EPYCE

Webinar 1 – From EPC to DEPC, the need of monitoring for energy and indoor environment

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Online Webinar, 14th of Dec 2022

What is a monitoring?

Observation or surveillance of a defined quantity over time

- Quantity
- Observation over time
- Visual representation

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https://www.freepik.com/free-vector/city-skyline-conceptillustration 24487812.htm Image by storyset on Freepik





Why monitor the buildings

• For Edyce:

- Assess the energy consumption for performance gap
- Calibrate the dynamic simulation models of the building
- For "real life" cases:

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- Follow and control the energy consumption
- Identify drifts causes by indoor conditions monitoring
- Evaluate optimization action



What is the baseline for comparison?

- EPC
- Past performance
- Other building(s)

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• Theoretical objective (DEPC)



Monitored quantities in the building

- Heat
 - Space Heating
 - DHW
- Electricity
 - User consumption
 - Technical installations
 - PV
- IEQ
 - Indoor Air Temperature
 - Indoor Air quality





Monitoring examples

- Geneva 'IDC' (Heat consumption index) (annual energy)
- B1.3 before the project (monthly energy)
- B1.3 now (hourly DHW and Space heating, hourly IEQ)



Geneva 'IDC'

• Energy consumptions:

- Annual
- DHW and Space Heating aggregated for the whole building
- Indoor conditions:
 - Nothing

Objectives:

- Comparison at building stock level
- Long-term evolution
- +: Easy to follow, low-cost

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-: long feed-back time, global guideline needed



B1.3 Introduction

- Class E
- Multifamily house
- Built in the 80's
- Total heated floor area: 10'000 m²
- Focus on one entry





B1.3 before the EDYCE project

- Energy consumptions:
 - Monthly (from gas bills)
- Indoor conditions:
 - Nothing

Objectives:

- Comparison with static EPC values
- Performance gap identification
- +: cost-free, precision

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-: energy bills hard to find, no explanation for gap



B1.3 installed monitoring devices

Installed devices:

- Heat:
 - DHW
 - Total heat from gas heater
- Electricity:
 - Heat technical installation
 - Ventilation
- IEQ movable gateway with 24 probes Issue:
- Time of delivery
- Time of installation
- Connectivity

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• Cost (18k + 13k €)





B1.3 during the EDYCE project

- Energy consumptions:
 - Heat: Hourly
 - Electricity: Hourly
- Indoor conditions:
 - T°, HR and CO2 hourly in some rooms

Objectives:

- Optimization
- Short term changes evaluation
- Adapted conditions definition

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- +: Short feed-back, investigation possible
- -: cost of installation, data quantity



Heat consumption since 5.5.22



Conclusion

- Monitoring essential to evaluate the energy performance
- IEQ monitoring to understand performance gap causes and for calibration of dynamic simulation model
- Time interval between measurment is crucial for feedback time
- Costs and time of installation can be important
- A lot of available technologies, difficult to harmonize at building stock level



Thank you for your attention

Project partners:



Web: <u>E-DYCE.eu</u>



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 893945.