Waste heat is a sustainable source for district heating networks

The traditional third-generation district heating networks distribute high-temperature energy from one power plant to the individual remote customer, while those of the fourth generation integrate a limited number of high-temperature energy sources into the grid, in some cases renewable.
LIFE4HeatRecovery goes further, developing a new generation of intelligent district heating networks, in which a large number of heat sources can be efficiently integrated, available within the urban district at low temperature (10 - 40 degrees Celsius).

The solutions designed by LIFE4HeatRecovery integrate heat that cannot normally be used, such as the one contained in waste water, the waste heat from air conditioning and industrial refrigeration systems.

The advantages are considerable: the sources of heat that can be used are many and available along the development of the network, and the dispersion of heat through the pipes is limited because the distances between the supplier and the user of the heat are lower. Furthermore, the energy normally released into the environment, contributing to global warming, is recycled for the heating of buildings. This ensures flexibility and scalability to the design of the network, as well as making available reliable and clean thermal energy for everyone.

The solutions studied are ready to be demonstrated in four real district heating networks: the district heating network of Ospitaletto (Brescia) will recover heat from the cooling process of the products produced by the local steelworks. In Wüstenrot, Germany, heat will be recovered from wastewater from residential homes. In the Netherlands, sustainability in recovering waste heat from a detergent factory in Heerlen and from the air-conditioning system in a Rotterdam hospital will be demonstrated.

Together with the control strategies that optimize the collection, storage and reuse of waste heat available, LIFE4HeatRecovery will develop industrialized plant packages based on the use of heat pumps and thermal storage tanks, in order to facilitate installation and reduce investment costs.

Furthermore, as infrastructure costs are a barrier to public investment in the sector, LIFE4HeatRecovery will also develop energy investment and sales models, and innovative financing mechanisms based on public-private partnerships and active participation, with the aim of facilitating the replication of the studied solutions.

The project will be developed by a consortium of ten public and private actors, including energy consultants, utilities and researchers.
In Italy, EURAC Research will coordinate the project and direct the research, COGEME SpA will implement the measures developed in the Ospitaletto district heating network, while ALPERIA and Linea Group Holding will develop tools and approaches to foster the technologies upscale.