

[P070]

CITYOPT Project - Optimal design of a micro-District heating network

N. Pardo García*, C. Marguerite, F. Nadler

Austrian Institute of Technology, Austria

68% of the European Union population lives in urban areas, this proportion is growing as the urbanization trend continues. This situation brings an opportunity to develop more sustainable urban areas, with higher use of renewable, more efficient infrastructures and lower carbon footprint. The main goal of the CITYOPT project is to create a set of applications to optimize the energy system in different life cycle phases with a holistic approach. In this paper, the CITYOPT planning tool and the methodology behind it for the test site of Vienna is presented. The objective of the Vienna study case is to optimize a micro district heating network (micro-DH) based on industrial waste heat to cover the heat demand of three building offices in the surroundings. In this network, heat pumps, a solar panel system and gas boilers are integrated as a back-up and to maximize the use of the waste heat two thermal energy storages a water-tank (short-time) and ground heat exchanger (long-time) are also considered. APROS simulation tool is used to model this energy system which optimal design, in terms of energy efficiency, CO₂ emissions and costs is made by the CITYOPT Planning tool.

Keywords: Smart Cities, District heating network, Urban Planning support, Decision support tools