SMART OUTCOMES

Success Stories from the WTIA SMART TechNet Project

SUCCESS STORY NUMBER 10: IMPLEMENTATION OF RESEARCH IN INDUSTRY – *CSIRO Manufacturing and Infrastructure Technology (CMIT), based in Adelaide, SA, is committed to enhancing Australia's industrial base, and seeks to develop sustainable manufacturing industries through innovative systems, products and processes. Joining technology for light metals is one area of successful application of research in industry.*

The background

Working closely with industry, CSIRO researchers have developed numerous technologies that have significantly benefited the Australian manufacturing sector.

CMIT is a Technology Support Centre within the OzWeld Network, and a core partner of the Cooperative Research Centre for Welded Structures (CRC-WS), for which the WTIA carries out the technology transfer role. A close working relationship between organisations plays a critical role in the diffusion of technology to industry, via technology forums, technology demonstrations, publications such as the Australasian Welding Journal and the WTIA Internet site.

Technology for joining light metals

While aluminium, magnesium and titanium have been identified as the 'metals of the future', they are sometimes regarded as challenging materials to work with.

Researchers at the CMIT Adelaide Laboratory have a long history of involvement with the joining of these metals, and will play a leading role in the recently launched CSIRO Light Metals Flagship Program. Work has already commenced to develop the welding and forming technology to facilitate a world-competitive Australian titanium pipe industry.

Crucial to this will be new welding technologies to dramatically reduce the current costs associated with welding titanium sections.

CMIT recently won the coveted WTIA Company of the Year Award for its outstanding research and development of welding for Australian industry.

Keyhole welding technology

The keyhole gas-tungsten arc welding (GTAW) technology that was developed and commercialised jointly by CSIRO and the CRC-WS, has already proven itself for applications on titanium and may well offer the productivity advantages being sought for 3 to 19 mm wall thicknesses.

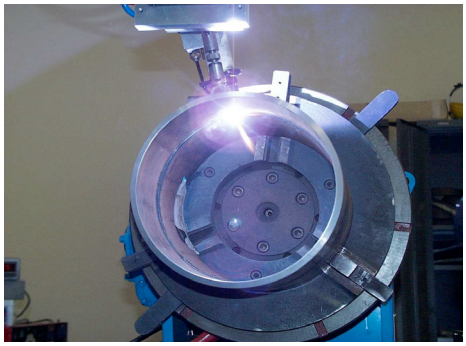
The benefits to industry

This relatively simple process makes automated, high quality, deep penetration welding accessible to any small-to-medium sized fabricator with an existing investment in conventional arc welding equipment

Benefits include simplified or no edge preparation, substantial reduction or elimination of filler material requirements, high productivity, and the opportunity to operate in a safe, clean low-fume environment.

A number of WTIA member companies have taken up keyhole GTAW. Weldtronics Pty Ltd, for example, is using it successfully for applications in titanium welding.

The technology is being marketed globally with potential applications in shipbuilding, heavy engineering, food and beverage, automotive and aerospace industries.



C-Mn pipe being welded using keyhole GTAW