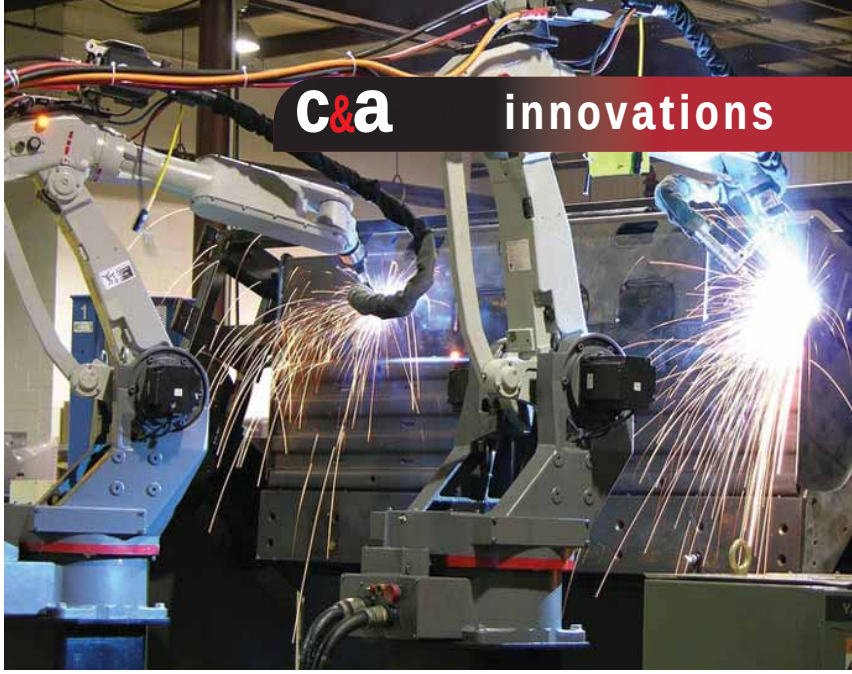
Welding technique avoids distortion



An Industrial/academic government funded joint venture has succeeded in developing a new practical welding method that could reduce manufacturing times, allowing significant weight savings and reduce costs.

The project – named MALCO for Creating Opportunities for the Manufacture of Lightweight Components – is an engineering and development collaboration between ThyssenKrupp Tallent, TWI and The University of Strathclyde with funding from the UK Technology Strategy Board. BOC, Bentley Motors and Komatsu were also involved.

MALCO addresses the distortion that occurs to a welded structure as part of the welding process. It pioneers a low stress, no distortion welding system that utilises CO2 cryogenic cooling technology on the same side as the arc.

Innovative mathematical modelling of the process helped predict optimal material performance reducing the need for expensive and time-consuming trials.

BOC's senior technical specialist Walter Veldsman said: "The significance of MALCO is that it enables cooling on the same side of the arc. Critically, the CO2 used in the process is contained close to the weld pool but does not interfere with it. By working together we have overcome the problem of delivering and extracting the coolant in a manner suitable for an industrial environment. Critically, the solution does not restrict access to the welding joint and the general application but it significantly reduces distortion."

Roger O'Brien of ThyssenKrupp Tallent added: "This is an excellent example of how the combined knowledge of industry, engineering and academia can come together to deliver practical solutions with measurable business benefit. The innovation is now the subject of a joint patent application."

The project offers significant commercial potential. Intended for robotic welding systems, it will reduce manufacturing time and costs by negating the need for additional measures and materials to counteract distortion and also reduces weight. The technology has so much short term potential that it has already won a Best Research and Development Project award and is short listed for a UK Engineering Technology and Innovation Award, the results of which are announced in December.

New High power monitors

Two products from a new modular range of intelligent monitors have been launched by TTControl, a joint-venture company of TTTech Computertechnik and Hydac International specialising in robust, flexible control systems and intelligent displays for mobile equipment. The new monitors - a 10.4 inch variant with a touchscreen, and a smaller seven inch version - set new standards with respect to maximum resolution, programmability with CoDeSys 3.x and user-friendliness, for example through the ability to display PDF documents.

Both are extremely robust and have a fast boot-up time, with the display ready to use within 10 seconds of powering up. The operator benefits from a very fast display with resolution to HD standards, allowing for the design of very clearly laid out displays whose ergonomics, thanks to hardware acceleration, can be further increased using 3D effects.

A built-in USB port allows easy extraction of operating data and installation of new application software. The new platform is also scalable, graphical elements developed for a VGA displays can be easily scaled up to XGA resolution and thus continue to be used. A picture-in-picture function enables the software controlled superimposition of a camera image. The window size is freely configurable, and an overlay effect is also possible. Another function enables not just the display of documents in PDF format, but also to move freely within them, zooming in and out. The easy-to-use programming platform CoDeSys 3.x with specific additions, such as transparency effects, is part of the standard package offering vehicle manufacturers plenty of freedom with respect to usability and ergonomics of their HMI design.

Marc Weissengruber, managing director of TTControl said: "Many of our customers want a single supplier for electronic control and operator interface. Since the recent expansion of our portfolio of control units, we have now turned our attention to strengthening our range of displays. By matching the control panels to the control units, vehicle manufacturers benefit from reduced development time and simplified maintenance. Our display controller provides so much computing power that, besides the pure display functions, it can take over control functions or the role of a CAN gateway."

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