

**THE SYNERGY PROJECT:
A STUDY OF HIGH ENERGY-EFFICIENT BUILDING ELEMENTS ASSESSED UNDER
INTEGRATED PROTECTION CRITERIA AND LIFE CYCLE DESIGN ASPECTS**

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ABSTRACT

This paper presents the first steps of a project that focuses on the research and development of high energy-efficient building elements, assessed under integrated protection criteria and life cycle design aspects. More specifically, it concerns a holistic approach in designing and evaluating the building elements of new and existing constructions in Greece, with regard to their energy, hygrothermal, fire and environmental performances.

Apart from the knowledge and the theoretical results that will derive during the project, there are also more practical products, such as a catalogue and computational tools with numerous constructional details and information regarding their thermophysical, hygrothermal, fire resistance and environmental properties. These tools are very useful for all engineers, especially during the design and the decision-making phases of a new building or a renovation project. The expected products of the proposed project will not only act as a guideline for the technical community, but it will promote the use of building materials, which are efficient from every aspect of view.