

TIMEPAC

Towards innovative methods for energy performance assessment and certification of buildings

H2020 Coordination and Support Action 2021-24

https://timepac.eu

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Consortium

13 partners from 7 EU countries (Austria, Croatia, Cyprus, Germany, Italy, Slovenia, and Spain)



certification public bodies - local energy agencies and consultancies - software developers - research groups – communication agency

- La Salle FUNITEC, Spain (Coordinator)
- Jožef Stefan Institute, Slovenia
- Politecnico di Torino, Italy
- Institut Català d'Energia, Spain
- CYPE Soft S.L., Spain
- Ministrstvo za infrastrukturo, Slovenia
- Goriška Lokalna Energetska Agencija, Slovenia
- European Science Communication Institute, Germany
- Edilclima, S.r.l., Italy
- Regione Piemonte, Italy
- Institute for Sustainable Energy and Resources Availability, Austria
- Energy Institute Hrvoje Požar, Croatia
- Cyprus Federation of Employers & Industrialists, Cyprus

Project objectives



A new holistic approach of Energy Performance Certification throughout the whole building lifecycle

Project objectives

TIMEPAC will contribute to improving existing energy certification processes, moving from **single, static certification to more holistic and dynamic approaches**, which consider:

- the **data generated** in the overall energy performance certification process, from generation to storage, to analysis and exploitation, and throughout all the building lifecycle, from design, to construction and operation

- buildings as part of a built environment, connected to energy distribution and transport networks

- buildings as dynamic entities, continuously changing over time



Project objectives

focusing on the overall EPC data lifecycle

DYNAMIC CERTIFICATION OVER BUILDING LIFETIME



Specific objectives

- To increase the quality and reliability of EPC schemas
- To implement EPC schemas with **sustainability and SRIs**
- To integrate EPC databases with other data sources in order to improve the efficiency and reliability of EPCs
- To increase awareness of the need to have EPC enhanced with other data sources to foster the exploitation of EPC data
- To provide training materials including the new methods developed in TIMEPAC



Previous research projects

ENERSI (La Salle - FUNITEC, ICAEN)

La Salle - FUNITEC, in collaboration with partner ICAEN, has developed two online applications - ENERHAT and ENERPATenable users (owners, tenants, real estate agencies) and experts (planners, policy makers) to estimate the costs of the building refurbishment measures at the building and city level

ENERHA

www.enersi.es/enerhat



www.enersi.es/enerpat



Methods and tools to integrate EPC data with other data sources using Semantic Web technologies.

>600.000 Generalitat de Catalunya Energy Performance Institut Català d'Energia Certificates >25.000 >600.000 National **Building Technical** Agència de l'Habitatge de Catalunya Cadastre Parcels Inspection >8.000 >30.000 **Geographical Information** National **National Institute Statistics** Municipalities Census sections



Previous research projects ENERFUND (JSI, SERA)

The H2020 ENERFUND project, in which JSI and SERA have been partners, developed a methodology for helping decision makers on energy renovation of buildings.

The methodology is based on existing data that is integrated in georeferenced EPC (total floor area, energy savings potential, year of construction/previous renovation) and combined with other publicly available data (energy prices, occupancy, ownership, etc).

https://app.enerfund.eu



England / Greater London / London / City of Westminste

Previous research projects

TABULA and EPISCOPE (POLITO)

TIMEPAC will adhere to the methodologies developed in the IEE projects TABULA and EPISCOPE, in which POLITO has been a partner.

In TABULA, a building typology was created and applied to 13 European countries.

By using a bottom-up approach, the building typology proved to be an effective way to carry out energy balances and refurbishment scenarios of building stocks on a large scale.

http://webtool.building-typology.eu/#bm





Project concept

Innovative procedures to foster a holistic and dynamic approach to EPC in practice will be developed in **five Transversal Deployment Scenarios (TDSs)** with the participation of the partner organizations, at a **European scale**.

| CYPRUS | Real estate Mobility | | TDS2 – Enhancing EPC schemas through operational data integration | enhance EPC quality | CYPRU: |
|----------|-----------------------------|-------|--|--|---------|
| SLOVENIA | Energy production | | TDS3 – Creating Building Renovation Passports from data repositories | | SLOVENI |
| SPAIN | Energy consumption | | [inspections, BMS, audits] | Enhanced EPC schema (SRIs, operational data,) | SPAI |
| | EPC database | | TDS4 – Integration of Smart Readiness Indicators and sustainability indicators in EPC | Online training platform | |
| | BIM renovation | | TDS5 – Large scale statistical analysis | ernite training protection | |
| | BIM model | | of EPC databases | Trained stakeholders | |
| | Current certification proce | edure | | nced certification procedures | |

TRANSVERSAL DEPLOYMENT SCENARIOS

TDS1 - Integration of BIM with EPC

TDS2 – Enhancing EPC schemas through operational data integration

TDS3 – Creating Building Renovation Passports from data repositories [Inspections, BMS, audits]

TDS4 – Integration of Smart Readiness Indicators and sustainability indicators in EPC

TDS5 – Large scale statistical analysis of EPC databases

BIM models, monitoring data, statistics

DEMONSTRATION SCENARIOS

DS1 – Improving certification with enhanced EPCs

DS2 – EPC exploitation through advanced analysis (SRIs)

DS3 – Bullding renovation scenarios from the analysis of enhanced EPC data

DS4 – Improving building operation with enhanced EPC

TRAINING SCENARIOS

TS1 – Analysis and visualisation of EPC data and development of innovative energy services

TS2 –EPC data collection, validation and exploitation

TS3 – Advance methods and tools for holistic energy renovation of buildings

TS4 – Exploitation of EPC for local, regional and national energy planning

TS5 – Evaluation and verification of energy saving opportunities based on EPC data

TS6 – Operational optimisation of building energy performance based on activities during EPC generation

Learning materials derived from implementation of scenarios (guidelines, procedures)

Training materials (videos, webinars, documentation, tools)

TIMEPAC ONLINE TRAINING PLATFORM

Target users: certifiers, energy consultants, building managers, residents, real estate

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| DEMONSTRATION SCENARIOS | | |
|---|---|--|
| DS1 – Improving certification with enhanced EPCs | TS1 – Analysis and vi | sualisation of |
| Transversal Deploymer (TDS) | | ces on, validation |
| tools to implement enhar | nced EPCs | s and tools for on of buildings |
| with standardized procedures and tools, | | PC for local, hergy planning |
| which can be extended a | at the EU level, | rification of ities based on |
| | TS6 – Operational op building energy perfo activities during EPC | ormance based or |
| Learning materials derived from implemen- tation of scenarios (guidelines, procedures) | Training materia (videos, webinar documentation, | s. |
| TIMEPAC ONLINE TRAINING PLATFOR | M | |
| | DS1 - Improving certification with Transversal Deployment (TDS) to deploy and deliver new tools to implement enhag schemas cases in the 6 g with standardized proceed which can be extended a | DS1 - Improving certification with Transversal Deployment Scenarios (TDS) to deploy and deliver new methods and tools to implement enhanced EPCs schemas cases in the 6 partner countries with <u>standardized procedures and tools</u> , which can be extended at the EU level, TS6 - Operational op building energy perfor activities during EPC |

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SUSTAINABLE PLACES 2021 | September 28th – October 1st, 2021 | Rome, Italy

TRANSVERSAL DEPLOYMENT DEMONSTRATION SCENARIOS TRAINING SCENARIOS SCENARIOS DS1 - Improving certification with TS1 - Analysis and visualisation of TDS1 - Integration of BIM with EPC enhanced EPCs EPC data and development of innovative energy services TDS2 - Enhancing EPC schemas DS2 - EPC exploitation through advanced through operational data integration DYNAMIC CERTIFICATION OVER BUILDING LIFETIME analysis (SRIs) TS2 - EPC da and exploita positories (BIM, cadastre Automatic storage of the certificate in BIM and EPC databases Analysis of EPC repositories to identif otential areas for building renovation TDS3 - Creating Building Renovation DS3 - Building renovation scenarios from Passports from data repositories the analysis of enhanced EPC data TS3 - Advan [inspections, BMS, audits] es and tools for large scale holistic ener stical analysis of EPC databas DS4 - Improving building operation with TDS4 - Integration of Smart Readiness enhanced EPC TS4 - Exploi Identifying customers for building Indicators and sustainability BIM models used to generate EPC to be used in future renovation projects components and equipment in areas with a potential for renovation regional and SCOs, consultants, building comp indicators in EPC TS5 - Evalua TDS5 - Large scale statistical analysis Each TDS encompasses various stages of the EPC workflow of EPC databases (generation, storage, analysis, and exploitation), involving multiple stakeholders (research groups, energy agencies, ESCOs, etc.) and resources (data, tools, methods). BIM models, Learning materials Training materials derived from Implemenmonitoring data, (videos, webinars, tation of scenarios statistics documentation, tools) (guidelines, procedures) TIMEPAC ONLINE TRAINING PLATFORM Target users: certifiers, energy consultants, building managers, residents, real estate

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| TRANSVERSAL DEPLOYMENT SCENARIOS | DEMONSTRATION SCENARIOS | TRAINING SCENARIOS | |
|--|--|---|--|
| TDS1 - Integration of BIM with EPC | DS1 – Improving certification with enhanced EPCs | TS1 – Analysis and visualisation of EPC data and development of | |
| TDS2 – Enhancing EPC schemas through operational data integration | DS2 – EPC exploitation through advanced analysis (SRIs) | TS2 -EPC data collection, validation | |
| TDS3 – Creating Building Renovation | DS3 – Building renovation scenarios from | and exploitation | |
| Passports from data repositories [Inspections, BMS, audits] | the analysis of enhanced EPC data | TS3 - Advance methods and tools for holistic energy renovation of buildings TS4 - Exploitation of EPC for local, regional and national energy planning TS5 - Evaluation and verification of energy saving opportunities based on EPC data | |
| TDS4 – Integration of Smart Readiness Indicators and sustainability | DS4 – Improving building operation with enhanced EPC | | |
| indicators in EPC TDS5 – Large scale statistical analysis of EPC databases | | | |
| | | TS6 – Operational optimisation of building energy performance based on activities during EPC generation | |
| BIM models, monitoring data, statistics | | DSs will be applied in the <u>Demonstra</u> by specific target groups involved in prious countries | |
| | TIMEPAC ONLINE TRAINING PLATFORM | | |

Target users: certifiers, energy consultants, building managers, residents, real estate

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SUSTAINABLE PLACES 2021 | September 28th – October 1st, 2021 | Rome, Italy

| RANSVERSAL DEPLOYMENT SCENARIOS | DEMONSTRATION SCENARIOS | TRAINING SCENARIOS | |
|---|---|--|--|
| DS1 – Integration of BIM with EPC | DS1 – Improving certification with enhanced EPCs | TS1 – Analysis and visualisation of EPC data and development of | |
| DS2 – Enhancing EPC schemas hrough operational data integration | DS2 – EPC exploitation through advanced analysis (SRIs) | Demonstration Scenarios (DS) TS2 - To demonstrate how the enhanced | |
| DS3 – Creating Building Renovation Passports from data repositories Inspections, BMS, audits] | DS3 – Building renovation scenarios from the analysis of enhanced EPC data | and e TS3 - holist reliability, effectiveness, user- | |
| DS4 – Integration of Smart Readiness ndicators and sustainability ndicators in EPC | DS4 – Improving building operation with enhanced EPC | TS4 - friendliness, cost-effectiveness, etc. | |
| DS5 – Large scale statistical analysis of EPC databases | | TS5 - the participating countries EPC data TS6 - Each DS will focus on specific target groups, to find out if the new methods tools improve their daily tasks and opens up new possibilitie for integration. | |
| | | | |
| BIM models, monitoring data, statistics | Learning materials derived from implemen- tation of scenarios (guidelines, procedures) | | |
| | TIMEPAC ONLINE TRAINING PLATFORM | | |

managers, residents, real estate

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TRANSVERSAL DEPLOYMENT SCENARIOS

TDS1 - Integration of BIM with EPC

TDS2 - Enhancing EPC schemas through operational data integration

TDS3 - Creating Building Renovation Passports from data repositories [inspections, BMS, audits]

DEMONSTRATION SCENARIOS

DS1 - Improving certification with enhanced EPCs

DS2 - EPC exploitation through advanced analysis (SRIs)

DS3 - Building renovation scenarios from the analysis of enhanced EPC data

DS4 - Improving building operation with enhanced EPC

TRAINING SCENARIOS

TS1 - Analysis and visualisation of EPC data and development of innovative energy services

TS2 - EPC data collection, validation and exploitation

TS3 - Advance methods and tools for holistic energy renovation of buildings

TS4 - Exploitation of EPC for local,



| TRANSVERSAL DEPLOYMENT | DEMONSTRATION SCENARIOS | TRAINING SCENARIOS | | |
|--|---|--|--|--|
| 1DST - Integration of blive with t | ining Scenarios (TS) | TS1 – Analysis and visualisation of EPC data and development of | | |
| TDSZ – Ennancing EPC schema | To produce and deliver training materials for the target groups | TS2 -EPC data collection, validation | | |
| Passports from data repositorie trai | olved in the EPC workflow and to n them on enhanced EPC | and exploitation TS3 – Advance methods and tools for holistic energy renovation of buildings | | |
| IDS4 – Integration of Smart Re- Indicators and sustainability | emas. | TS4 – Exploitation of EPC for local, regional and national energy planning | | |
| Indicators in EPC TDS5 - Large scale statistical analysis of EPC databases | nalysis | TS5 – Evaluation and verification of energy saving opportunities based on EPC data | | |
| | | TS6 – Operational optimisation of building energy performance based o activities during EPC generation | | |
| BIM models, monitoring data, statistics | Learning materials derived from Implemen- tation of scenarios (guidelines, procedures) | Training materials (videos, webinars, documentation, tools) | | |
| TIMEPAC ONLINE TRAINING PLATFORM | | | | |
| | Target users: certifiers, energy consultants, bul managers, residents, real estate | ilding | | |
| SUS | TAINABLE PLACES 2021 September 28 th – Octo | bber 1 st , 2021 Rome, Italy | | |

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Networking opportunities

Next Gen EPCerts H2020 cluster

 Interlinks with ongoing projects ("Building Energy Performance Certificates: The Enabler Smart Readiness Indicator" workshop), Wednesday, September 30, 9:00-12:30

TIMEPAC International Workshops

- 2021 (December), in Slovenia
- 2022, in Italy
- 2023, in Austria

TIMEPAC Final Conference

- 2024, in Barcelona



If you would like more information, please contact us leandro.madrazo@salle.url.edu

