

DK, Amager district heating



General

Owner	Hovedstadsområdets Geotermiske Samarbejde (HGS) (joint venture between four energy, transmission and distribution companies)	Operator	DONG Energy (geothermal loop incl. heat exchangers) and HOFOR (heat pump plant)
Region	Amager		

Project

Inhabitants connected	> 60000 (> 1 million inhabitants)	Design of the DH	Water based transmission and local networks with pre-insulated pipes
Others uses (drinking water, cascade uses...)	No	Production of heating and/or cooling	For district heating
Planning of the operation (from pre-studies to full completion)	1999-2005	Dates of beginning and end of construction	2001-2005
Administrative permits	Licence for exploration and exploitation of geothermal energy for the purpose of district heating pursuant to the provisions of the Danish subsoil act. Approval from municipality for heat production pursuant to the provisions of the Danish heat supply act. Approval from municipality for discharge of geothermal water to the sea after mixing with cooling water from power plant.	Difficulties faced	Increased injection pressure partly reduced by clean up pumping and soft acidizing.

Financing

Investment for geothermal well	15 million euro for two wells	Investment for geothermal heating station	13 million euro
Investment for DH network and substation	Not part of geothermal plant	Financing (banks, funds, PPP...)	Owner
Amount of Subsidies if any	1 million euro for seismic survey from national funding	Taxes	No tax on heat from the subsurface, but taxes on energy used at the plant and on equipment. VAT on all costs for the plant.
Cost of the MWh sold	Not applicable. Consumers pay all costs for heat from the net. This includes network costs and costs for heat production from different heat production units.		

Technical

Installed capacity (MWth)	1500	Subsurface and surface technical schemes	One production and one injection well. Direct heat exchange and absorption heat pumps.
Installed geothermal capacity (MWth)	14 MW (27 MW including absorption heat pump driving heat)	Temperature of the geothermal resource (production - injection)	74 °C / 17 °C
Operating Temperature of the DH	Local net, winter/summer: Supply: 89/80 °C; Return: 52/48 °C	Heat Pump if any (power in Mwe and COP)	Absorption heat pumps: 13 MWth / COPth 1,8
Geothermal flow rate	Up to 235 m3/h	DH Length	> 2000 km
Innovation if any	The use of absorption heat pumps driven by different heat sources including biomass CHP and incineration CHP, which in some cases		

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makes it free to drive
the heat pumps.