

ANERGY NETWORK FRIESENBERG OF THE FAMILY CORPORATION ZÜRICH - SWITZERLAND

Anergienetz Friesenberg der Familienheim-Genossenschaft Zürich (FGZ)



Fig 1: Picture of a trench, while laying the anergy network.

Summary of the project

Since 2010, the Familienheim-Genossenschaft Zürich (FGZ) has been planning and implementing the anergy network Friesenberg. Waste heat from adjacent data centers is largely used to replace the current use of fossil fuels. Waste heat from the summer months is stored temporarily in geothermal storage plants and used during winter, enabling significant reduction of greenhouse gas emissions and primary energy demand.

Expected results

The Familienheim-Genossenschaft Zürich is the largest housing cooperative in the city of Zurich with around 2 200 residential properties and 5 500 residents. The total heated floor area is about 185 000 m² and the heat demand for space heating and domestic hot

” USING WASTE HEAT FROM DATA CENTERS FOR HEATING AN EXISTING NEIGHBORHOOD THROUGHOUT AN ANERGY NETWORK AND HEAT PUMPS ”

water amounts 35 GWh/a. Until now, space heating and domestic hot water was supplied by oil and gas burners in nine central heating plants and distributed to the various residential properties by means of a district heating network. In February 2011, the FGZ General Assembly decided to gradually replace the oil and gas burners with heat pumps and to create an anergy network for the use of the available waste heat from two large data centers.



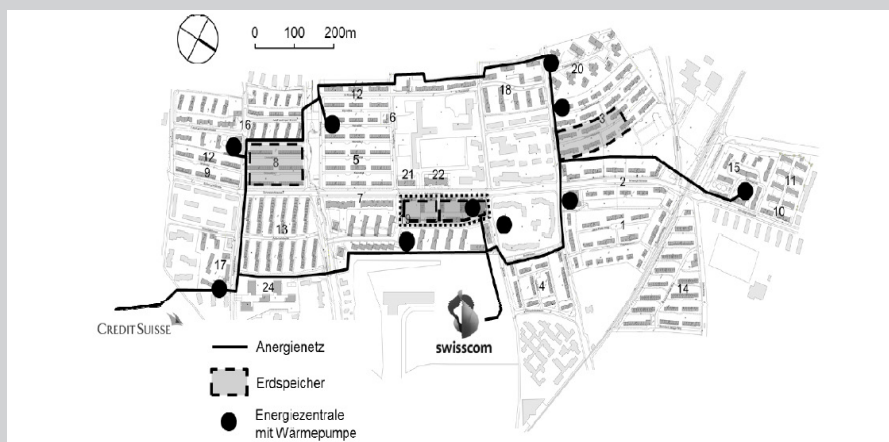


Fig 2: Plan of the neighbourhood Friesenberg with the anergy network and the decentralized heat pump power plants.

The implementation of the energy network will be carried out in several stages:

- The energy requirement of the FGZ will be annually reduced from 35 GWh to 13 GWh by 2050, due to retrofit measures of the envelope.
- 90 % of the remaining 13 GWh will be covered by heat pumps using waste heat and about 10 % by fossil fuels (peak loads).

The reduction of energy demand and the massive reduction of oil and gas consumption will reduce primary energy demand by approx. 65 % and greenhouse gas emissions by approx. 90 %.

After overall completion (2050) the Friesenberg Anergy network will consist of the following subobjects:

- A anergy network with a main line of approximately 3 kilometers (warm and cold supply line)
- Three geothermal storage plants with a total of 450 probes at 250 m depth
- Integration of two large data centers with a total heat capacity of approximately 4.5 MW
- Central energy plants with a total heat capacity of approximately 10 MW

The Anergy Network Friesenberg has been put into operation since autumn 2014 and is continuously expanded. The first few years of operation have shown that the expected performance and heating and cooling requirements are met. The temperature of the hot conductor varies in season between 8 °C and 28 °C, while the required power can be provided at any time.

FACTS ABOUT THIS PROJECT

Building type: Residential buildings

Heated floor area [m²]: 185 000 m²

Installed heat capacity [kW]: 3 930 kW

Heat source: Waste heat from data center and heat pumps

Investment cost: 42.5 millions CHF

Participating countries: Switzerland

Time frame: 2011 - 2050

Project organisation:

Project leader: anex Ingenieure AG (on behalf of Amstein + Walther AG)

Project partners:

- Planner: anex Ingenieure AG (previously Amstein + Walther AG)
- Investor: Familienheim-Genossenschaft Zürich

Link to web page or report:

<http://www.fgz.ch/index.cfm?Nav=31&ID=151>
(in German)

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**IEA Technology Collaboration Programme on
Heat Pumping Technologies (HPT TCP)**