Utilize heat from datacenter to district heating grid

Trond Berntsen / Project leader / 10.05.2022
Agenda

- Why
- Where
- When
- How
- Results
- Facade
- Pictures
- Thanks
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Rapid growth in power consumption for data centers creates problems but also great opportunities.
Data centers' energy use is in a restructuring phase

1. Generation cooling system
   - Fossil electricity
   - Cooling with chillers

2. Generation cooling system
   - Renewable electricity
   - Cooling with freecooling

3. Generation cooling system
   - Waste heat
   - Residential heating
   - Chilled water
   - STACK
   - FOV

The Nordic region has a unique opportunity to be able to offer a data center third-generation cooling system with heat recovery
Key reasons to build the central

- Fortum’s strategy and vision of building a cleaner world
- Increase heat production
- Reuse surplus heat from datacenter to heat up approximately 5000 apartments in Oslo
- Valuable experience
- 5.5 MW heat, 3.6 MW cooling
- Available space for a doubling of capacity.
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Ulven energy central in Oslo, Norway
Ulven in Oslo

- Transformation from industrial area to residential area
Landscape plan
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Fremdriftsplan

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<th>Aktivitet</th>
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<td>Sign contract with datacenter and main entrepreneur</td>
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- Pre-engineering and tender: 30.06.2020
- Takeover: 01.12.2021
- 01.05.2022
Process diagram
Heatpumps

• 4 Carrier 61XWH-ZE14 heat pumps
• Refrigerant: HFO-1234ze
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Results

Energi fra kjølepøle: 11062 MWh
Energi til fjernvarme: 16023 MWh
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Architect rebellion in Norway

Det stille arkitekturopprøret

Arkitekturopprøret skulle vært vårt. Et stille oppsøkte eksistert blant oss arkitekter i flere år.

«Arkitekturopprøret Norge»: – Hvordan kunne vi la dette skje?
Facade

• The facade is made up of wood and living plants to illustrate Fortum’s vision of building a cleaner world.
• The plants are shaped as a city to illustrate that we are making the city greener.
• Three windows are placed on the facade so people passing by can take a look at the inside of the central.
Mønster for panelene

• Plant wall to resemble Oslo's famous buildings and landscapes
• 4 types of panel: Oslofjord, foreground, buildings, background
• All the senses
• 130 different plant species
Oslo's famous buildings and landscapes

- Can you find the buildings below in the illustration?

Holmenkollen

Akerbrygge

Oslofjorden
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