GDYNIA DEMONSTRATION PROJECT

Agnieszka Łukaszewska
Head of R&D in FASADA

P2ENDURE

GDYNIA DEMONSTRATION PROJECT

CONTENT

1. GENERAL DESCRIPTION
2. P2ENDURE APPROACH
3. WORK DONE
4. IMPACTS

30th September 2020

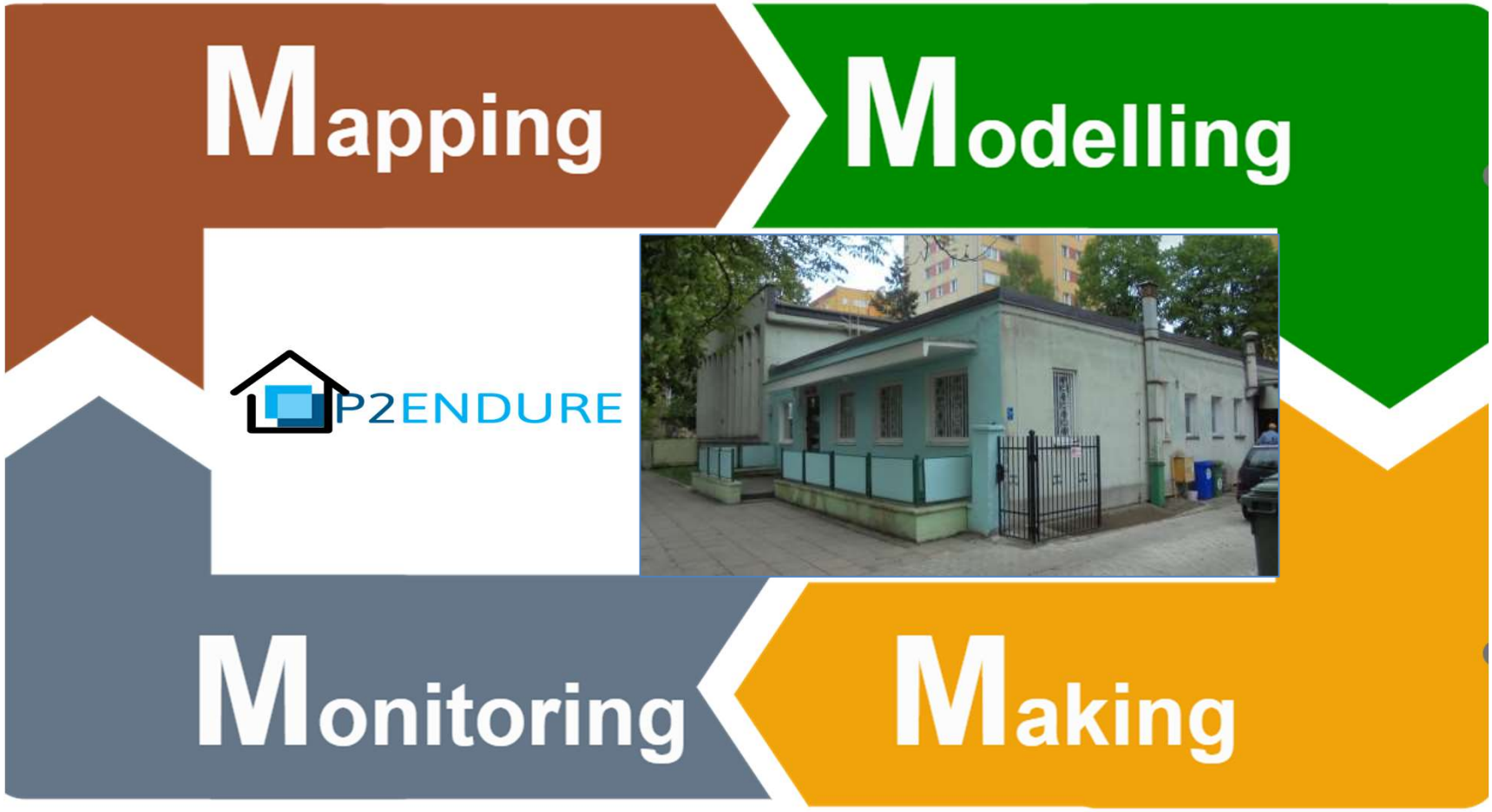
Sustainable places

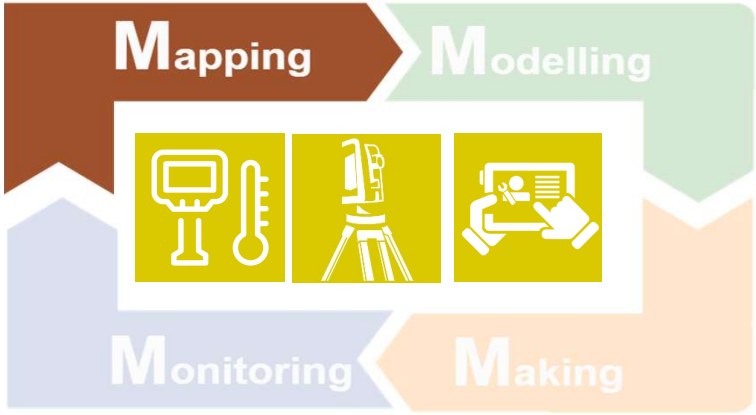
P2ENDURE

GENERAL INFORMATION

- **Project name:** Kindergarten no 16 in Gdynia, Poland
- **Owner**: Municipality of Gdynia (cooperation with the Municipality with the project)
- **Short description:** Demonstration building is a two-storey kindergarten building no 16, attended by around 130 children. It was constructed in year 1965 and it has the function of kindergarten from the beginning. Building volume is 2712 m^3 and built up area is 464 m^2. The external walls are made from the brick with no insulation layer.
- **Status at the beginning :** No electronical documentation and design, building not retrofitted.

P2EDNURE APPROACH

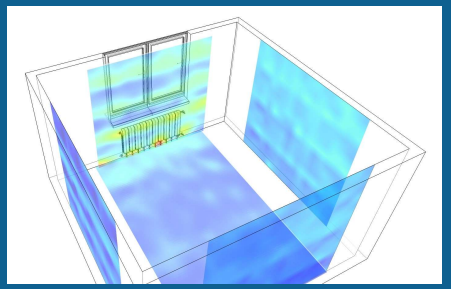


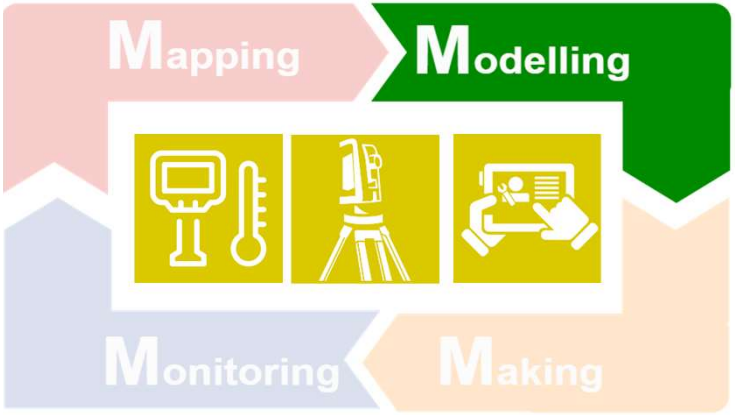


P2ENDURE

Mapping:

- Energy audit & building assessment condition
- 3D scanning
- Monitoring IAQ (temperature, humidity, CO2, PM1, PM2.5, PM10)

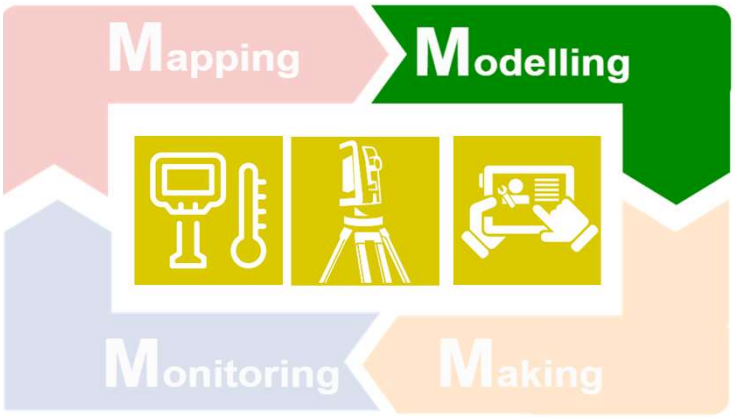




P2ENDURE

Modelling:

- **Cloud to BIM**
- **As-built BIM model**



P2ENDURE

Modelling:

- **BEM model and Energy analysis to select the most optimum renovation scenario**
- **65% of primary Energy savings**

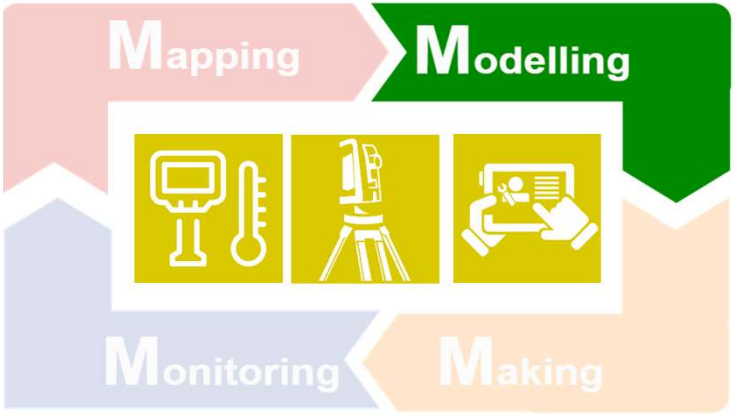
STEP 1
Creation of the **BASELINE** energy model

STEP 2
VALIDATION of the baseline with the energy bills

STEP 3
Creation of the **POST-RENOVATION MODEL**

STEP 4
Evaluation of the **PERFORMANCE** of the renovation

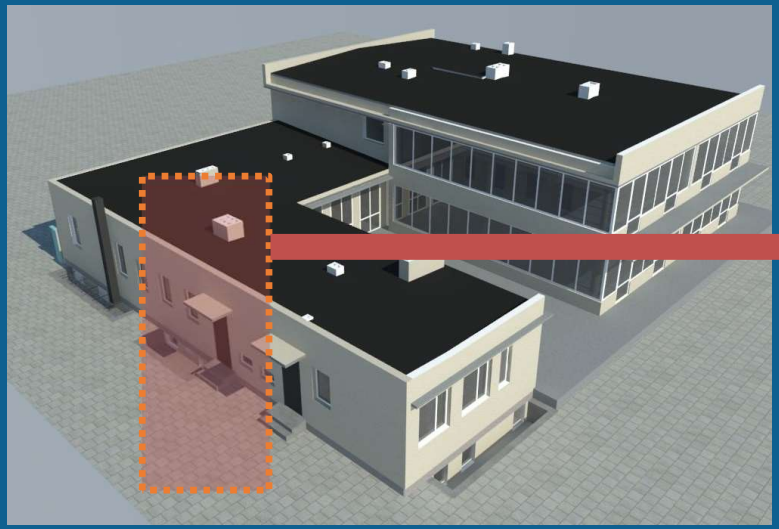
Analysis of **FURTHER ACTIONS** to achieve the **60% ENERGY SAVING**

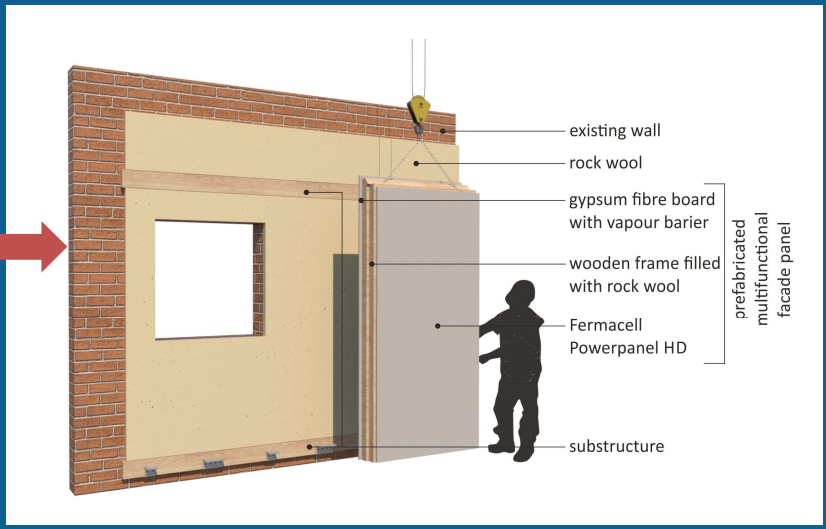


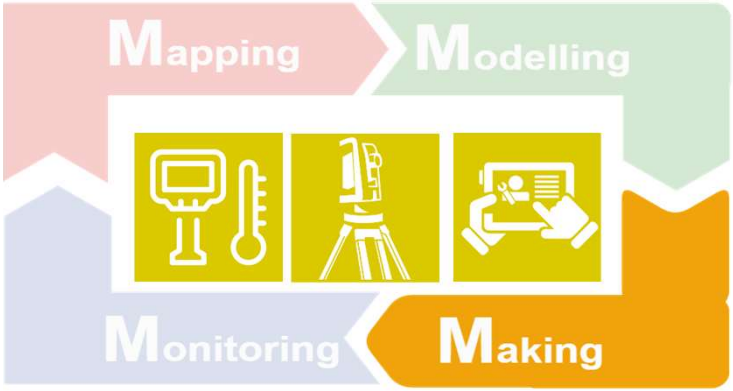
P2ENDURE

Modelling:

- **Selection of PnP Fermacell multifunctional facade panels developed with the project**
- **BIM renovation design**

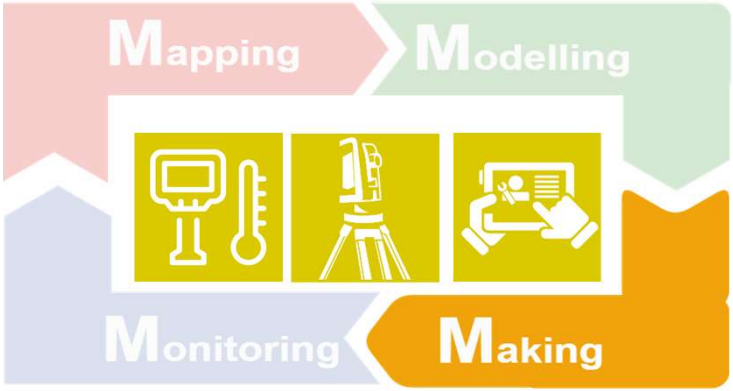






P2ENDURE

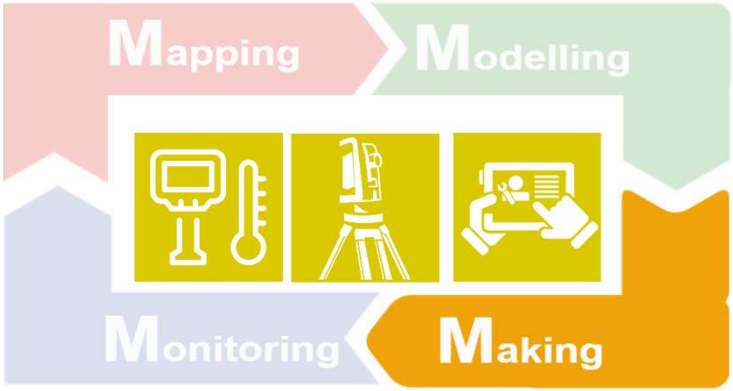
Making:


Mapping
Modelling
Monitoring
Making

P2ENDURE

P2ENDURE
PLUG & PLAY BUILDING RENOVATION
FASADA

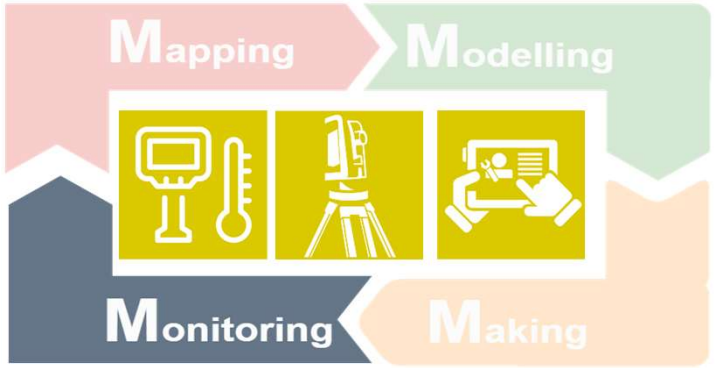
P2ENDURE
PLUG & PLAY BUILDING RENOVATION
FASADA



P2ENDURE

BEFORE

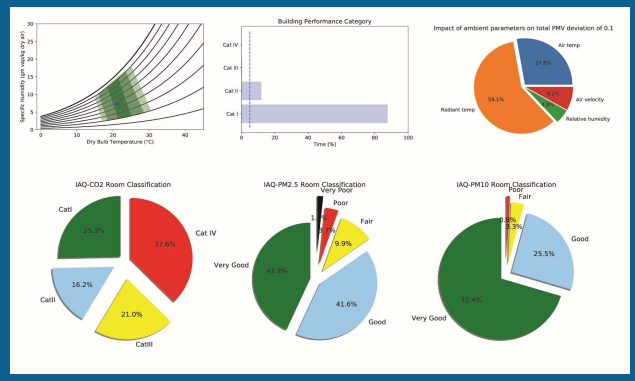
AFTER

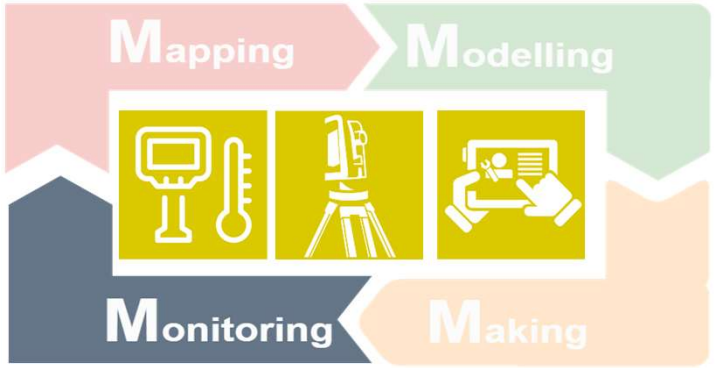


P2ENDURE

Monitoring:

- **Post renovation monitoring (temperature, humidity, CO2, PM1, PM2.5, PM10)**

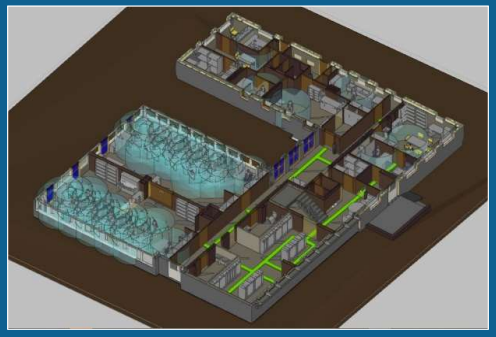


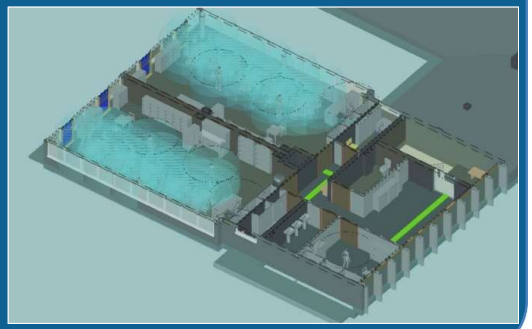


P2ENDURE

Monitoring:

- **Additional activity: COVID-19 analysis**
- Use of Open BIM-COVID 19 software to analyze the correctness of the applied solutions and procedures against the COVID-19 for the kindergarten
- Verification of : maximum numer of people in the rooms, safe distance between people, distance between workstations and main routes attended by employees, children and parents, and the marking and location of disinfection stations.

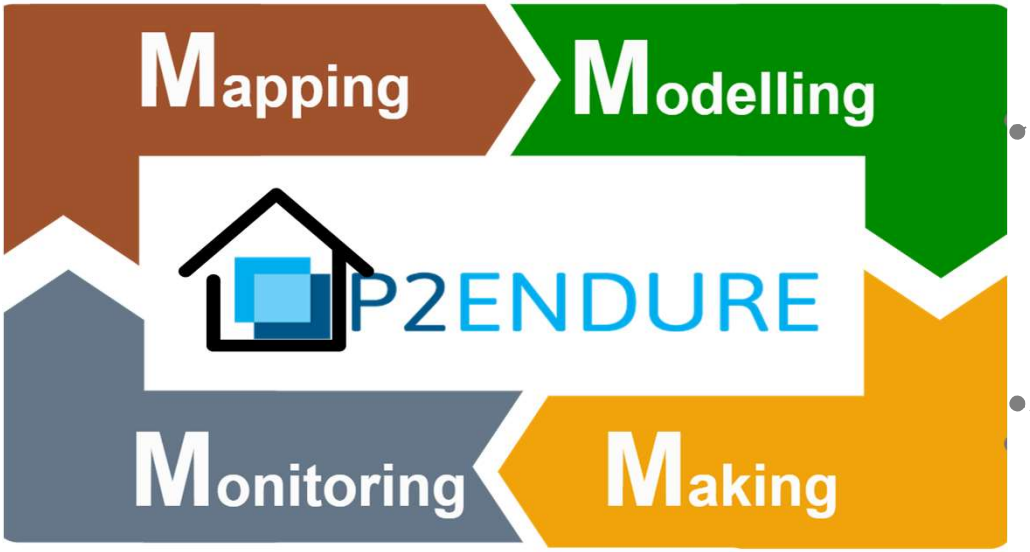




P2EDNURE APPROACH

- 3D scanning
- Energy audit & building assessment condition
- Monitoring of internal air quality before renovation

- Cloud to BIM
- As-built BIM model
- BEM model and Energy analysis to select the most optimum renovation scenarion
- BIM Renovation design



- Post-renovation monitoring of internal air quality before renovation
- COVID-19 analysis

- 4D and 5D modeling
- Renovation of the building with PnP multifunctional facade panels

IMPACTS

65%

Energy reduction

Embodied energy

-50%

Time reduction

30 Followers in short term
794 282 Long term

Replicability

Indoor environmental quality

Disturbance

© P2ENDURE
ALL RIGHTS RESERVED. ANY DUPLICATION OR USE OF OBJECTS SUCH AS DIAGRAMS IN OTHER ELECTRONIC OR PRINTED PUBLICATIONS IS NOT PERMITTED WITHOUT THE AUTHOR'S AGREEMENT

THIS PROJECT IS FUNDED UNDER THE EU PROGRAMME H2020-EE-2016-PPP (SUPPORTING ACCELERATED AND COST-EFFECTIVE DEEP RENOVATION OF BUILDINGS THROUGH PUBLIC PRIVATE PARTNERSHIP (EEB PPP) UNDER GRANT AGREEMENT NUMBER: 723391. THE INFORMATION IN THIS PUBLICATION DOES NOT NECESSARILY REPRESENT THE VIEW OF THE EUROPEAN COMMISSION.

COLOPHON

Agnieszka Łukaszewska

Head of R&D

a.lukaszewska@prefasada.pl

www.prefasada.pl
@PRE_FASADA

P2ENDURE