INP Reference

Waste heat extraction cavern power plant

LOCATION: Bad Säckingen, Germany

SYSTEM/TECHNOLOGY: Regenerative heat generation

SERVICES: Basic-engineering and pre-engineering, Solution development / Feasibility studies

INDUSTRY BRANCH/TYPE OF PLANT: Green Energy, Power plants

CLIENT: Schluchseewerk AG

ACTIVITY PERIOD: 2022-2023

Project description

Schluchseewerk AG operates a pumped storage power plant with 4 machine sets (consisting of generator, turbine and pump) at the Bad Säckingen site. During operation, waste heat is generated at the bearings and in the generators, which is released into a cooling water system that is fed with Rhine water.
Stadtwerke Bad Säckingen is planning and implementing a new district heating sub-network to supply the Leimet III development area. 208 residential units are to be built here. In addition, the neighboring Waldbad swimming pool is to be supplied with heat in summer.
Due to the proximity to the Säckingen cavern power plant, it makes sense to integrate the waste heat from the cavern power plant here.
The aim of this project study was to determine the technical and economic feasibility with regard to the available heat potential in the Säckingen cavern power plant, with a view to feeding it into the Leimet III district heating network.

INP Services

The project study focused on the following areas:

- Estimation of the available heat quantity with subsequent measurement campaign to specify the actual quantities available
- Development of a concept for heat extraction and, if necessary, return of the water volume to the cooling water circuit
- Determination of the possible integration points
- Design of the heat pump
- Determination of the required/available installation area
- Determination of the necessary construction measures
- Dimensioning of the main components required, such as pumps, pipes, etc.
- Concept for integration into the district heating network
- Estimation of the investment costs
- Consideration of amortization periods for the investment, taking into account the alternative heat generation and production costs, as well as taking into account possible subsidy regimes

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