System Configuration by EDF

COLLECTOPIA

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COLLECTOPIA is a typical district with a mixture of residential and tertiary buildings, located in a small-town village in Northern France. A greenhouse nearby has a seasonal thermal storage.

Political aspects

- 75% reduction of greenhouse gases by 2050 (ref 1990)
- 50% reduction in final energy use by 2050 (ref 2012)
- 32% share of renewable in final energy use by 2030
- Reduction of nuclear energy in the electricity mix to 50% by 2025

Economic aspects

- Regulated electricity & gas rates for residential households (only for EDF)
- Electricity rate of 15ct/kWh (equally distributed between energy costs, taxes & distribution)
- Gas rate of 6.5 ct/kWh
- CO_2 tax of 22 €/t (2017)
- Feed-in tariffs for PV & CHP electricity

Social aspects

- Inhabitants and employees are the main actors
- Planning and redevelopment of districts aim at supporting a social and intergenerational mix
- Support of self-consumption initiatives for inhabitants
- Smart meter roll-out just started by distribution operator

Environmental aspects

- The geothermal potential has been validated for the thermal storage in the rocks in the aquifer
- Climate conditions are conform to the temperate Western European climate

Technological aspects

General technological aspects

- The French electricity mix is characterized by high shares of nuclear energy with low CO_2 grid emission factor
- Renewable electricity is mainly generated from hydro and wind energy
- The share of renewable energy covers 14.3% of final energy use
- Heating networks are not very common but their development is increasing
- Domestic heating is still characterized by a shares of electrical & biomass single room heaters

COLLECTOPIA specific aspects

Electrical Layout

- **Network:** Low-voltage grid
- **Decentralized Production:** 50% of roofs covered with PV
- **Consumption:** Residential & tertiary buildings

Heating Layout

- **Network:** Low-temperature district heating network
- **Centralized Production:** Gas CHP / Centralized Heat Pump
- **Centralized Storage:** Underground Aquifer / Hot Water Tank
- **Decentralized Production:** Heat pumps, Local waste heat recovery from air handling units & Greenhouse
- **Decentralized Storage:** DHW buffers with boosters
- **Decentralized Consumption:** Low temperature Residential houses, Middle-rise buildings, Local greenhouse

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