INP Reference

Transformation plan for a local heating network in a large city

LOCATION: Hesse, Germany

SYSTEM/TECHNOLOGY: Regenerative heat generation

SERVICES: As-built status and data recording, Solution development / Feasibility studies

INDUSTRY BRANCH/TYPE OF PLANT: Green Energy

CLIENT: Energy supply company/large municipal utility in Hesse (subject to NDA)

ACTIVITY PERIOD: 2024

Tasks

A large energy supplier in Hesse plans to decarbonize the heating networks it operates under the contracting model by 2040. To this end, transformation plans are to be drawn up as part of the federal funding for efficient heating networks (BEW)–module 1.

One of these heating networks is the local heating network of a district in a large city in Hesse. The local heating network, to which 82 residential buildings with a total of 658 residential units are connected, is supplied with heat by a heating system. The connected load of the heat is approx. 1.8 MW, which is provided by two gas boilers.

This local heating network is to be decarbonized as part of a transformation plan. To this end, a transformation plan was drawn up in accordance with the BEW funding program and based on the AGFW recommendation for the creation of a transformation plan according to BEW. This includes an actual state analysis, a potential determination, a target analysis, as well as a cost framework and a path to greenhouse gas neutrality. The study was carried out on the basis of the specific conditions of the environment and the local heating network.

Project description

The following aspects, among others, were examined:

- Heat pump with the heat sources:
  - Ambient air
  - Near-surface geothermal energy (geothermal probes)
  - Ice storage
  - Groundwater
  - PVT
- Potential from solar radiation (PVT, solar thermal)
- Heat accumulator
- Cold local heating network
- Building refurbishment

POINTS OF CONTACT



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- Lowering the flow temperature
- Modernization of the substations

The potential of the technologies investigated was evaluated and a recommendation drawn up. Two supply variants were defined from the potentials examined and discussed in a workshop. In this workshop, one variant was selected, which was then worked out in detail. A target analysis, a cost framework and a path to greenhouse gas neutrality by 2040, including packages of measures, were drawn up.

INP Services

- ACTUAL analysis
- Load profile analysis
- Detailed analysis of potential
- Evaluation of potential
- Supply recommendation based on the potential analysis and potential assessment
- Holding a decision-making workshop
- Detailed variant analysis
- Investment cost estimate of the variants
- Path to greenhouse gas neutrality
- Definition of packages of measures
- Presentation of results