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# Webinar

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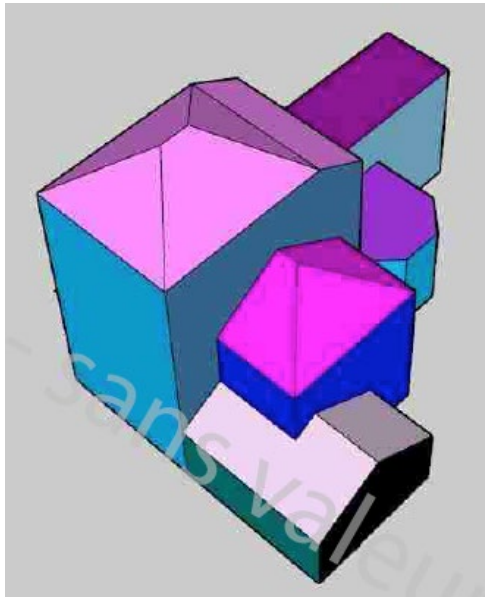
Energinvest

# Belgian pilote Seneffe

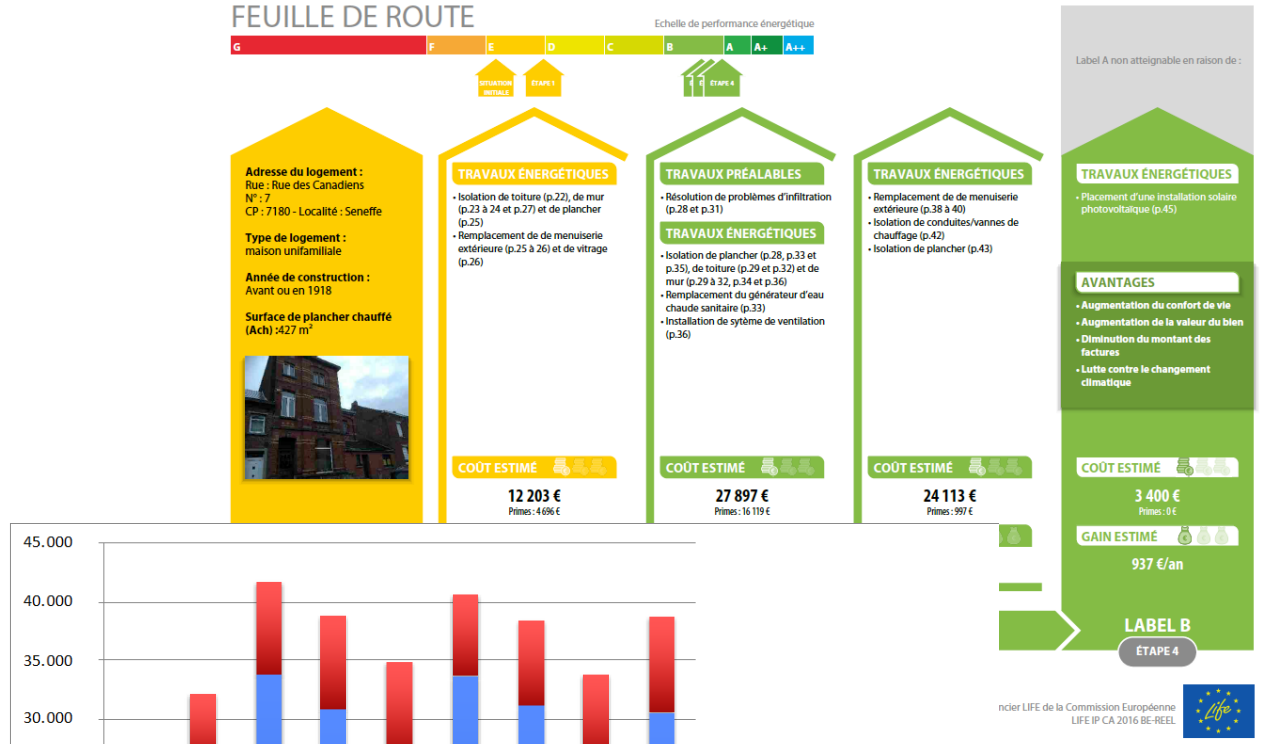
- Residential building
- Adress:

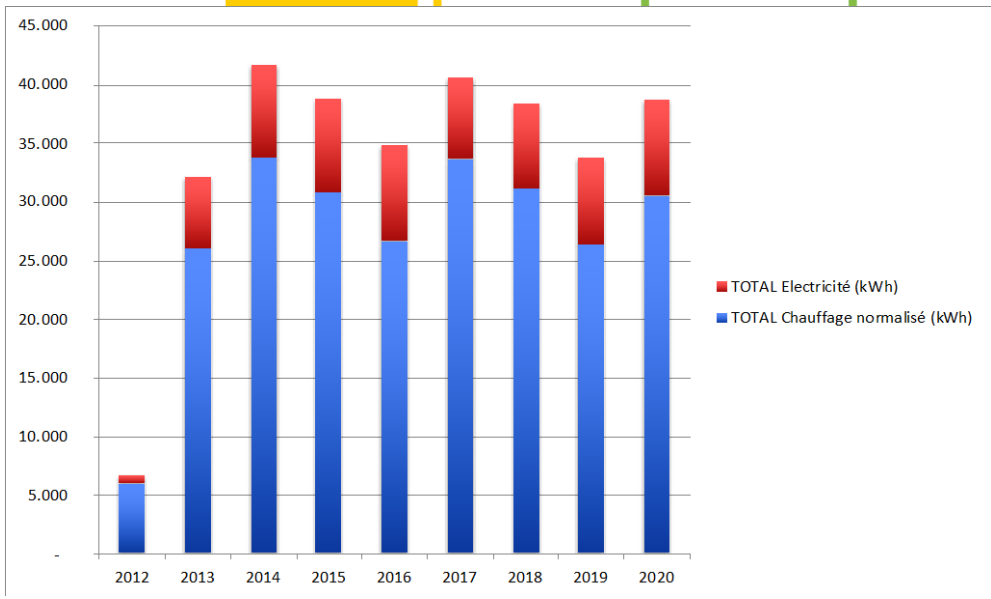
  Rue des Canadiens 7
  7180 Seneffe
  Belgium
- Characteristics of the site
  - In line with ongoing residential business case calculations & simulations = more realistic extension
  - It is quite representative for a lot of older houses, especially in an urban environment



# Belgian pilote Seneffe

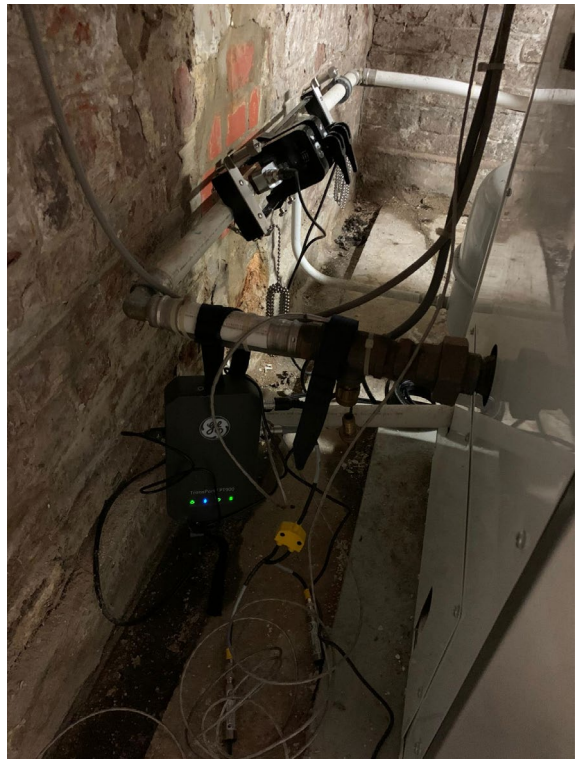
- Energy Audit
- Surface = 356m² (heated)
- Volume = 1.282m³
- K-value = 176
- Theorethical thermal consumption = 140 MWh/y
- Measured thermal consumption = 30-35 MWh/y



# Goal of the project

- To investigate the flexibility of supply and demand of energy within the residential sector
- **AEPC**: Active building Energy Performance Contract
- How?
  - Static simulation
  - Dynamic simulation
  - Calibration by measuring points (in- & outflow gasboiler, temperature probes in the house)



# Static simulation

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1) Define the building model + visit building
2) Determine minimum insulation (k-level < 40) → Heatloss calculation tool (Excel)
    a. Baseline scenario (current U-values)
    b. Optimised scenario (improved U-values)
    c. Takes into account: ventilation/infiltration losses & transmission losses
3) Determine theoretical HP installed power (after renovation, take into account DHW)
4) Design scenario (incl. investments) and calculate energy savings
5) Build (static) BAU and AEPC cases (possible more than one)

# Dynamic simulation

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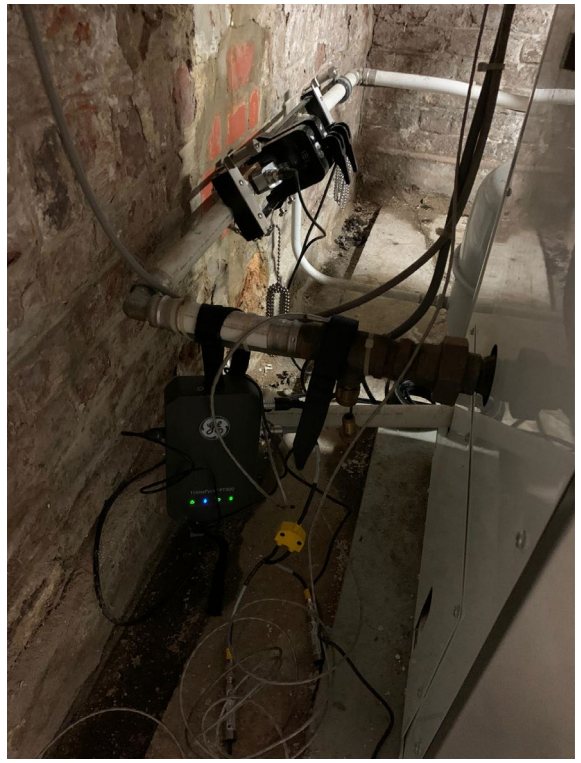
1. Define input parameters and assumptions
2. Calibrate model with measurements (thermal response)
3. Calculate energy savings
4. Build (dynamic) BAU and AEPC cases



# Complexities

- Quite complex building form
- Specific constraints on building insulation (aesthetic, practical, neighbours etc.)
- Usage of house is very modular → so is heating/comfort level
- AEPC contract will be theoretical, currently no ESCO ready to execute → input on residential AEPC contract needs to come from other contracts/contacts
- No 15' energy metering (YMR typical for residential use)
- Timing implementation also determined by architectural study that will start soon, which architects to validate the energy savings and cost estimates > aesthetics

# Flexibility

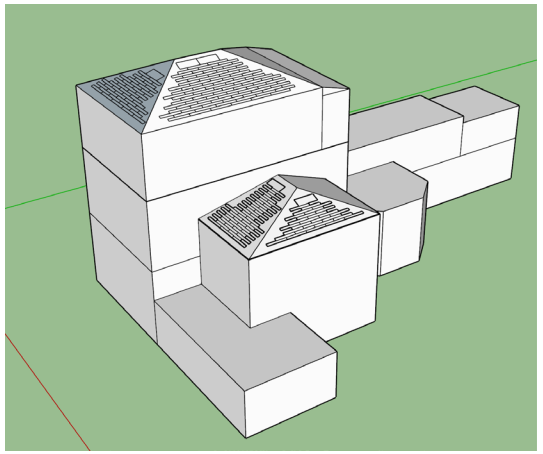
a) Photovoltaics → sunslates on inclined roof, PV-panels on flat roof

b) Heat pump to replace existing gas boiler (+cooling)

c) Electric vehicle & charging point

d) Battery or storage tank for domestic hot water

e) Electrical appliances (compatible with smart meter)



# Limitations (residential case)

- Most works will not be completed before end of the AmBIENCe project
- The heat pump will not be completed so no real performance testing possible
- AEPC contract will not really be signed