

Award-winning paper in 2011

Papers published in *Engineering and Computational Mechanics* are eligible for awards from the Institution of Civil Engineers. Papers from any of the ICE journals can be nominated for several awards. In addition, each journal has awards dedicated to their specific subject area.

On Friday 12 October 2012, ICE president Richard Coackley presented awards to the following paper published in *Engineering and Computational Mechanics* in 2011. The editorial panel nominated their best papers and an awards committee chaired by Barry Clarke allocated the awards.

Telford Premium Prize

The Telford Premium Prize was awarded to Milani and Lourenço (2011).

Abstract

A finite-element (FE) homogenised limit analysis model suitable for analysing masonry structures near collapse is applied to a real large-scale three-dimensional (3D) masonry building subjected to horizontal actions. In the model, masonry is substituted for a fictitious macroscopic homogeneous material. Masonry macroscopic mechanical properties are obtained by means of a recently presented equilibrated limit analysis approach performed on a suitable unit cell, which generates the entire structure by repetition. Masonry homogenised failure surfaces are then implemented in the 3D code outlined. With respect to previously presented models, the software allows analysis of real-scale buildings without the classic uncoupling of in-plane and out-of-plane actions. The possible presence of steel, reinforced concrete and ring beams is also considered by introducing two-node beam elements in the numerical model. A relevant 3D structural example (a masonry structure subjected to horizontal actions) is treated. Full sensitivity analyses and comparison with results obtained from commercial elasto-plastic software are also presented to validate the results of the proposed model.

REFERENCE

Milani G and Lourenço PB (2011) FE homogenised limit analysis model for masonry structures. *Proceedings of the Institution of Civil Engineers – Engineering and Computational Mechanics* **164**(2): 65–78, <http://dx.doi.org/10.1680/eacm.2011.164.2.65>.



ICE President Richard Coackley presents the Telford Premium Prize to Gabriele Milani