



Newsletter No.4

PILOT IN HUNGARY: E.ON Tiszántúli Áramhálózati Zrt., Kossuth L. u. 41, 4024 Debrecen

Basic facts and initial state:

- o 5 joint buildings with around 150 rooms
- o Heating and cooling system with 250 fan coils and 4 heating/cooling substations
- o Heating energy supplied from the central city heat distribution system; cooling energy supplied from own water chiller units (electric powered, one per each heating/cooling substation)
- o No building automation, energy management, or renewable energy production

Total cost of the investment:

256.000 EUR, of which
217.600 EUR funded from
the Interreg Danube
Transnational Programme

3Smart investment:

- o Zone sensors have been installed in 114 rooms to measure room temperature and fan coil return medium temperature
- o Calorimeter, buffer tank temperature sensor, water chiller control, electricity consumption measurement and forward medium temperature control have been introduced in every heating/cooling substation
- o 22.41 kWp photovoltaic plant was installed along with two smart-grid-ready three-phase inverters
- o Electrical heater units, water chillers and PV inverters have been equipped with control options for load-shifting and demand side control
- o 3Smart database and building management software have been created to provide manual control/supervision and to interact with the 3Smart Energy Management System (EMS). All relevant data from every system mentioned earlier and also from other data sources such as buildings weather station, weather forecast service, smart meter has been brought together in one central system
- o Each control system has been equipped with changeover (soft switch) possibility which enables smooth switch between previous mode operation and 3Smart control

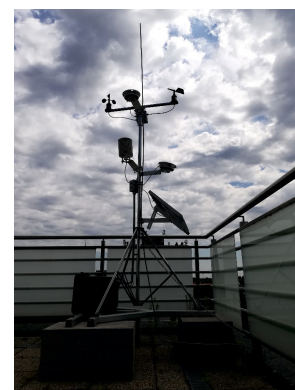


Application of the 3Smart tool on-site:

- o Coordinated
 - I. **(building zone level)** prediction of rooms heating/cooling energy consumption,
 - II. **(central HVAC system level)** predictive control of forward temperatures for the heating and cooling medium for the building, and for the water chiller units
 - III. **(microgrid level)** predictive control of the electrical heating units, the water chillers and the PV plant that implements control of energy exchange profile with the electricity grid including demand response which maintain comfort as required by the end-users and minimize the building energy costs
- o Auxilliary prediction and estimation procedures which as a side-effect facilitate and enhance building maintenance
- o Provides detailed data analysis options for the building electricity consumption

Expected effect:

Drastic decrease of building operational costs; return on investment conservatively estimated at 7 years – without consideration of gains from participation in meanwhile expectably established demand response schemes



Public presentation
will be held on:
5 September 2019

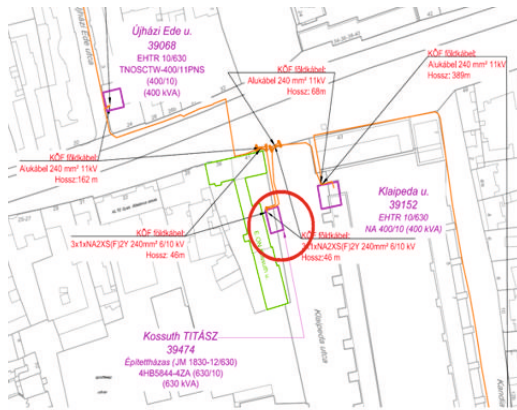
SAVE THE DATE

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



PILOT IN HUNGARY: Electricity distribution grid of E.ON Tiszántúli Áramhálózati Zrt. Debrecen

Basic facts and initial state:



Total cost of the investment: 33. 500 EUR, of which 28.475 EUR funded from the Interreg Danube Transnational Programme

3Smart investment:

- o Smart meters for monitoring MV line and LV parameters
- o Methodology and conception for grid-side energy management system is elaborated
- o User-friendly applications are developed for data collection on both grid- and building-side
- o Smart meter on medium voltage line is installed and incorporated into the data collection process
- o Day-ahead and intra-day prices are coming regularly and are stored in database
- o Shiftable loads / consumptions are identified and equipped with control automation system
- o Pilot site is ready to accept modules

Application of the 3Smart tool on-site:

- o Short-term modules:
 - I. Day-ahead module for optimal management of building flexibility, driven by long-term contract with the DSO
 - II. Intra-day module for triggering the flexibility based on real-time measurements from grid smart meters
- o 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: Encourage customers to be involved into Active Network Management in order to mitigate the network constraints, and reach more cost-effective operation of the buildings.

Using the flexibility services makes the DSO more effective in terms of distribution network planning and operation

Public pilot presentation date: **5 September 2019**

