

ICCS27 – 27th International Conference on Composite Structures

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Special Session

Use of innovative composites materials for the strengthening of historical and archaeological sites

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Short Description and Aim

Innovative composite materials have shown to be effective in improving the seismic behaviour of existing structures. In the strengthening field, several materials can be used for existing structures. A large part of the existing building stock is made of masonry structures, and recent calamitous events have shown the high vulnerability of particular contest like as the historical buildings and archaeological sites. Composite materials can guarantee high mechanical compatibility with several heritage masonries if they are correctly designed and modelled. In fact, composite materials can be easily applied in heritage buildings where the restoration criteria must be satisfied. However, without a normalized design approach, many practical applications are characterized by low efficiency. Many of the usual approach normalized for reinforced concrete or steel structures have been extended. However, these methods often show several drawbacks. In many engineering applications, the application on masonry in the past were performed without a proper design, or simply according to suggestions of manufactures. This approach often favours low efficiency of the strengthening systems or a deleterious behaviour of composites. In particular, composites applied in unnecessary amount show low efficiency, and they could favour a brittle behaviour of the masonry elements, pushing the failure of the masonry. Despite the popularity in the research panorama, this research field still have drawbacks concerning the modelling approaches and the building codes for the application to these engineering fields. The session focuses on innovative composite materials applied on heritage buildings and archaeological sites where additional requirements must be satisfied in terms of compatibility to substrates and reversibility of the strengthening systems, and new knowledges in terms of modelling and methodologies must be developed.