

Period:

February, 2021

Project Details:

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- Project Manager: Frank Louwet
- Location: Crutzestraat, Hasselt

Executive Summary:

This month there were a total of 345 degree days

Phase 1 heating energy:

- 2196 kWh of gas consumed (0.32 kWh per apartment per degree day)

Phase 2 heating energy:

- 14515 kWh of gas consumed (2.1 kWh per apartment per degree day)
- 3.5 kWh of electricity consumed (0.00051 kWh per apartment per degree day)

Phase 3 heating energy:

- 17791 kWh of gas consumed (1.8 kWh per apartment per degree day)
- 650 kWh of electricity produced

Project Overview:

The advanced control strategy is implemented in a district heating system for social housing in Crutzestraat, Hasselt. The social housing is operated by Cordium, the operating manager for social housing in Flemish region. The project consists of three phases or buildings with 20, 20 and 28 apartments in each phase. Each building has its own central heating system with various technologies installed. Furthermore, central heating systems are interconnected by an internal heat transfer network. i.Leco developed the control strategy which sends hourly setpoints for: maximum and minimum temperature setpoint in each building and/or distribution circuit, operation modes of installed technologies, and distribution state settings between building/heating systems.

Phase 1

Installed technologies:

- Geothermal/water gas absorption heat pumps – 2 pcs

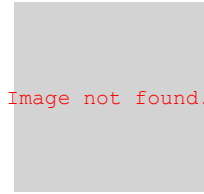


Figure 1: Phase 1 Energy Diagram

This month 20 MWh of heating energy was provided to the phase 1 building by heat pumps. Consumption of gas compared with previous months is shown below.

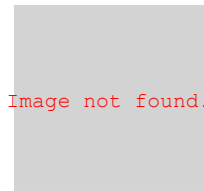


Figure 2: Phase 1 Energy Consumption monthly comparison

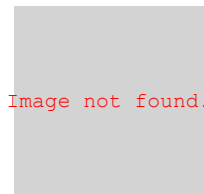


Figure 3: Phase 1 Control (February, 2021)

The minimum return water temperature this month was 39.4 °C

Phase 2

Installed technologies:

- Electrical air/water heat pump
- Electrical geothermal/water heat pump
- Geothermal / water gas absorption heat pump
- Gas condensing boiler



Figure 4: Phase 2 Energy Diagram

The electrical and gas energy consumed by the installed technologies this month is shown below:

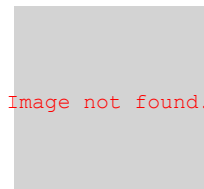


Figure 5: Phase 2 Energy Consumption

This month 19.5 MWh of heating energy was provided to the phase 2 building by heat pumps and the gas boiler. Consumption of electricity and gas compared with previous months is shown below.

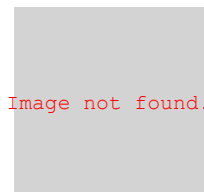


Figure 6: Phase 2 Energy Consumption monthly comparison

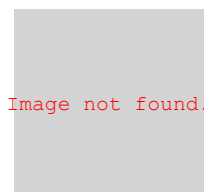


Figure 7: Phase 2 Control (February, 2021)

The minimum return water temperature this month was 35.6 °C

Phase 3

Installed technologies:

- Combined heat and power
- Gas boilers – 3 pcs

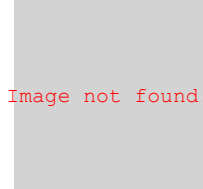


Figure 8: Phase 3 Energy Diagram

The gas energy consumed by the installed technologies this month is shown below:



Figure 9: Phase 3 Energy Consumption

This month 29 MWh of heating energy was provided to the phase 3 building by gas boilers and the combined heat & power plant. Consumption of gas and electricity production compared with previous months is shown below.



Figure 10: Phase 3 Energy Consumption/production monthly comparison

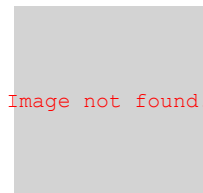


Figure 11: Phase 3 Control (February, 2021)

The minimum return water temperature this month was 45.9 °C