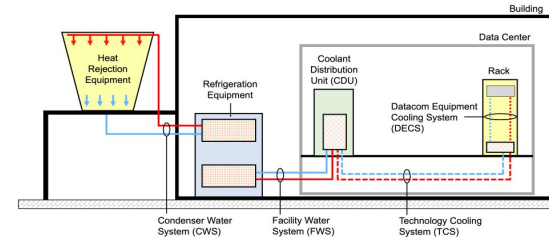
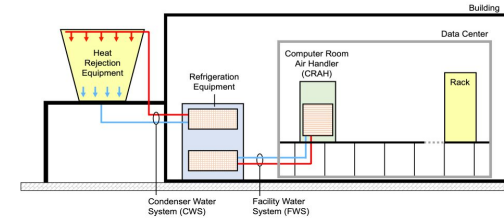
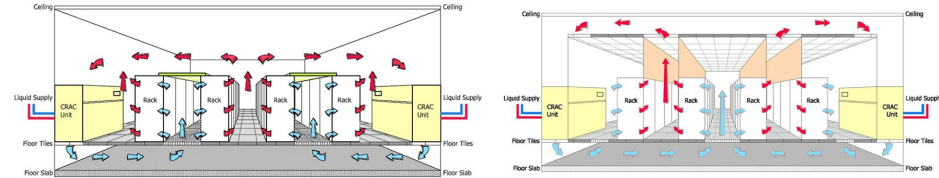
- Mission Critical Facilities, Data Centers, Technology Spaces and Electronic Equipment

MISSION

- Concerned with all aspects of mission critical design, commissioning, maintenance, and sustainability
- Drive common standards, energy efficiency, resiliency in design
- Guide industry in current and future technologies and design

SCOPE

- All things datacom facilities
 - Datacom refers to data processing and communication facilities
 - Data Centers, server rooms, telecom
 - Systems & Components
 - Facility level
 - Chillers, CRAHs, CRACs, Air Handlers, Controls
 - IT equipment level
 - CDUs, RDHx, Racks, Servers



ASHRAE TC 9.9 - Relevance to OCP

STANDARDS

- ANSI/ASHRAE Standard 90.4: Energy Standard for Data Centers
- ANSI/ASHRAE Standard 127: Method of Testing for Rating Computer and Data Processing Room Unitary Air Conditioners

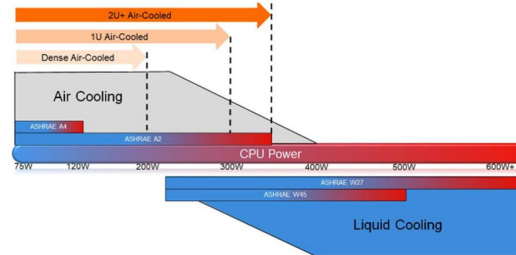
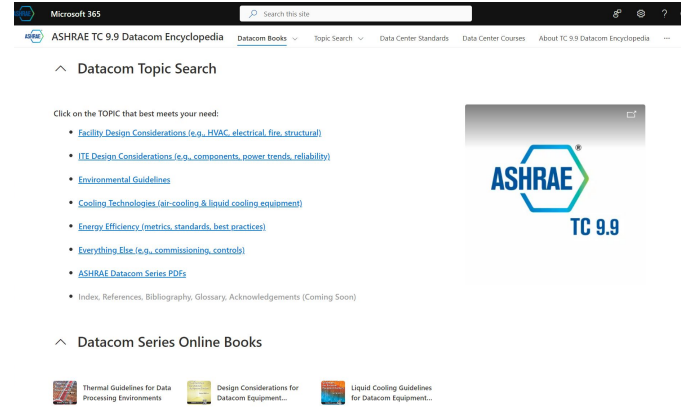
INDUSTRY GUIDELINES

Datcom Encyclopedia includes the following items:

- Thermal Guidelines for Data Processing Environments
- Liquid Cooling Guidelines for Datacom Equipment Centers
- Temperature Classifications:
 - “A Classes” for air cooling (A2, A3, A4...)
 - “W Classes” for liquid cooling (W27, W32, W45...)
- Psychrometric charts
- Best Practices
 - Methods of test of rating for chillers, CDUs, ect...
 - Data Center commissioning
 - Data Center design considerations

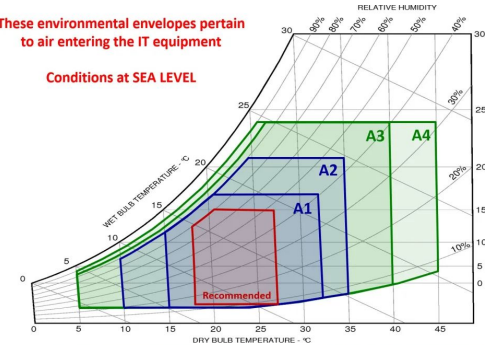
RESEARCH

- Cold Weather Shipping Acclimation and Best Practices
- Gaseous Contamination and High Humidity Impacts
- Sea Salt Corrosion
- Wetted Materials Compatibility
- Flow Velocity Limits for Erosion Control
- Liquid Cooling Resiliency

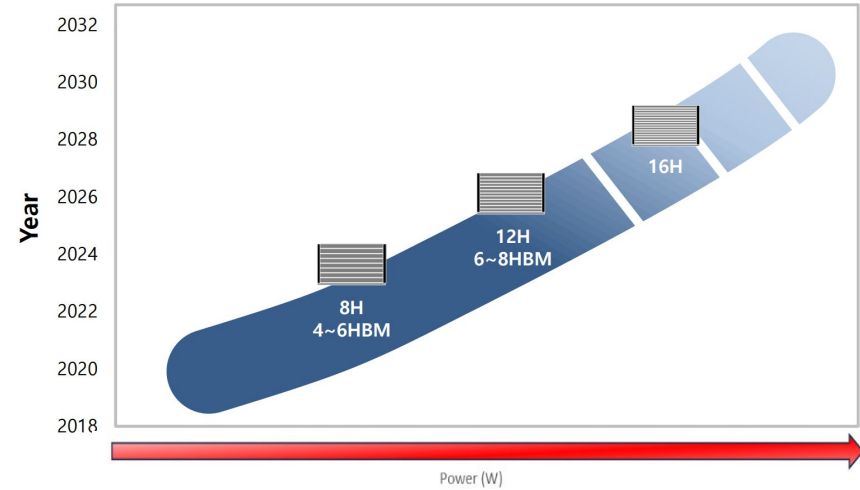
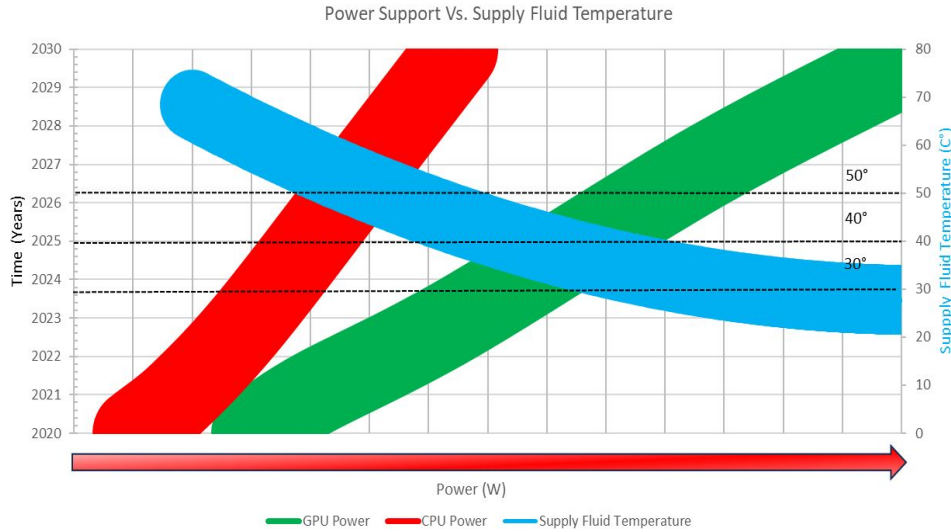


These environmental envelopes pertain to air entering the IT equipment

Conditions at SEA LEVEL




AI is Changing the Technology Landscape




- Demanding higher TDP components and increased density at the rack → **liquid cooling!**
- How is the industry positioned to support this shift?


Source of Figures: 2023 OCP Global Summit - Panel: Coolant Temperatures for Durable Data Center Designs



What
challenges do
we face?

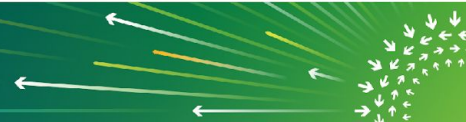


What do we
tackle
together?



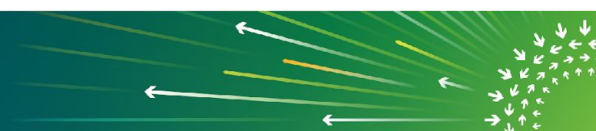
What do we do
differently?

- **SPEED**
 - Driven by AI enablement
 - Move from boutique to scale - need for updated standards and clear guidelines, and many more...
 - Example → *Define fluid velocities in flexible hoses*
- **BREADTH**
 - One technology does not work anymore; we have multiple options that work concurrently
 - What do we do together to address this and leverage the industry?
 - Example → *Activate hyperscalers, MEPs, engineering companies to define the standards (as much as possible)*
- **OPPORTUNITIES**
 - Activate a group that will articulate these questions along with experts from the industry
 - *We need people to be more active → breadth of engagement*
 - Clear guidance & best practices → More technical details, thread specs, pipe connections, etc... etc...
 - Leverage unique strengths of ASHRAE and OCP



Benefits of OCP and ASHRAE Collaboration

- Generate wider knowledge base
 - Leverage unique strengths
 - Coordination of different voices in the value chain
 - Engagement from silicon to ambient
- Educate
 - Avoid duplication of work
- Collaborate
 - Shared/aligned roadmap
- Communicate
 - Published work; publicizing
- The OCP Industry Liaison team will facilitate the two way communication between OCP and standards bodies to have the right standards in place to accelerate adoption of liquid cooling



Panel Discussion



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Chair, ASHRAE TC
9.9
Voting member 9.9
& 90.4
Affiliated Engineers,
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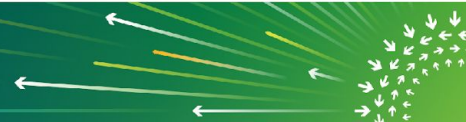


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Liaison Lead - CE
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Vice President,
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John Fernandes
OCP CE Co-Lead
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Thank you!



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