

## MODELLING OF THE BOND BEHAVIOUR OF CFRP LAMINATES GLUED ON CLAY BRICKS

\*E. Grande<sup>1</sup>, M. Imbimbo<sup>2</sup> and E. Sacco<sup>3</sup>

<sup>1</sup> Department of Mechanics,  
Structures and Environment -  
University of Cassino – Italy  
Via G. Di Biasio, 43 – 03043  
Cassino - Italy  
e.grande@unicas.it

<sup>2</sup> Department of Mechanics,  
Structures and Environment -  
University of Cassino – Italy  
Via G. Di Biasio, 43 – 03043  
Cassino - Italy  
mimbimbo@unicas.it

<sup>3</sup> Department of Mechanics,  
Structures and Environment -  
University of Cassino – Italy  
Via G. Di Biasio, 43 – 03043  
Cassino - Italy  
sacco@unicas.it

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### ABSTRACT

The use of composite materials represents a consolidate technique for strengthening masonry constructions. Nevertheless, several aspects are still object of investigations. Among these, one of the most important aspects in the application of composite materials for strengthening structural elements is the adhesion between the reinforcing and reinforced materials. This phenomenon is very complex because it involves materials with different properties (masonry, FRP and glue layer) and depends on several parameters. Moreover, some experimental and numerical investigations have been conducted in the last decades for concrete structures but only in the last few years the decohesion problem has been object of investigations for masonry structures ([1]-[2]).

A rigorous methodology to take into account in numerical models the interaction between masonry and the FRP reinforcement is the use of the interface model concept. According to this model, the forces acting on the interface are related to the relative displacement of the two sides (masonry and FRP). The use of this model is rather complex because it implies the knowledge of the parameters that define the behaviour of the FRP/masonry layer and it could lead to unsatisfactory results which are in contrast with experimental observations ([6], [7]).

In this work some numerical analyses are presented in order to simulate the bond behaviour of CFRP laminates glued on clay brick elements. In particular, on the basis of the results of an experimental campaign conducted by authors, different numerical models have been developed using the data deduced by the performed tests. The obtained results have been compared with the experimental ones in order to assess the reliability of the proposed models and for underlining further aspects concerning the interaction between the CFRP strengthening and the brick support.

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