

**5<sup>th</sup> International Conference on****STEEL AND CONCRETE STRUCTURES****August 29-30, 2018 Tokyo, Japan****Laser cutting technology introduced to the tubular joint fabrication****Alper Kanyilmaz**

Polytechnic University of Milan, Italy

The available connection methods of I beam-to-CHS-columns are complex and costly, since they adopt local stiffener and gusset plates to allow the load transfer between beam and column, resulting in excessive welding quantities. This prevents the widespread use of CHS profiles as columns in the construction sector, although they have excellent structural and architectural properties. Researchers worldwide investigate the possibilities to simplify the fabrication of such joints. This article proposes a new joint solution to achieve this objective, which consists passing through joints to be adopted between CHS columns and I beams making use of Laser Cutting Technology (LCT). Thanks to LCT, welding quantity and shop-fabrication time of such tubular connections reduces significantly, obtaining better precision with higher quality in the joint assembly and improving the workplace safety with less manual work and more computer-programmed automation. This paper focuses on the shop fabrication process of the joints assembled using LCT and presents experimental outcomes of the tolerance assessment, laser cutting and shop assembly by means of fillet, partial and full penetration welds.

alper.kanyilmaz@polimi.it