PLUG & PLAY BUILDING DEEP RENOVATION

EU Horizon2020 Collaborative Research Project 2016-2020

Anna Gralka MSc & Rizal Sebastian PhD
DEMO Consultants, The Netherlands

P2ENDURE

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2 March 2010

MODER H2020 workshop, Utrecht, NL

Anna Gralka MSc & Rizal Sebastian PhD

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EU HORIZON2020 COLLABORATIVE PROJECT

- Call H2020-EE-10-2016: Accelerated and cost-effective deep renovation of buildings

- Project duration: 48 months (1 September 2016 – 31 August 2020)

- Coordinator: Rizal Sebastian PhD (DEMO Consultants, NL)

- Consortium: 16 partners (8 SME, 5 large companies, 2 universities, 1 local government)

MAIN AIM AND VISION

- Main aim

  - ❑ 60% energy saving through deep renovation

  - ❑ 15% cost saving compared to traditional renovation techniques

  - ❑ 50% time saving and thereby reduction of disturbance during renovation

- Vision

  - ❑ Deep renovation: intervention > 25% of building envelope; or > 25% of building value; or transformation of building function (for vacant / obsolete buildings)

  - ❑ Plug & Play: prefab solutions (building and HVAC components) to be implemented in short time without structural changes of the existing building

  - ❑ Evidence-based: demonstrate the viability and replicability of practical innovations through real demonstration projects of various deep renovation typologies:
    - residential buildings
    - public buildings
   - transformation of public or historic buildings into dwellings

RESEARCH CHALLENGES

- PnP solutions of P2Endure must be:

  - ❑ Ready to implement (TRL 6+ → TRL 8)

  - ❑ Affordable

  - ❑ 50% faster from production to on-site assembly

  - ❑ Scalable & adaptable (in all European countries)

- Integrating and optimising practical innovations for deep renovation

  - ❑ PnP components for building envelopes

  - ❑ PnP technical systems

  - ❑ On-site 3D technologies

- Developing and implementing modular processes, BIM, mobile ICT tools

PROPOSED INNOVATIONS (1)

- **4M** modular processes: **M**apping – **M**odelling – **M**aking – **M**onitoring
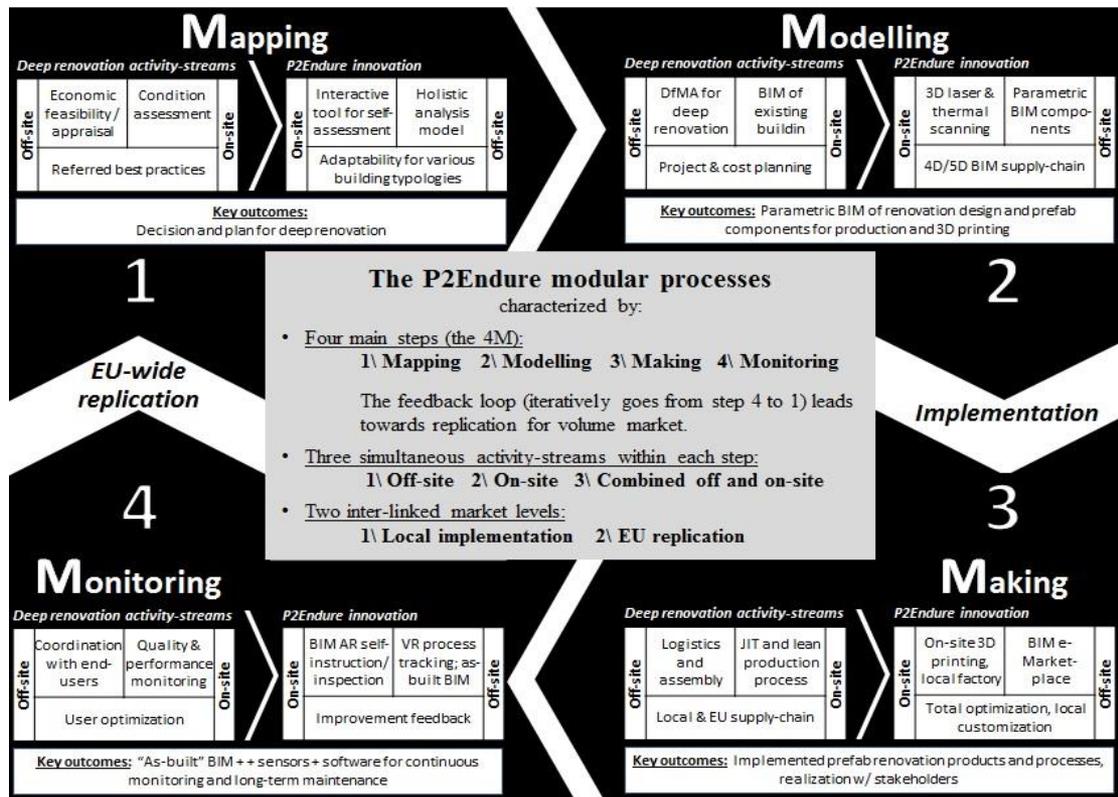
PROPOSED INNOVATIONS (2)

- Robot for 3D printing on-site
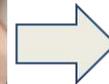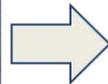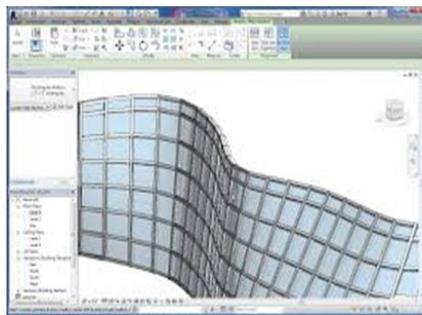
PROPOSED INNOVATIONS (3)

- Lightweight PnP panels

TRC   EPS
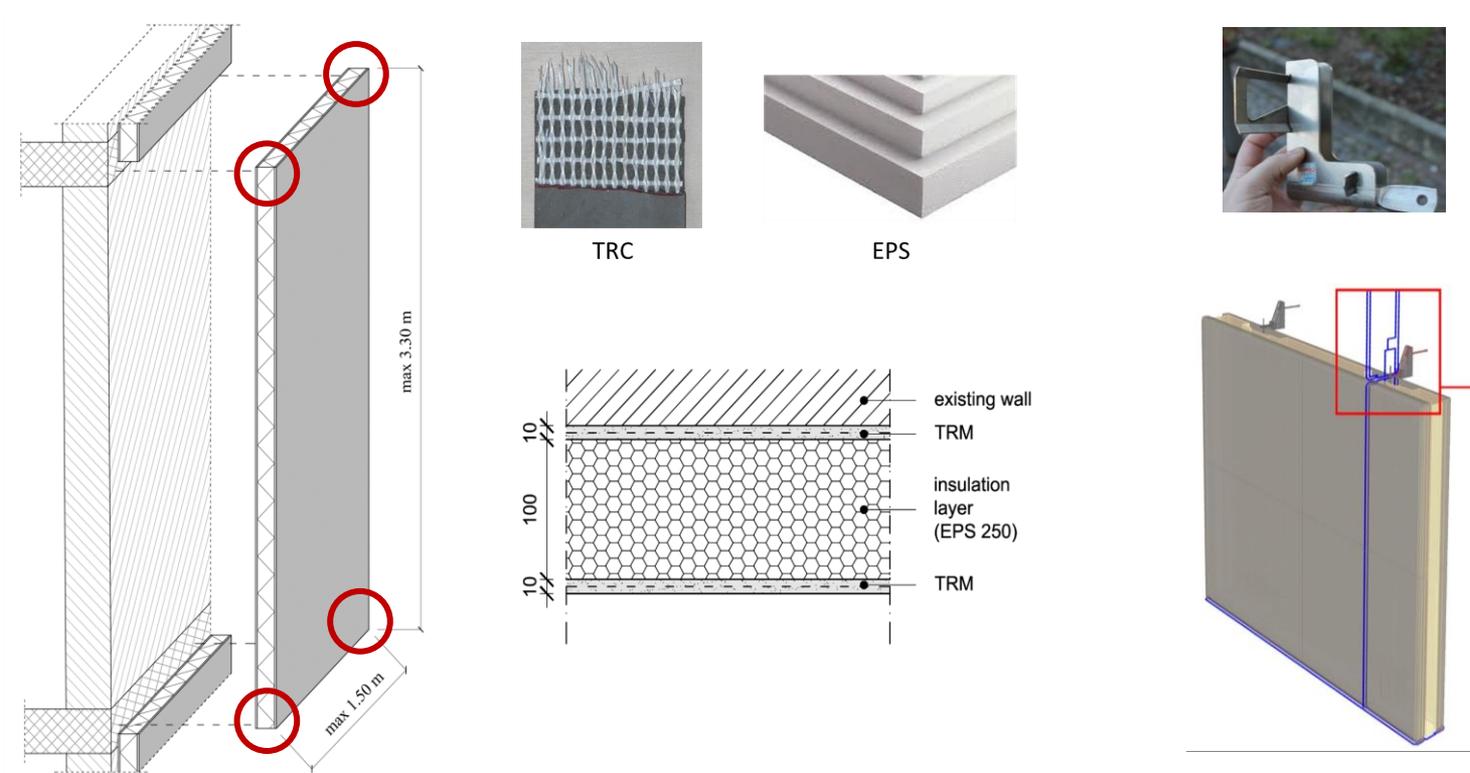
PROPOSED INNOVATIONS (4)

P2Endure integrated solutions	
PnP components for building envelopes	• Multifunctional panels • Smart windows • Folding balcony • Rooftop retrofit modules • PnP smart connectors
PnP building utility systems	• PnP HVAC systems • IEQ (Indoor Environment Quality) control systems • Compact energy storage • Connection to energy grid and RES production
On-site 3D technologies	• 3D laser and thermal scanning • 3D printing and robotics

REAL DEMONSTRATION CASES (1)

- Hogekamp, Enschede, The Netherlands

  Deep renovation and transformation of a vacant university building into student apartments, hotel and conference rooms
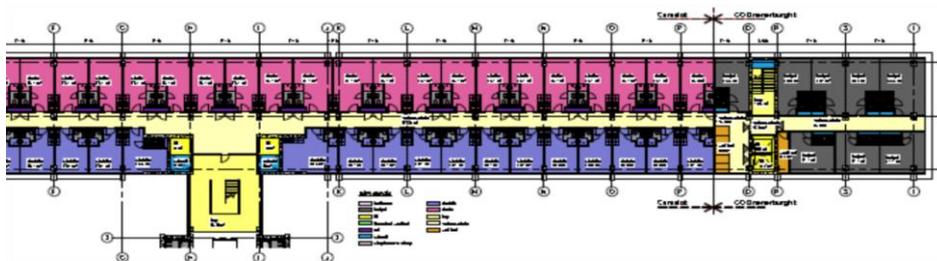
REAL DEMONSTRATION CASES (2)

- Deep renovation of a kindergarten building in Gdynia, Poland

REAL DEMONSTRATION CASES (3)

- Deep renovation and new RES system for historic hospital in Palmanova, Italy
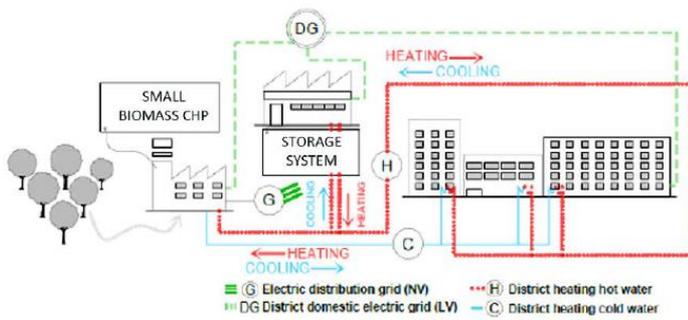
DISCUSSIONS

- Exploring mutual synergies with the MODER project

- More information on P2Endure: www.P2Endure-project.eu

thank you!

COLOPHON

2 March 2017

MODER H2020 workshop, Utrecht, NL

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Version V1

P2ENDURE