BEST PRACTICE IN SLOVENIA – ENERGY EFFICIENT CITIES

BASIC INFORMATION

Title of the Best Practice

Utilization of low temperature excess heat from hydro-power plant Fala, for space heating at the on-site technical museum.

Energy efficiency measures implemented in the building:

The implemented system enables low temperature waste heat recovery from plants cooling processes, using heat pumps. The captured heat is then used for heating the on-site Fala museum premises.

The implementation process involved research, planning, design and technical implementation and monitoring phases.

First a feasibility study was developed utilizing decision support system and waste heat calculator developed as part of Interreg CE HEAT project, to assess technical and financial feasibility of the envisaged project. Based on positive results, project plans were prepared, followed by the technical implementation of the system.

Since this kind of system is one of the first in the sector a monitoring system was also implemented that will enable better insights into the operation of the implemented measures, help identify potential additional improvement and provide evidence for further implementation of such systems.

Location:

City: Fala

Region: Podravje

Country: Slovenia

GoogleMaps link:

LINK HERE

Partners involved:

Dravske Elektrarne Maribor, Obrežna ulica 170, 2000 Maribor, info@dem.si

Implementation year: 2018/19

Photos:

(Source: DEM)

SYSTEM CHARACTERISTICS

Brief Description*:*

The Drava Hydropower company (DEM) have identified the opportunity to exploit the excess heat to improve the heating system in the 100-year-old hydro powerplant museum Fala, via recovery of low-temperature waste heat produced as part of the cooling process in the adjacent hydro powerplant.
The heat is recovered via water/water heat pump, operated via low temperature heat from cooling liquid during the operation of the aggregator, and with river water during periods when the aggregator is not in operation. According to technical calculations the optimal heat pump capacity is 130 kWth with average COP of 3,66 (based on heating system power and temperature regime; Q_{hp} = 130 kW, $T_{source,ref}$ = 24 °C, T_{sink} = 60 °). In addition, a small storage tank for water is installed for water based calorific heating.

WH source potential (aggregate 1):

Amount of waste heat available	*800 MWh/annum*
Temperature	*Temperature range of heat vector : 10.0 - 24.0º C*
Availability over time - Months in year	*3.500 hours/annualy*
Amount of reduced CO2 emissions	130.612,8 kgCO2/annually

The initial economic forecast for replacing this outdated heating system with waste heat recovery-based system, suggests 60% reduction in costs for heating and investment payback period of around 8 years, which is in line with investment requirements of the company.

Duration: planning and procurement 2018 –works and commissioning 2019

FINANCIAL SOURCES AND FINANCING DETAILS

Total investment value: cca 130.000 EUR (VAT exclusive)

Sources of financing:

Co-financing	20% Min for Environment (public call; European cohesion fund)
Other funding's	Own sources

Electricity savings (MWh/year**):** 144.946,5 kWh/year

Or fuel savings (kg or m3 or kWh or GJ): **-**

Cost savings (EUR/year): approx. 8-year payback

CO2: reduction of 135.612,8 kg/CO2

PROJECT IMPLEMENTATION BENEFITS

The project is a case of good practice both in terms of developing and testing decision support tools developed as part of CE HEAT project with the purpose to accelerate waste heat uptake on the one hand, and demonstrating innovative uses of low temperature on-site waste heat that can be further deployed and scaled in this sector.

ADDITIONAL INFORMATION

This best practice is in part a result of Interreg Central Europe project CE HEAT.