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Speaker 10

## Avoidance of hydrogen assisted cold cracking in multi-pass weld metal



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### ABSTRACT:

Hydrogen assisted cold cracking (HACC) is a common form of fabrication cracking in welding of ferritic steels. HACC occurs when hydrogen becomes trapped inside the weld zone during rapid cooling. Development of lean composition steels, along with the use of highly alloyed welding consumables leads not only heat affected zone (HAZ) cracking occurs but also weld metal (WM) cracking. So far, techniques for avoidance of HACC are focused on HAZ cracking and do not consider the difference in conditions between the mechanism resulting in HAZ or WM HACC. In this study a condition that results in both WM and HAZ HACC has been developed on U-groove S690QL samples, welded with a multi-pass, flux-cored technique. A microstructural investigation was carried out to characterise HACC morphology, and the WM diffusible hydrogen quantified. Following this, techniques were applied to the cracking condition to define suitable.



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