

Impact of Boundary Conditions in Applications



ROYAL INSTITUTE
OF TECHNOLOGY

Dr. Viktoria Martin
Department of Chemical
Engineering & Technology

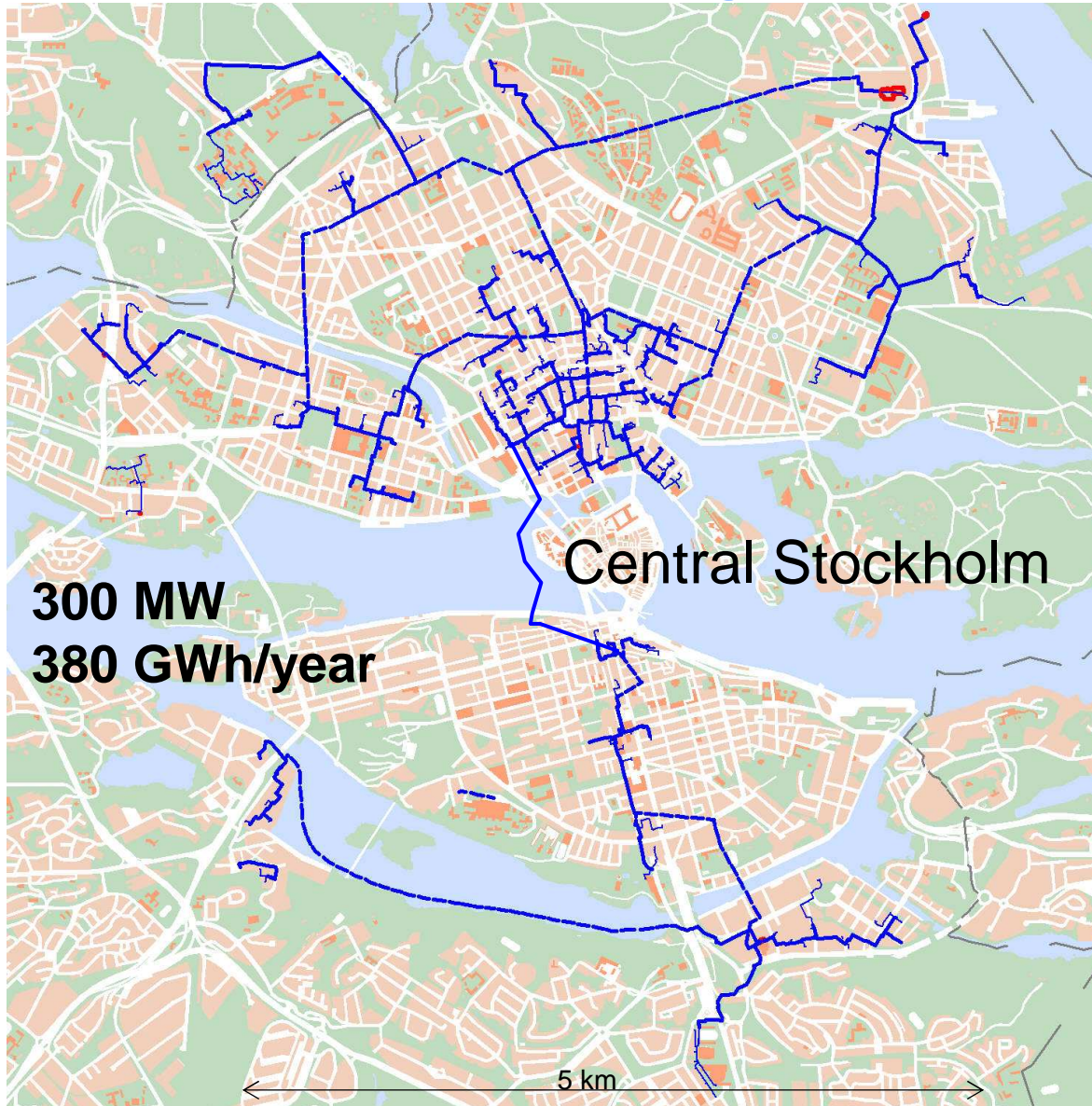
What is needed from a PCM-storage?



ROYAL INSTITUTE
OF TECHNOLOGY

- Stability, e.g. deal with phase separation
- Safety – non-toxic including additives, and non-flammable (paraffins in buildings?)
- High “enough” power – application dependant.
 - Increase conductivity of PCM and/or...
 - Increase heat transfer in the “system”.
 - Which alternative is the most cost-effective?
- High energy density
 - “Dilution” due to additives like stabilizing gel, excess water, conductivity enhancing measures, and containers, resulting in low IPF.
- Low subcooling
 - Crucial for cold storage applications
- Cost-competitive compared to alternatives – application dependant

District Cooling Network -- Stockholm

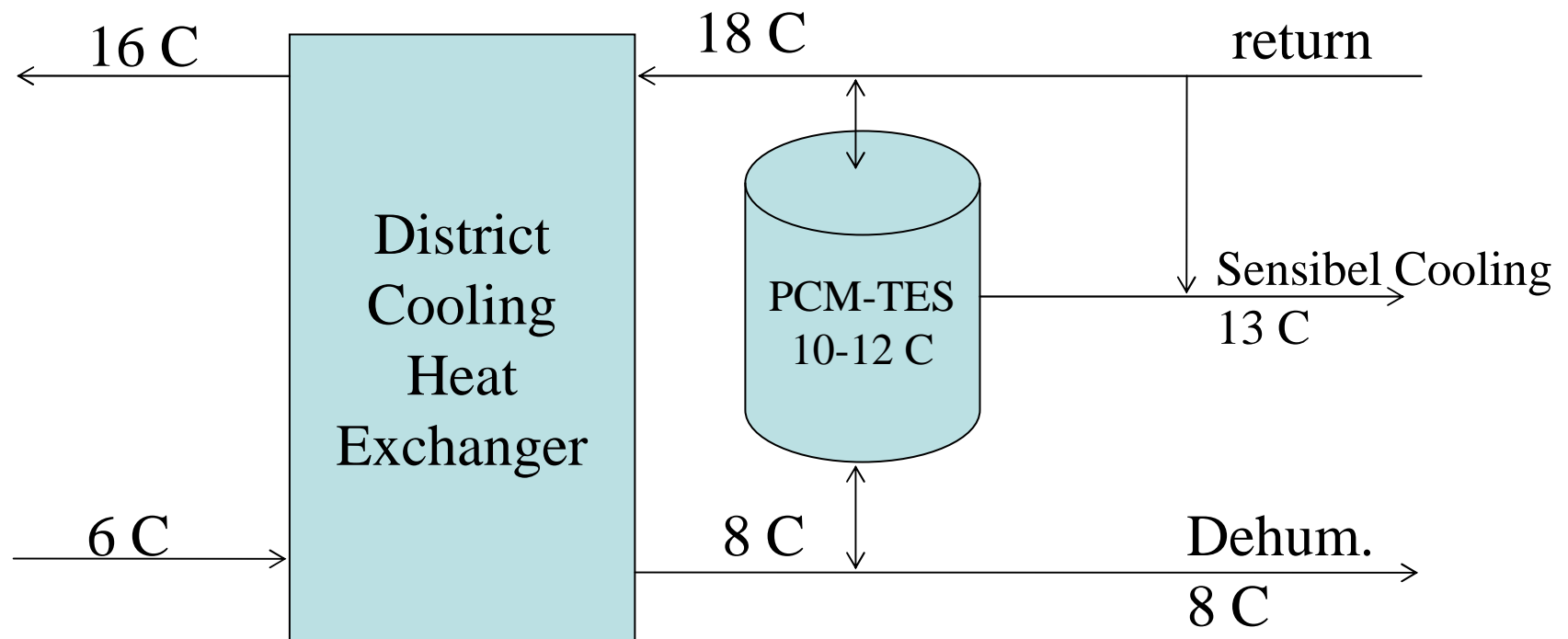


- "Free-Cooling" from the Baltic Sea
- "Waste Cooling" from Electrical Heat Pumps
- Conventional Compression Chillers

Cold Storage Application in Stockholm District Cooling Network



ROYAL INSTITUTE OF TECHNOLOGY



And the cost needs to be comparable to the alternatives...



ROYAL INSTITUTE OF TECHNOLOGY

