



ADVANCED
COOLING
SOLUTIONS

CE Sustainability Workshop

(Dielectric Fluids and Impact on Immersion)

05/25/2022

Connect. Collaborate. Accelerate.



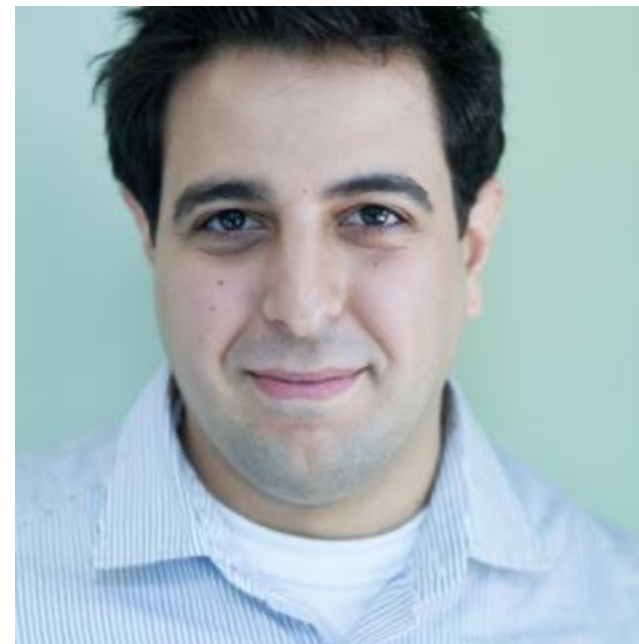
OPEN
Compute
Project®

Panellist

Husam Alissa

Director of Advanced Cooling & Performance in Microsoft's Cloud Operation & Innovation, Advanced Development Team

- Husam's focus areas include systems (chip-server-datacenter), cooling (air, direct to chip, immersion, and cryogenics), performance, architecture, reliability, efficiency, sustainability, and TCO, with more than fifty publications in these fields and multiple patents.
- His work has received many recognitions including DCD Award for Mission Critical Tech Innovation, IEEE Micro Top Picks, New York State Assembly Early Career Achievement, IEEE TCPMT Best Paper Award, ASME InterPACK Outstanding Paper Award, and S3IP Distinguished Doctorate Dissertation Award. He is a member of IEEE, ASHRAE TC9.9, ASME, OpenCompute, & iMasons.



ADVANCED
COOLING
SOLUTIONS

Panellist

Jimil M. Shah Ph.D.

Senior Director of Thermal Sciences at TMGcore

- Before joining TMGcore, he was an Application Development Engineer for Server Liquid Cooling of Data Centers at 3M Company. His research in advanced cooling solutions for data center thermal management focuses on single- and two-phase direct-to-chip as well as immersion cooling using dielectric fluids. Before joining 3M, Dr. Shah worked as a Post-Doctoral Research Associate at the University of Texas at Arlington.
- Dr. Shah received his doctorate in Mechanical Engineering from the University of Texas at Arlington in 2018 and is a professional member of IEEE, ASHRAE TC9.9, ASME, and OpenCompute. In the InterPACK 2018, he received the “ASME Electronic and Photonic Packaging Division (EPPD) Student Engineer of The Year Award.” He has published 28 journal and conference papers with three additional articles under review.

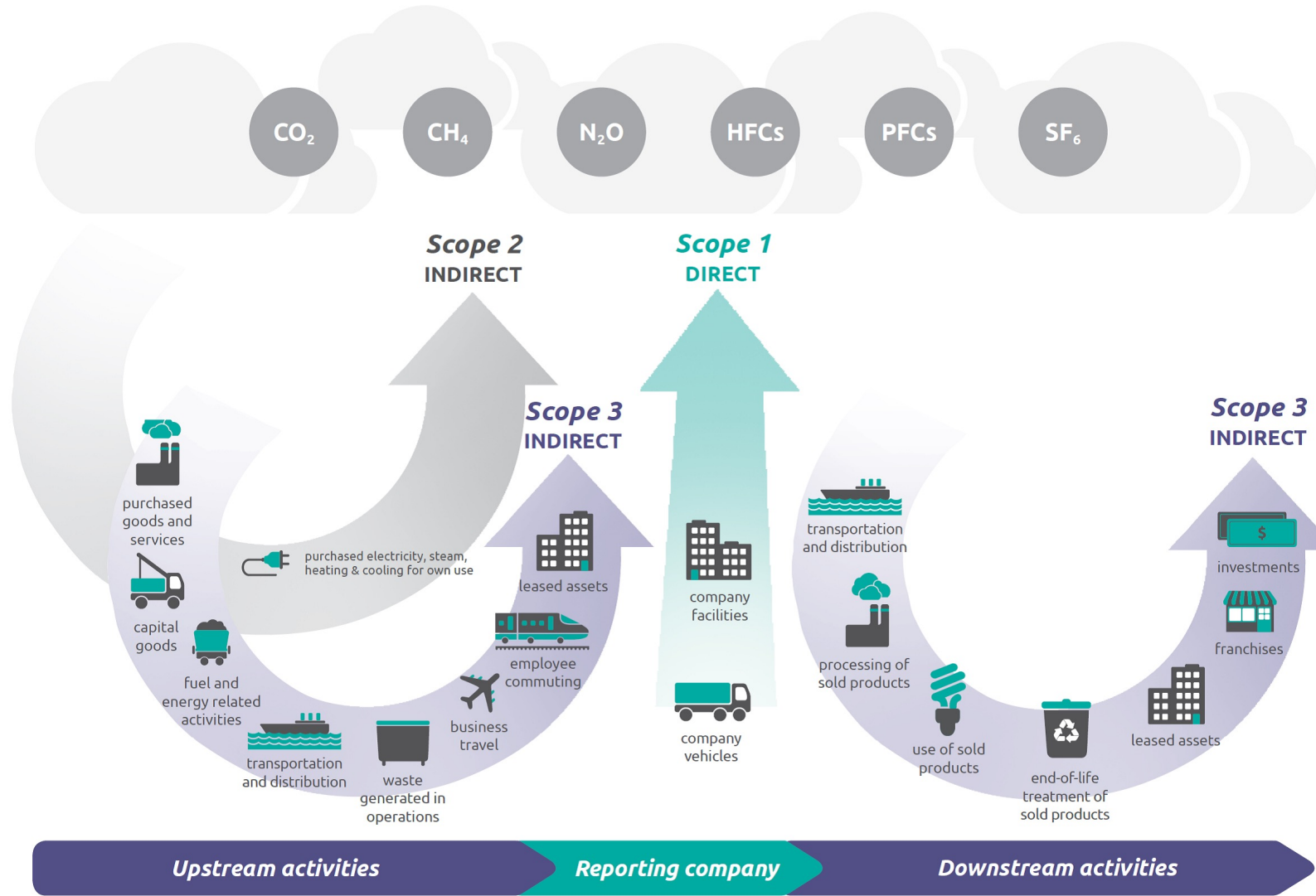


ADVANCED
COOLING
SOLUTIONS

Emission Source Categories



ADVANCED
COOLING
SOLUTIONS



Source: WRI/WBCSD Corporate Value Chain (Scope 3)
Accounting and Reporting Standard

Connect. Collaborate. Accelerate.

Emission Source Categories

- How does immersion cooling impact Scope 1 emissions in contrast with traditional air cooling?
- How does immersion cooling impact Scope 2 emission in contrast with traditional air cooling?
- Scope 3 is a real challenge getting proper Upstream accountability
 - What are some consideration unique to Upstream for engineered fluids?
 - What are some consideration unique to Upstream for renewable HC fluids?



ADVANCED
COOLING
SOLUTIONS

Emission Source Categories



ADVANCED
COOLING
SOLUTIONS

- Scope 3 Downstream is also a challenge including end of life
 - What are some consideration unique to Downstream for engineered fluids, please consider treatment/recycling or other end of life uses?
 - What are some consideration unique to Downstream for HC fluids, please consider treatment/recycling or other end of life uses?
- Outside of specific Scope emissions are there other points regarding sustainability?