18TH CONFERENCE ON SUSTAINABLE DEVELOPMENT OF ENERGY, WATER AND ENVIRONMENT SYSTEMS

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BOOK OF ABSTRACTS

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sdewes INTERNATIONAL CENTRE FOR SUSTAINABLE DEVELOPMENT OF ENERGY, WATER AND ENVIRONMENT SYSTEMS

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The Challenges for a Holistic, Flexible, and Through-Life Updated Energy Performance Certificate

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Abstract

One of the strategies proposed by the revision of the Energy Performance of Buildings Directive (EPBD) is to provide the Member States with more reliable, accurate, and digitalised Energy Performance Certificates (EPCs), namely the so-called next-generation EPCs. The EU-Horizon2020 TIMEPAC project (Towards Innovative Methods for Energy Performance Assessment and Certification of Buildings) is aimed at enhancing the entire process to generate, store, analyse, and exploit EPCs. The starting point of the project is that the building is no longer conceived as a static entity, but as an occupant-centric object, subject to continuous changes. Therefore, the enhanced EPC approach should be holistic, flexible, through-life updatable (e.g., building renovations, internal conditions, aging, etc.), interoperable, and integrated.

The TIMEPAC approach includes a preliminary analysis of the current certification procedures in the six partner countries involved, as well as the proposal for an enhanced schema that meets the EPC requirements highlighted above. The enhanced EPC schema is currently under development through five different Transversal Deployment Scenarios, each one involving different stages of the EPC workflow (generation, storage, analysis, and exploitation), multiple stakeholders, and data sources. One of these scenarios will address the EPC scheme enhancement through operational data integration (building energy model calibration), as to reduce the "performance gap" between the actual building energy consumption and the standard performance provided by the EPC. Moreover, it will also evaluate the integration of a wider set of parameters in the EPC; these will consider different evaluation domains, such as indoor environmental quality, environmental sustainability, smart-readiness, and cost-effectiveness. Another scenario will, instead, provide a methodology to exploit the EPC database by carrying out reliable large-scale energy analysis to boost the deep renovation of the building stock. This is focused on the EPC data quality checking procedure based on a set of rules and scores to evaluate the reliability of the energy certificate data.

In this work, the main methodologies proposed in the TIMEPAC project for the enhancement of the existing EPC scheme are presented and discussed.