

<b>ACRONYM</b>	ATTEL
<b>PROJECT TITLE</b>	PERFORMANCE-BASED APPROACHES FOR HIGH STRENGTH TUBULAR COLUMNS AND CONNECTIONS UNDER EARTHQUAKE AND FIRE LOADINGS
<b>PROGRAMME</b>	European Coal and Steel Community – TGS8
<b>SHORT DESCRIPTION</b>	<p>The project ATTEL intends to develop both analytical and experimental know-how in order to support new design criteria for the exploitation of HSS and steel-concrete composite circular hollow sections for columns and connections subjected to exceptional loads, like earthquakes and fire. The investigation will be both experimental, through testing of tubular members and connections, analytical and numerical, through the use of the component method and advanced finite element simulations, in order to make full use of high strength steel ranging from S500Q/S500MC to S690Q/S700MC according to Eurocode 3 Part 1-12, for structural tubes ranging from 2 in to 24 in, with <math>D/t &gt; 30</math>; in a greater detail, over-design based approaches are going to be applied for:</p> <ol style="list-style-type: none"> <li>1. Steel and composite CFT columns made of HSS;</li> <li>2. Welded or bolted composite beam-to-CFT column joints made of HSS;</li> <li>3. CFT column base-joints made of HSS.</li> </ol> <p>In detail, results coming from the experimental, numerical and analytical studies will:</p> <ol style="list-style-type: none"> <li>i) Improve knowledge on the performance of HSS elements under seismic action, getting over the misconception that the ultimate-to-yield ratio is an important factor for avoiding premature local buckling in the inelastic range; thus, the will is to demonstrate that a plastic hinge analysis is possible with HSS.</li> <li>ii) Eliminate fire protection in conventionally designed and built steel-framed buildings, by i) achieving a better understanding of the whole building behaviour; ii) characterizing the HSS material with regard to the mechanical properties evolution with temperature; and iii) developing a full fire engineering approach based on the over-design methodology.</li> </ol>
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<b>DURATION</b>	1 <sup>st</sup> July 2008 – 31 <sup>st</sup> Dec 2011
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