

Smart control of individual rooms and floors in existing buildings

Energy | Eindhoven, NL



Photo source: Municipality of Eindhoven

The system allows interactive monitoring and control of heating, ventilation and lighting through a mobile application of individuals rooms/floors independently. The system works on predictive control algorithm to automatically adjust the room to its user when needed. The system monitors window openings, temperature and occupancy. The system at the floor level monitors the CO2 level, occupancy and temperature. It gives users insights into energy use and promotes sustainable behaviour. (e.g. receive message when you open window in winter but want higher indoor temp).

Measured Impacts

29 sensors in **24** rooms

Relative heating energy reduction percentage on average: **12,48%**



project scale

Individual site



development type

Upgrading

Benefits

- Reducing operation costs
- Improving personnel efficiency
- Improving air quality
- Decreasing energy consumption in buildings
- Improving energy usage efficiency
- Shaving peak energy demand
- Reducing energy bill
- Increase comfort, can improve safety in emergency situations as occupancy is monitored, cleaning and maintenance facilities can be more efficient









Lessons learned

- Important to have well-functioning hardware(technology) as failure during piloting can lead to reduced trust on the technology
- Promotion is needed to encourage use of the App as a change in behaviour is expected

Challenges

- The Use case did not provide the expected end results due to:
- The existing HVAC infrastructure did not allow individual room control and installing new room controls was too expensive. High ROI period
- The heat losses form the connecting pipes to radiator are too high. Hence, enough energy not saved.
- Air conditioning system able to only control per wing and not per room.

Supporting factors

-  EPC Ratings (Energy labels) to be maintained for each building
-  infrastructural
-  Strong financial benefit foreseen as heating service provider charges occupants fixed fee
-  financial
-  Eindhoven – Strijp-S district
-  geographical
-  VolkerWessels
-  partners

Contacts

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