Automated Welding Boosts Towbar Production at Witter

Automated jig control, using drives from Control Techniques, has made a significant contribution to increased production at Deeside-based Witter Towbars, cutting the welding time for each towbar assembly by up to 50%!

The new rotating jigs were designed and produced by Telford-based Automatic Technologies International (ATI) using Unidrive SP AC drives with UMD servomotors from Control Techniques Dynamics, with programming provided by on-board EZMotion modules.

Used in conjunction with MAG-welding robots, the jigs – known as welding 'manipulators' – provide up to 360° rotation, most often in 45° increments, between periods of welding.

"The client was looking at different ways of automating what had been a manual task," explains Alex Wilson, managing director of ATI. "The solution required integration with the welding robot and special machine builders were offering solutions that required PLCs to provide the control and interface – a costly solution. We were able to provide a much simpler solution, with no PLC required, simply by using position numbers from the robot output card direct to an EZMotion module within the Unidrive SP. And, as a bonus, we could guarantee complete safety whilst loading each job, using the secure disable feature on the drive, so that it wasn't necessary to power down the drive each time or use contactors to provide a category 4 safety stop."

Just three outputs are used from the robot, making up eight binary codes covering the jig rotation, as well as 'stop' and 'run'. The programming for acceleration / deceleration and positioning is all carried out in the easy-to-program EZ-Motion card fitted inside each of the 2.2kW Unidrive SP AC drives. To give the best dynamic response, matched to the drive, 115UMD Unimotors low cogging brushless AC servomotors are used, with Sin/Cos absolute encoder feedback to give precise position control.

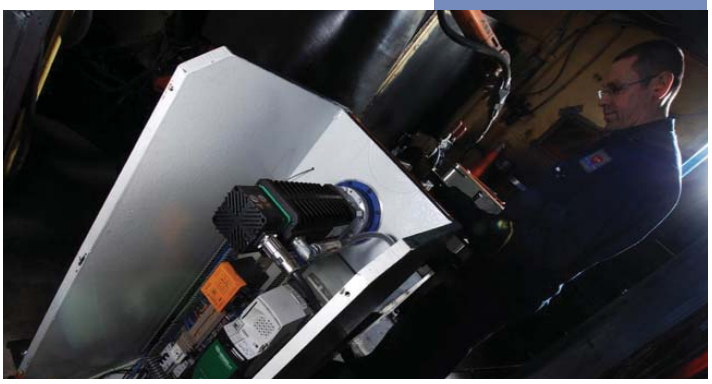
The elements of each assembly including brackets, legs and side plates, are fitted into one of 80 different jigs and are clamped into place. Jigs are up to 1.5 metres in width and up to 800mm in depth. The job is set up on the robot controller and a press of the start button initiates the full sequence of welding, rotation to the required position and welding again. There are around 850 variants in all and the launch of each new vehicle brings several new towbar designs.

Seven robots are engaged in the welding of the towbar assemblies, four of which are now fitted with two manipulators, considerably cutting the time required for welding each assembly.

"Previously, each job was completed in four separate stages," explains Witter's senior manufacturing engineer, Gary Nuttall, "Each stage requiring its own jig. Then of course, partly welded assemblies had to be moved from one stage to another by hand, a manual handling issue we were keen to eliminate. Now, as well as much less handling, we get improved weld quality, It's consistent, there's much less chance of human error, and of course, there's up to 50% time saving on the whole of the welding procedure."

KEY BENEFITS

- WELDING TIME REDUCED BY 50%
- WELDING QUALITY IMPROVED
- SECURE DISABLE SIMPLIFIES SAFETY
- EASY INTEGRATION WITH EXISTING AUTOMATION EQUIPMENT



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