

SmILES Use Case by EDF

Collective self-supply

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Keywords: District Energy Management

Objective

- 1) Fulfil the energy demand of the consumers in an urban district
- 2) Maximize the use of local resources
- 3) Minimize energy flows from external sources

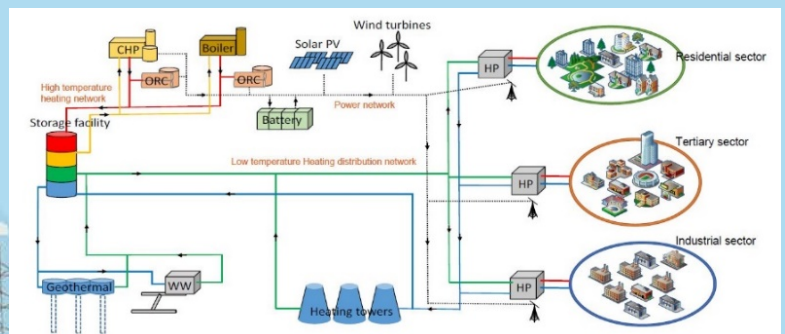
Scope

The supply of energy from local resources is a promising element for urban districts to increase the social acceptance and inefficiencies of central production units. Furthermore, the CO₂-eq impact and the losses in the networks can be reduced.

This use case studies the potential of local energy supply with distributed energy resources. Such an interconnected system enables synergies and optimal conversion between electricity and thermal energy sources. But, consumers in the district have independent profiles of energy demand to be met. Pooling the uses enhances the exchanges and the collective energy balances, thus potentially increasing the share of the energy supply locally produced. The objective is to work towards a more self-sufficient local energy network.

Description

The system under discussion includes: the local available renewable and waste energy resources, the exogenous energy resources, all units for energy conversion and energy storage, the internal networks for energy distribution as well as all energy imports and exports to the system. The local consumers have their own independent profiles of energy demand (electrical, heating and cooling). A centralized energy operator orients the energy flows from the different loads to meet the consumer demands. All resources and equipment are controlled as a whole to optimize the collective energy management. Besides supply and demand needs, CO₂ emissions and the systems costs are under investigation. Therefore, this use case investigates the interplay of the system's elements, not the ICT domain.



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