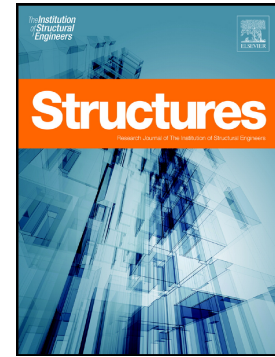


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Carles Colomer Segura, Lotfi Hamra, Marina D'Antimo, Jean François Demonceau, Markus Feldmann



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Determination of Loading Scenarios on Buildings due to Column Damage**Carles Colomer Segura^{1*}, Lotfi Hamra², Marina D'Antimo², Jean François****Demonceau² and Markus Feldmann¹**¹ *Institute of Steel Construction and Lightweight Construction, RWTH Aachen University**Mies-van-der-Rohe-Str. 1, 52074, Aachen, Germany,**Phone: +49 241 80 25177, Fax: +49 241 80 22140, e-mail: c.colomer@stb.rwth-aachen.de*² *ArGEnCo Department, MS²F Division, Liège University**Allée de la découverte 9, B52/3, 4000 Liège, Belgium**Phone: +32-(0)4-3669358, e-mail: jfdemonceau@ulg.ac.be***ABSTRACT**

The majority of imaginable (and relevant) accidental scenarios on building structures are initiated at the ground level by a column suffering damage, mainly due to a localized explosion or a vehicle impact. The transmitted vertical forces from the column to the structure are decisive in understanding the response of the building and are the subject of analysis of this paper. The classic definition of a column loss scenario is extended here by means of a simplified analytical approach to characterize the axial forces appearing in the column during the damage process. A simple closed-form solution is proposed to define the loading scenario on the structure and compared to the classic rectangular (un)loading approach. In certain cases, the proposed analysis shows a more unfavorable loading situation for the structure, which needs to be accounted for during design.

KEYWORDS

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