INP Reference

Heat pump systems GKM

LOCATION: Mannheim, Germany

SYSTEM/TECHNOLOGY: Regenerative heat generation

SERVICES: Pre-project planning and tendering, Basic-engineering and pre-engineering

INDUSTRY BRANCH/TYPE OF PLANT: Green Energy

CLIENT: MVV Energie AG / Grosskraftwerk Mannheim AG

Project description

MVV Energie AG (MVV) runs one of the largest district heating grids in Germany in the Rhine-Neckar region with around 160,000 connected households. Grosskraftwerk Mannheim Aktiengesellschaft (GKM) has been operating one of Europe‘s most efficient hard coal-fired power plants in Mannheim for 100 years and is currently the largest source of thermal energy supplying MVV‘s district heating grid.

With the German government‘s decision to end the generation of electricity and thermal energy from coal in Germany, alternatives are currently being sought to supply heating energy to large metropolitan areas. MVV and GKM recognize the use of electrically powered large-scale heat pump systems as a key component in decarbonizing district heating generation in the Rhine/Neckar region.

As part of the “Real-Labore der Energiewende“ (Real-world laboratories of the energy turnaround - a German initiative of the Federal Ministry for Economic Affairs and Climate Protection), MVV and GKM have implemented an initial river heat pump project (WPA 1) with a thermal output of around 20 MW. MVV and GKM are planning to build and operate a second river heat pump plant (WPA2) with a heating capacity of approx. 150 MWth at the Mannheim-Neckarau site. Rhine water is to be taken from the river as the heat source for the heat pump system via GKM‘s existing cooling water infrastructure.

Based on the technical data of possible suppliers of large heat pumps, the technology independent preliminary planning and the preparation of the tender documents were carried out.

INP Services

General planning (mechanical and process engineering, civil, electrical and control technology) as extended preliminary planning

- Design of the required main components around mechanical and process engineering, electrical and control technology as well as heating, air conditioning and ventilation
- Preliminary planning of the building or parts of the building, in

POINTS OF CONTACT

Jürgen Wilkening
Prokurist - Business Development Manager
INP Deutschland GmbH
Werkstraße 5
67354 Römerberg
Deutschland
Tel. +49 6232 6869-0
juergen.wilkening@inp-e.com
www.inp-e.com

particular with regard to the foundation and building construction, including statics, available space, noise and fire protection conditions
- Superordinate 3D planning of the building with consideration of variants, taking into account the various system concepts and different heat pump technologies
- Detailed consideration of the foundation situation and interfering edges in the construction area
- Development of the design basis with planning of associated safety and explosion protection concepts as well as a rough estimate of the cost differences for various possible refrigerants
- Planning and design of the connection and route for supplying the river heat pump with Rhine water
- Planning and design of the connection and route to the district heating network
- Planning and design of additional heating the district heating water to the required grid temperature
- Design of the 110 kV power connection and determination of the connection point in the power plant
- Creation of a power supply concept/single line diagram including transformers, switchgear (medium voltage, low voltage and rectifier system)
- Creation of a DCS concept for integrating the WPA2 into the existing power plant DCS technology
- Preparation of a schedule for the complete project execution
- Preparation of documents to apply for governmental funding as part of the federal subsidy for efficient heating networks
- Preparation of documents for submission to the authorities for project approval and building permit
- Compilation of the frame specifications and preparation of a descriptions of scope of supply and list of services for a functional, open-concept tender for the heat pump module