

A woman with long brown hair is lying in bed, reading an open book. She is wearing a green knitted sweater and maroon pants. A black and white cat is sitting on the bed next to her, looking towards the left. The background shows a bed with white pillows and a grey headboard.

SamEnergi Creating new income from your excess heat

Datacenter Forum
2 december 2021



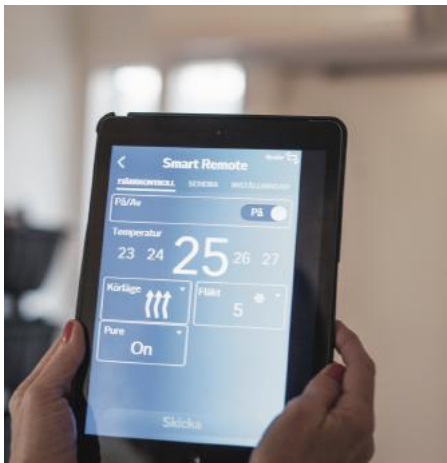


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Our Purpose
Power Climate
Smarter Living





Fossil free Energy
Energy Services
Energy Reuse



Energy Supply Services



Power-as-a-Service

Power Grid & Supply



**Heat Reuse in
District Heating**



SamEnergi

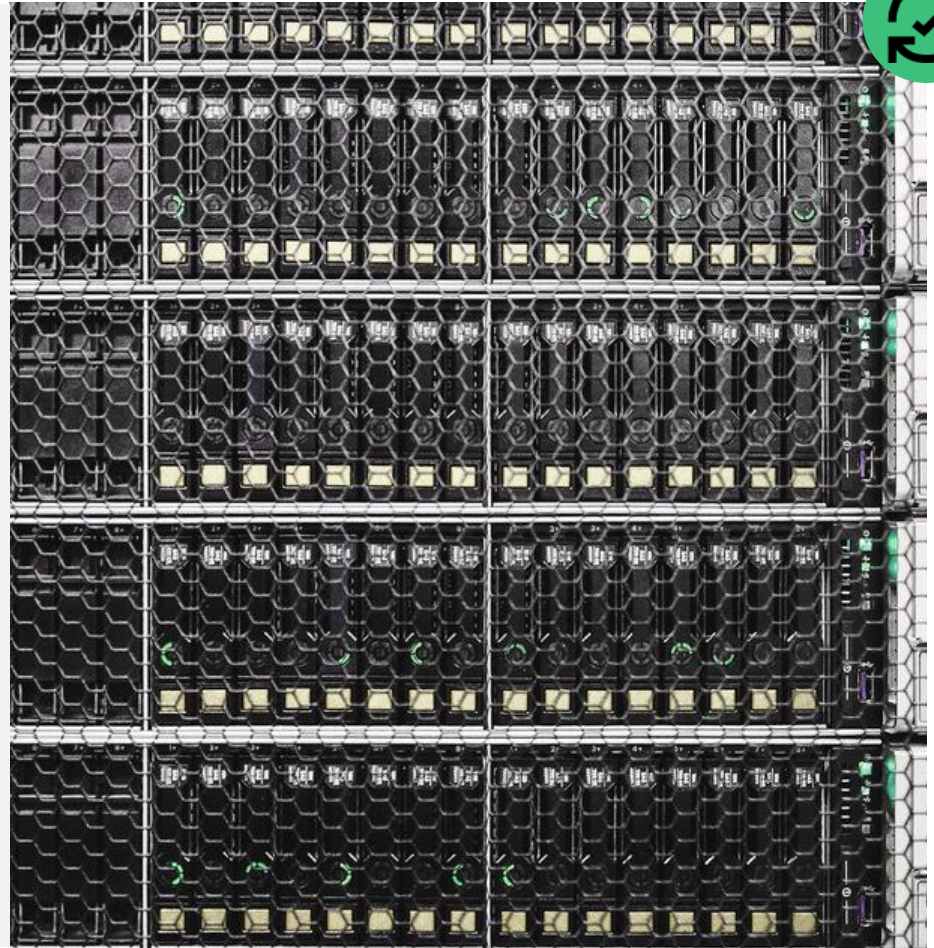


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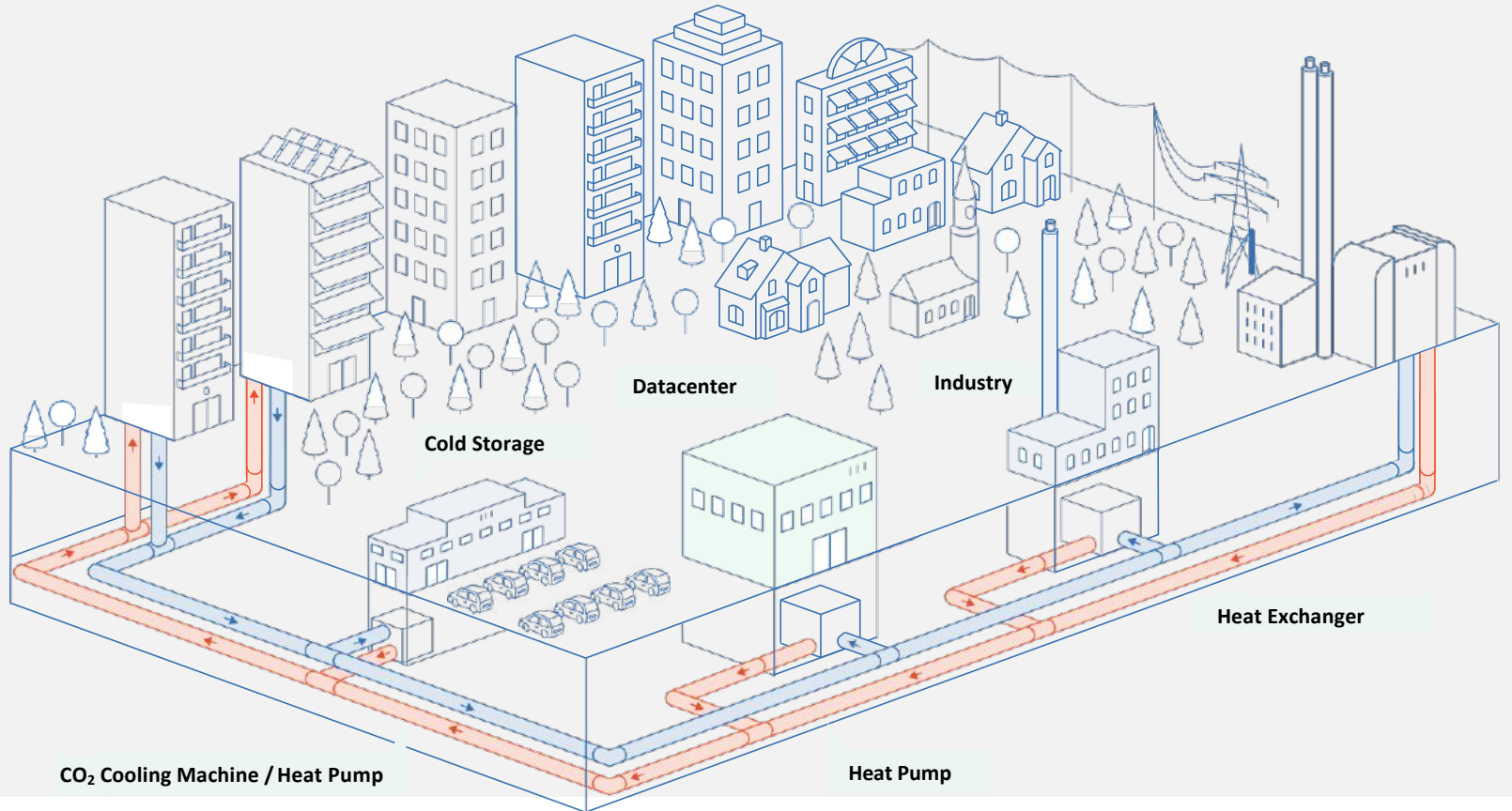
- Launched in 2019
- Business model to purchase excess heat
- Connected to district heating and cooling grid
- Compensation based on Vattenfall's local production cost, being replaced

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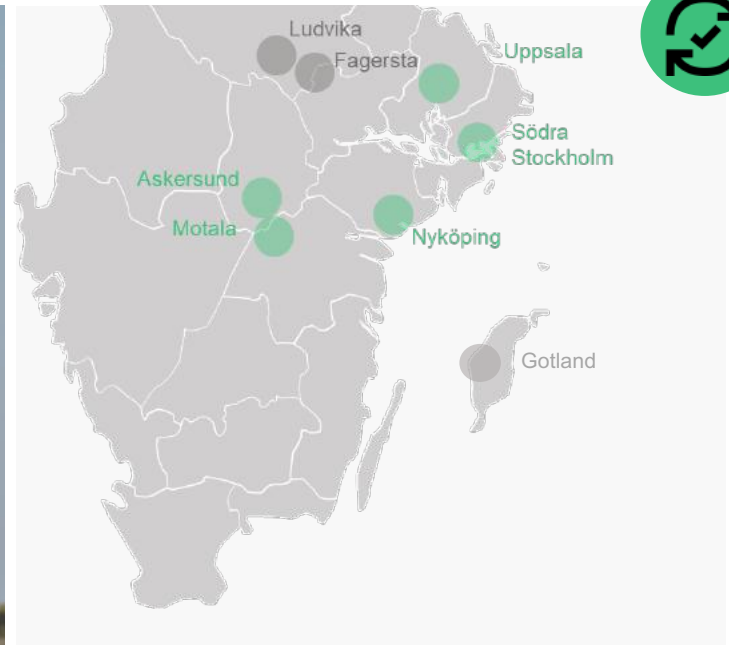
- Small to medium size datacenters
- Liquid cooling easier than air cooled
- Long term agreements 5-10 years
- Low grade heat delivery where possible



District Heating a Circular Asset



Vattenfall's District Heating Grids in Sweden



Heating / (Cooling)

Steam

Power

District Heating as a Circular Asset



City/Town	Potential for Excess Heat (MW)	Compensation Forecast (k€/MW/yr)	Nearest Airport – Driving Distance	Power Grid Area
Uppsala	30	120	35 mins (Arlanda)	SE3
Stockholm (Haninge/Tyresö)	15	140	50 mins (Arlanda)	SE3
Nyköping	10	120	0	SE3
Motala	5	120	30 mins	SE3
Stockholm (Gustavsberg)	3	190	1 h (Arlanda)	SE3
Knivsta	3	150	20 mins (Arlanda)	SE3
Storvreta	2	190	40 mins (Arlanda)	SE3



Exempel – 2 MW Datacenter in Storvreta

Annual Delivery (h)	Heat Delivery (MWh)	Delivery Temperature (°C)	Compensation (k€/year)
6 000	12 000	60	230 *

* Lower delivery temperature qualifies lower compensation, here 60% av full compensation

Adaptable Technical Approach



**High Temperature
Delivery to DH
Feed Line**

70 - 80 °C

**Low
Temperature
Delivery to DH
Feed or Return
Line**

55 - 65 °C

Adaptable price model

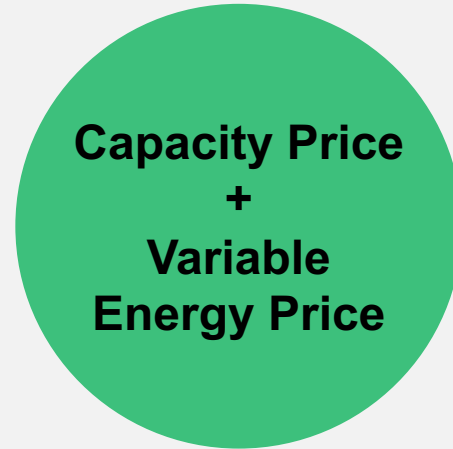


Energy Delivery Agreement



- +** No strings attached
- Generated income less predictable

Capacity Subscription Agreement



- +** More predictable income
- Obligation to deliver when needed

What can Vattenfall do for a datacenter

- One stop shop
- Provide expertise to find an establishment site
- Connect the datacenter to the DH grid
- Enable heat recovery with a low CAPEX
- Lower the datacenter OPEX
- Manage all the aspects around the excess heat business





SamEnergi combines both targets

Sustainability



Profitability



An aerial photograph of a winter forest scene. A stream flows through the center, surrounded by snow-covered ground and evergreen trees. Several large piles of cut logs are stacked in rows across the middle ground. The text "Thank you" is overlaid in large white font in the upper center.

Thank you