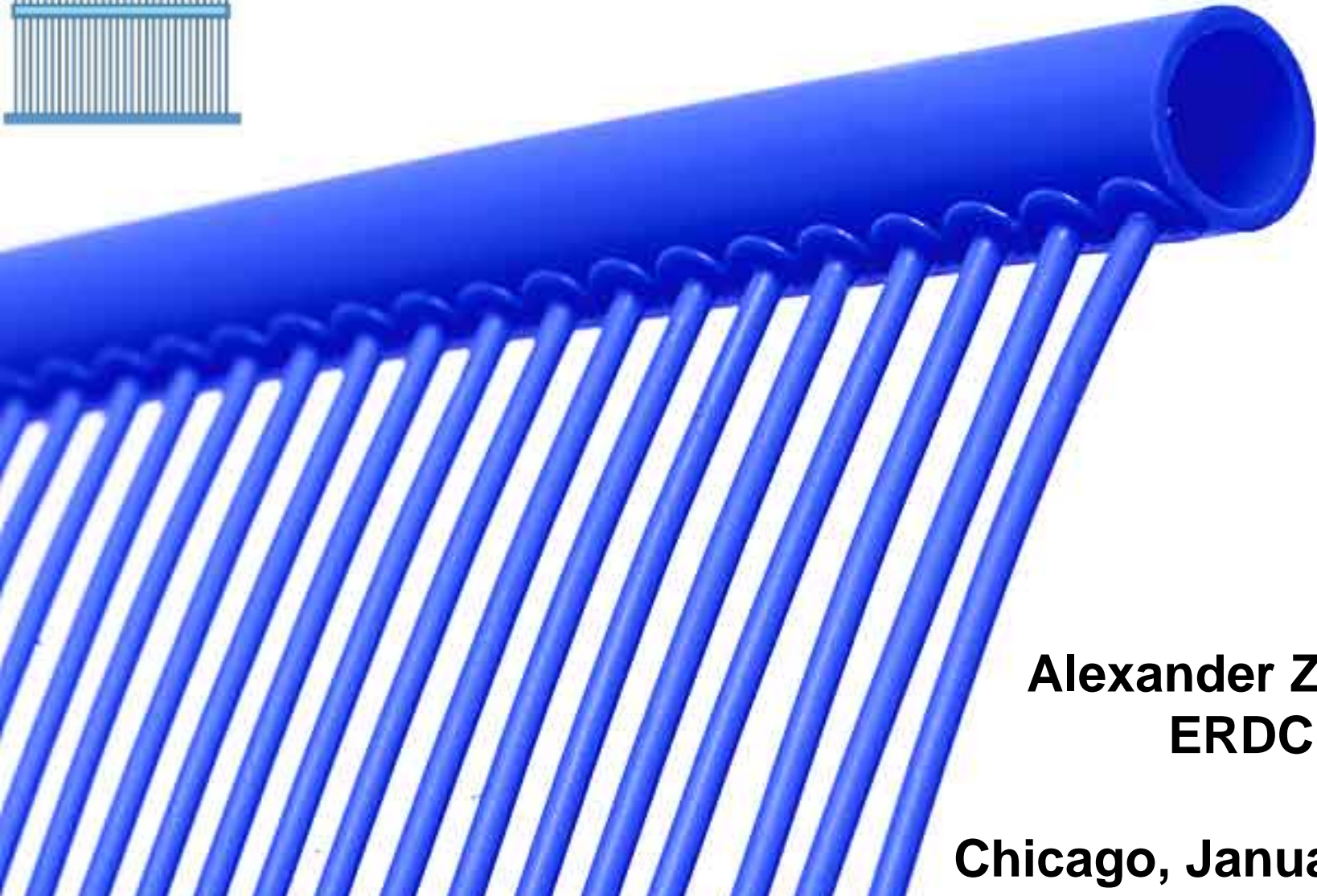


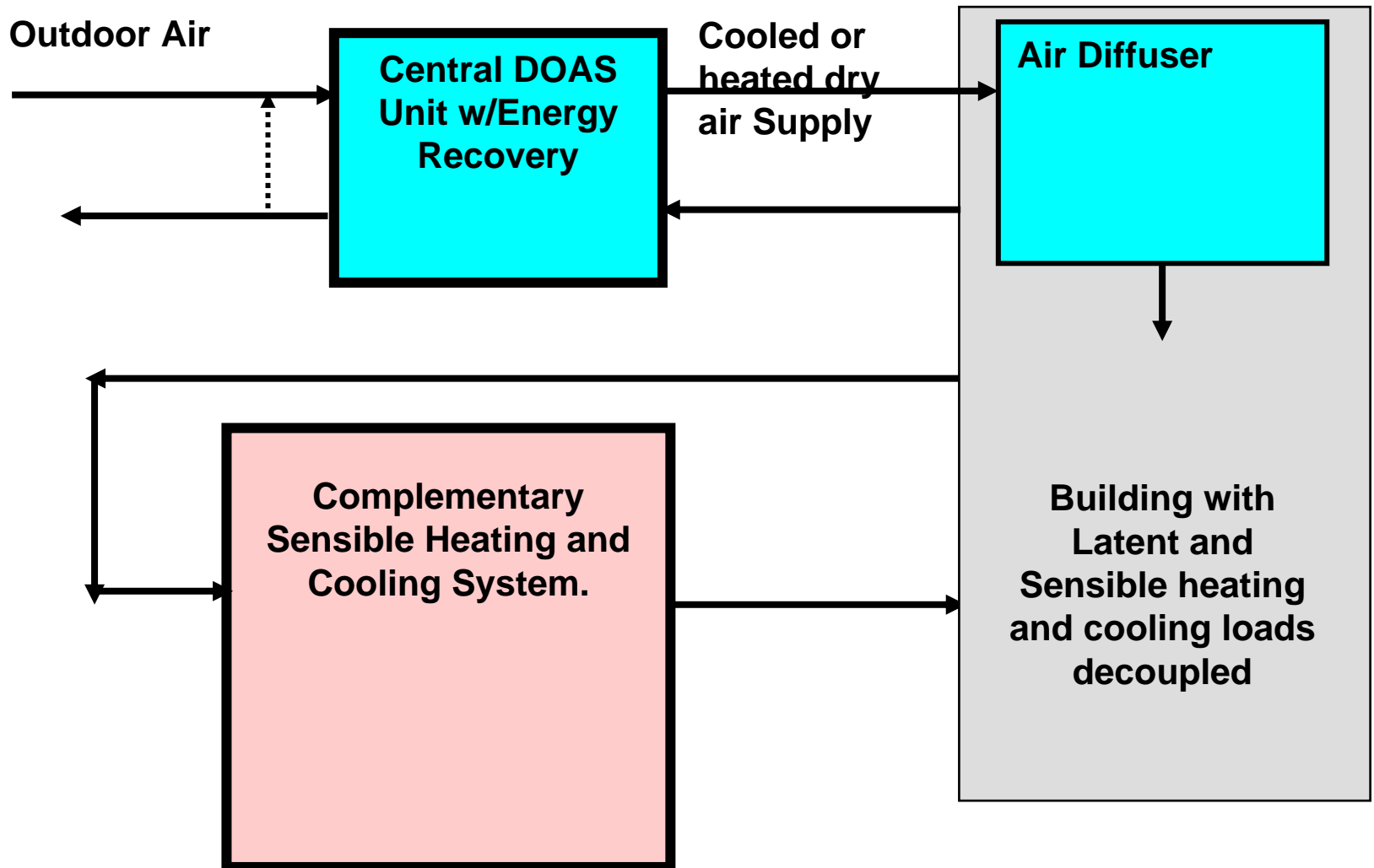
Radiant Capillary Cooling Systems



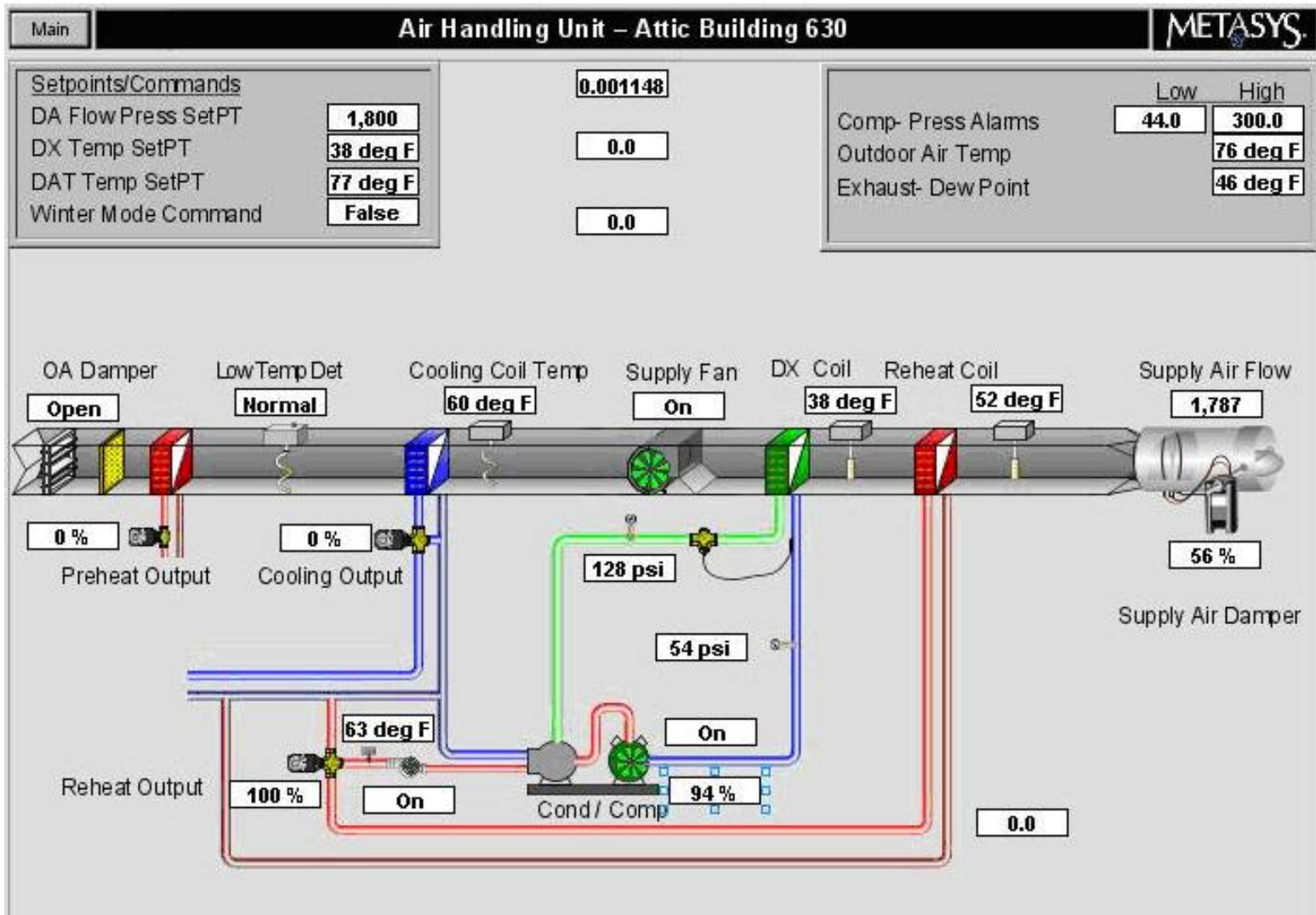
**Alexander Zhivov
ERDC**

Chicago, January 27-29

Dedicated Outdoor Air System Schematic



Schematic of the DOAS Retrofit Option



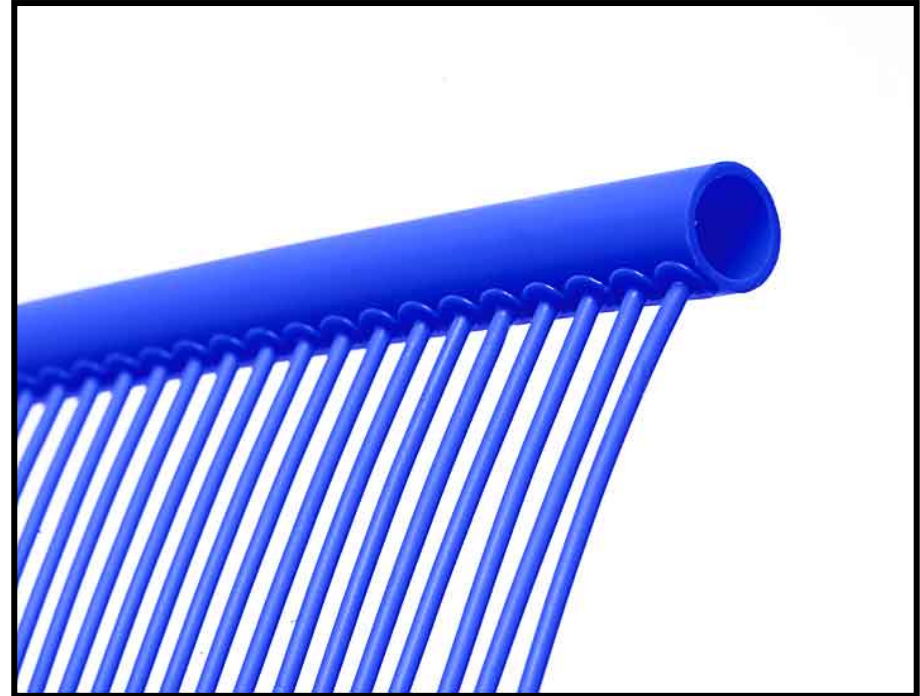
Radiant Heating and Cooling System Vs. FCU

- FCU supplies air with a low temperature and creates a higher risk of condensation and mold
- FCU has mechanical parts which require more maintenance
- FCU requires lower chilled water T (45-50°F Vs. 60°F for radiant system) which creates a potential problem with condensation on piping/connection
- FCU supplies air with a lower temperature (55°F) which creates a potential problem with condensation and mold on air diffuser and adjacent surfaces



Radiant Heating/Cooling System

**Installation of the capillary
radiant heating/cooling system
on the pre-finished surface**



**Two-side cooling mat detail
with water feeding (or water
return)**

That's How Radiant Cooling Systems Look





Whole Ceiling Installation. Pre-finishing



Wet-Wet Plaster Whole Ceiling





Finished metal ceiling

Vienna Twin Tower



Radiant Heating/Cooling System

- The chilled ceiling can provide capacity up to 25 Btu/sq.ft. This capacity is generally sufficient if the building is sufficiently insulated and has a DOAS
- Pipes and fittings are made out of polypropylene (plastic). Cooling and heating by Capillary Tubes is not new to the HVAC industry. It was used for commercial and institutional projects over Europe since last fifteen years. Has at least 2 suppliers BEKA, USA and KaRo. See www.beka-klima.de for list of completed projects.
- The capillary tubes (material only) for drywall/plaster or concrete is around \$6.00/sq.ft. Additional \$ 8.00/sq.ft. will be for installation.

Illinois Institute of Technology

College of Architecture library expansion and renovation project included installation of radiant cooling system in suspended ceiling panels.

Crown Hall is a National Historic Landmark designed by Ludwig Mies van der Rohe 3360 S. State St, Chicago, IL 60616



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