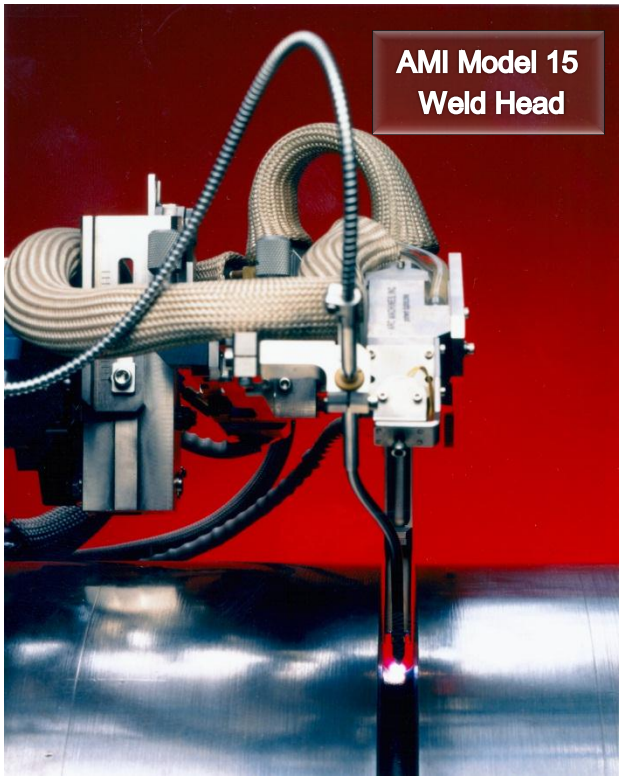
ARC MACHINES IN SUCCESSFUL FIRST VENTURE WITH CHEMICAL GIANT

Arc Machines, Inc (AMI) has supplied automated orbital welding systems for a unique project at GrowHow UK Ltd's fertiliser plant at Ince, near Chester.



The Ince site produces 1 million tonnes of fertiliser per annum, providing essential nutrients for grass and arable farming, and needed to install a new converter vessel in its ammonia synthesis gas loop. When faced with welding the 18" diameter, nearly 2.5" thick stainless steel pipes, contractors Fabricom called upon AMI's expertise to provide an automated welding system that could guarantee weld quality and speed unachievable by a manual process.

AMI provided full training to the Fabricom engineers and supplied three M415 power source and M15 torch systems to enable the welders to work 24 hours a day and complete the project with minimum plant downtime.

This was the first time GrowHow had used automated orbital welding and selected the AMI system for the guarantee it provides of repeatable high quality across all welds. In a situation where the reliability of every weld is vital, the ability of AMI's equipment to cope with the thickness of the pipe wall and maintain weld integrity under extremely high gas pressure and temperature gave the company significant advantages.

To ensure a high integrity weld, AMI conducted several tests on the high grade, elevated temperature environment 321 stainless-steel pipe material prior to project commencement and provided comprehensive training and support. Seventeen girth welds were completed in a fabrication shop with the final 4 tie-in welds completed on site under arduous winter weather conditions.

For AMI's regional director, Michael Allman, this is another demonstration of the relevance of automated orbital welding to a variety of industries ranging from oil and gas, petrochemicals and nuclear power generation to food and beverage, pharmaceuticals, and semi-conductors.

He said: "GrowHow is the UK's largest manufacturer of ammonia and nitric acid and prides itself on technical excellence so our system had to match up to very high specifications. Not only did the automated orbital welding complete the job faster and more accurately than a manual system but it also provided a clean, high quality surface finish which is invaluable to accurate non-destructive testing.

“The speed of project completion achieved by the automated system was also an enormous advantage. In all industries, minimising downtime and its associated costs are essential and the AMI systems lead the field in this respect.”

AMI’s M415 power system gave GrowHow the reliability of an automation controller designed to meet the challenges of the most demanding welding applications. Incorporating an industrial computer, programmed via a large 12” touch screen or keyboard, the Model 415 has an intuitive graphical user interface to make programming easy using standard welding industry terminology and the capability of storing weld schedules in a microprocessor based control system. It also includes the option of real-time data acquisition, in order to maintain weld integrity with precise tolerances over hundreds of repetitive welds or when an identical weld is required at a later date.

Completing the system was the Model 15 large diameter pipe weld head with a specially adapted chisel torch nozzle designed to accommodate the relatively narrow compound bevel optimised during the welding development phase.

Primarily designed for field use in the nuclear, shipbuilding, petrochemical, and construction industries where exceptional weld quality is essential, the Model 15 is a rugged, precision weld head with low radial clearance. For welding of all pipe sizes from 3" upwards, it features rotation, wire feed, automatic voltage control, cross-seam steering and torch oscillation and can be retro-fitted or customised with numerous application-specific accessories.