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Marinella Fossetti, Giovanni Minafò

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Marinella Fossetti [a], Giovanni Minafò [b,*]

[a]: Università degli Studi di Enna "Kore", Facoltà di Ingegneria e Architettura, Cittadella Universitaria, 94100, Enna (Italy).
[b]: Università degli Studi di Palermo, Dipartimento di Ingegneria Civile, Ambientale, Aerospaziale, dei Materiali DICAM, Viale delle Scienze Ed.8, 90128 Palermo (Italy).

***Corresponding author**
Giovanni Minafò, PhD, Università degli Studi di Palermo, Dipartimento di Ingegneria Civile, Ambientale Aerospaziale, dei Materiali DICAM, Viale delle Scienze Ed.8, 90129 Palermo (Italy). Email: giovanni.minafo@unipa.it ; ph.: +39 091 23896749.

ABSTRACT

In the last decade, several studies **have investigated** the application of Fibre Reinforced Polymer (FRP) wraps to masonry piers in order to provide a confinement effect and enhance compressive strength and ductility. Although this technique has proved to be quite effective, various drawbacks arise when organic resins are used to bind fibres. To solve these problems, different techniques have been developed to be used as alternative methods for enhancing the structural performances of weak masonry columns. Among these, the use of Basalt Fibre Reinforced Cementitious Matrix (BFRCM) wrapping, or the application of steel wires at mortar joints. This paper presents the results of an experimental study on the compressive behaviour of clay brick masonry columns reinforced with FRP wraps, Basalt Fibre Reinforced Cementitious Matrix (BFRCM) or with steel wires. Uniaxial compressive tests were performed on twelve retrofitted columns and four control specimens up to failure. Two masonry grades were considered varying the mix used for the mortar. The results are presented and discussed in terms of axial stress-strain curves, failure modes and crack patterns of tested specimens. Comparisons with unreinforced columns show the capabilities of these techniques in increasing the structural efficiency with reduced aesthetical impact.

Keywords: *masonry columns, retrofit, FRP, basalt fibres, steel wires, experimental investigation.*