Programme co-funded by European Union funds (ERDF, IPA, ENI)

Interreg
Danube Transnational Programme
3Smart

Newsletter No.4

PILOT IN AUSTRIA: Primary School, Hauptstraße 1, 7522 Strem

Basic facts and initial state:

- Central heating system with 3 heating circuits
- Heating with 42 radiators (manually controlled) and 1 fan coil (controlled with a manual switch)
- Heating energy supplied by the local district heating system based on renewable energy sources (local biomass heating plant and biogas CHP plant)
- Electricity supplied by electricity grid of the local DSO Energy Güssing

Total cost of the investment: 50.000 EUR, of which 42.500 EUR funded from the Interreg Danube Transnational Programme

3Smart investment:

- It was necessary to upgrade the heating system in the school building by implementing room controllers, actuators on the radiators, temperature sensors, energy valves, etc. as well as a central controller, that enables a manageable heating system
- 9 controllable heating zones / 1 non-controllable zone (sanitary area) over 1 floor (500 m²) have been realized at the pilot building
- On electricity side a smart meter was installed to monitor the electricity consumption of the building
- Investments also were done on the IT side, by installing a master computer, where the 3Smart database is integrated for data collection from the sensors, and as a necessary link for the operation of the 3Smart energy management modules

Application of the 3Smart tool on-site:

- Coordinated
  - I. (**building zone level**) predictive control of energy used for heating the individual rooms
  - II. (**central HVAC system level**) predictive control of the starting temperature in heating for shaping heat consumption from the district heating
  - III. (**microgrid level**) prediction of energy exchange with the electricity grid

Expected effect:
Decrease of the operational heating costs; increase the comfort of the building users; creating a more balanced system based on the demand response with the district heating grid

Public presentation will be held on:
13 June 2019

SAVE THE DATE

Please follow further news regarding the event on 3Smart web page

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PILOT IN AUSTRIA: Retirement and Care Centre, Kapellenstraße 24, 7522 Strem

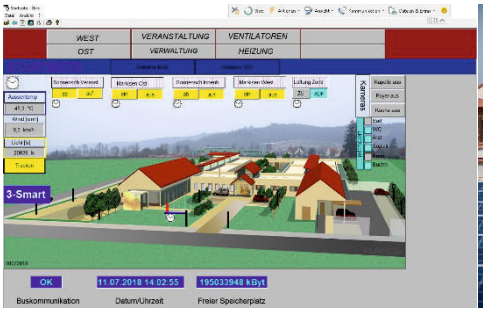
Basic facts and initial state:

- 114 rooms with zone control system / 1 floor (3.000 m²)
- 4 heating circuits (floor heating & cooling) and 2 zones that are interconnected by a central regulation system
- 53 floor heating circuit distributors
- central element for the HVAC level on heating side is the district heating transfer station and on cooling side the chiller
- 170 kWp PV plant (70 kWp south-oriented, 100 kWp east-west-oriented)
- SCADA system

Total cost of the investment:
65.000 EUR, of which 55.250 EUR funded from the Interreg Danube Transnational Programme

3Smart investment:

- Upgrade of the existing control system and creating a new controller that enables control without any noticeable change for the end-users in the building
- Implementation of measurements for heating/cooling medium temperatures for the floor heating/cooling system
- Installation of a 24 kWh salt-water battery storage system with controllable charging/discharging power
- Integration of the 3Smart database in the existing system as data source/sink for the 3Smart energy management system for all necessary data from the building, weather station, photovoltaic plant, storage system, smart meters, etc. and as a necessary link for the operation of the 3Smart energy management modules



Application of the 3Smart tool on-site:

- Coordinated
  - I. (**building zone level**) predictive control of energy used for heating/cooling of the individual rooms in the selected 3Smart control area of the building
  - II. (**central HVAC system level**) predictive control of starting temperature for the heating/cooling medium of the building;
  - III. (**microgrid level**) predictive control of battery system charging/discharging energy

Expected effect:
Decrease of the operational heating and electricity costs; increase the comfort of the building users;
creating a more balanced system based on the demand response with the district heating grid and the electricity grid

Public presentation will be held on:
13 June 2019

SAVE THE DATE

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PILOT IN AUSTRIA Electricity distribution grid of Energy Güssing in Strem (pilot area)

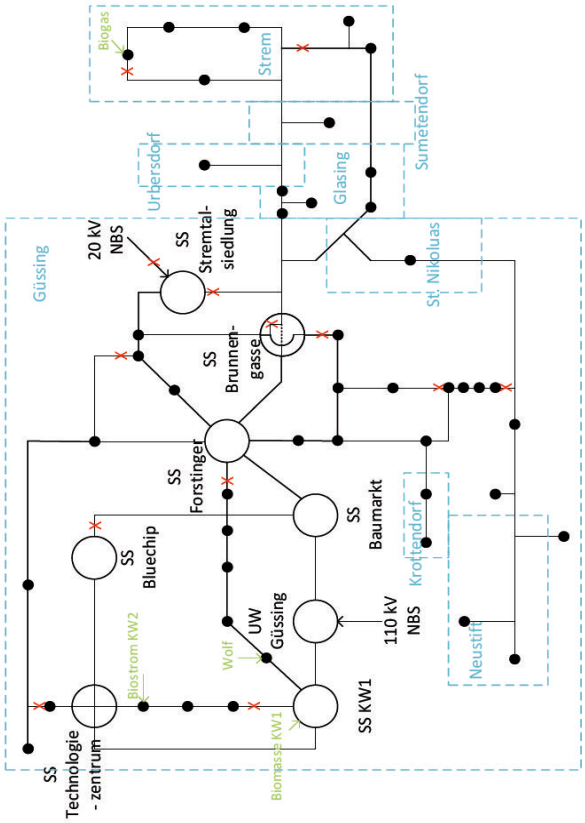
Basic facts and initial state:

- Pilot buildings are connected to 0.4 kV grid; transformer stations (20 kV) are close to pilot buldings and connected to main grid in Güssing via a single feeder (7 km overhead line)
- Each of the two pilot buildings in Strem has its own metering point towards the DSO Energie Güssing; retirement and care centre building is one of the largest consumers on the feeder and there is also a separate connection point for the centre's 170 kWp PV plant
- Near the two pilot buildings, on the same grid feeder, there are 1.5 MW PV plant and a 500 kW (electrical power) biogas plant
- Because of rising power production in Strem and a single feeder from main grid in Güssing "power grid management" is mandatory required
- No energy management system/software was available for grid planning. Also no dynamic load measuring existed. Continous measurement is planned to be introduced during the project lifetime (not funded from 3Smart)

Total cost of the investment: 30. 000 EUR, of which 17.000 EUR funded from the Interreg Danube Transnational Programme

3Smart investment:

- Server for the grid-side modules and for communication with building-side servers on the pilot buildings.



Application of the 3Smart tool on-site:

- Short-term modules:
  I. Day-ahead module for optimal management of building flexibility, driven by long-term contract with the DSO
- Long-term modules:
  I. Annual: Contracting flexibility provided by end-users, defining reservation and utilization costs and “negotiating” these with the end-users
  II. Multiannual: Defining the need for flexibility in the distribution network based on investment triggers

Expected effect: More efficient planning and operation of the distribution network, concept for the methodology to encourage the end-users to assist the system, reduction of end-users electricity bills due to flexibility services for the DSO
Public pilot presentation date: **13 June 2019**