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Abstract

The following paper presents the most recent results of a research programme carried out to, among other purposes, develop an innovative anchoring system for old masonry buildings. Despite the recognized importance of connections and anchoring systems, there is little experimental information about their strength and stiffness when installed in the masonry walls of old buildings. Therefore, one of the important goals of the research programme mentioned was the experimental characterization of the proposed anchoring system.

The main characteristic of the proposed system, which makes it different from others, is an internal spherical steel element where the rod is connected. This steel element, called hinge, allows no orthogonality between the steel anchor plate and the tie rod, which makes it suitable for uneven connections between orthogonal walls and/or walls and floors.

Besides this particular characteristic, the proposed system demonstrates all the capabilities of the traditional anchoring systems, namely, it can be used to strengthen the connection between orthogonal masonry walls or to ensure the connection of constructive elements (floors, roofs, stairs, etc.) to masonry walls.

Moreover, numerical simulations with non-linear finite elements models were performed, aimed at reproducing the experimental tests for other load conditions or different wall thicknesses.

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