



## Upright Stud Welding System Reduces Workers' WMSD, Fume Exposure

### Reduction of Biomechanical and Welding Fume Exposures in Stud Welding

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#### Overview

Ironworkers who install floor-level studs are bent over at the waist for long periods during welding, at risk of musculoskeletal disorders and inhalation of welding fumes. Researchers proposed an alternative upright welding method, employing a mobile stand and articulated arm to support welding equipment, to reduce both exposures. Working with 30 participating ironworkers, researchers compared conventional welding methods and postures to the alternative system.

#### Key Findings

- The alternative upright system significantly reduced trunk inclination (bending at the waist) and activity level in several muscle groups.
- Workers welding using conventional methods were exposed to high levels of iron, zinc and manganese in welding fume, levels that exceeded recommended limits. Exposures were substantially reduced when using the upright system, although they remained above ACGIH Threshold Limit Values (TLVs) when welding through decking.
- The upright system reduced exposure to hazards during stud welding simulations, but improvements in durability and maneuverability are needed for use in the field.

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#### See abstract:

<http://bit.ly/1WpJaKc>

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