

TAWERS from Panasonic

Peter Haw of PanWeld – trading as Panasonic Robotic and Welding Equipment – tells *African Fusion* about TAWERS, The Arc Welding Robotic System.

Panasonic Robotic and Welding Equipment has worked in partnership with Panasonic Industrial, Japan for the past 12 years, ever since the business and agency rights for the Panasonic range of robots and power sources were purchased from Reunert limited. The offering includes welding solutions for most customer needs but it is most active in the motor industry and with Tier-1 manufacturers of automotive components. Panasonic technical staff were instrumental in the design and commissioning of robotic welding applications that currently exceed the high quality requirements of the Japanese motor industry. Other industries serviced include furniture, mining and mining support systems, general and structural fabrication. The company is represented in all the main areas of South Africa with branches in Gauteng, Durban and Port Elizabeth staffed by experienced welding and robotic specialists.

Using its experience as a leading global manufacturer and after years of research, Panasonic has developed a high performance, dedicated Arc Welding Robot (TAWERS), designed to be completely dedicated to the arc welding process. TAWERS combines control of the robot manipulator, the welding power source and the servo wire feeder into one single unit.

This next generation in robotic welding solutions is offered in a broad range of models to maximise productivity through advancements unique to the TAWERS-platform. Features and benefits include:

- Panasonic's embedded arc control (EAC) technology: Used in robotic welding, EAC eliminates the need for three separate control systems as it combines control of the robot, welder and servo wire feeder into a single unit. It controls not only the robot motion, path and sequence commands, but simultaneously synchronises the welding power supply waveform control and servo wire feeder response accordingly,
- to adjust and correct for dynamic changes in the welding process.
- A common 64-bit control platform and interface: Operating 140-250 times faster than conventional systems, this provides high-performance pulse and CV (SP-MAG) welding options. The new short-circuit welding process deposits weld metal with low heat input and ultra-low spatter via SP-MAG, thus significantly reducing post-weld cleanup costs and part distortion.
- A high resolution arc data monitoring system increases the ability to quality manage the welding process.
- TAWERS robots are optimised for productivity: The manipulators are equipped with large motors and drives to deliver exceptionally high maximum speeds and acceleration to drive down cycle times.
- The TAWERS robot control platform incorporates intelligent collision detection software that monitors the forces applied to the robot arm and drops into a soft serve mode when an abnormal force is detected. This function greatly reduces pinning of the torch against the welding fixture or positioning device during tight welding operations.
- Automated wire extension control maintains a constant wire stick-out during welding, which eliminates a variable from the welding process resulting in consistent penetration, reduced risk of burn through and better weld quality – regardless of taught path variations.
- Robot lift arc starting: As the robot senses current detection it retracts to create the welding arc using voltage instead of current – dramatically limiting ignition spatter common to CV and Pulse welding processes. The extremely fast reaction also significantly increases first strike arc start efficiency.
- Robot lift-arc ending: The TAWERS robot virtually eliminates wire stick detection time and wire burn back



Peter Haw, Panasonic Welding and Fritz Badenhorst, production manager at Technique Manufacturing in Durban, a Tier 1 motor component and catalytic converter manufacturer.

time by automatically lifting the wire out of the puddle during the weld crater process and proceeding to the next weld in one motion. The lift motion, not only significantly reduces the total arc ending time and programming time but as a secondary benefit sharpens the welding wire, thus maximising the starting success of the next weld.

These advances, combined with innovative robot welder communication, industry leading welding technologies and effective software and hardware improvements, create powerful new solutions for arc welding challenges.

When considering productivity, most manufacturers need the following:

- To make parts quicker – either to increase capacity or reduce shift-levels.
- To reduce direct labour input and work-in-progress levels.
- Lower scrap rates and fewer re-worked parts.
- Less time spent cleaning welded parts.

PanWeld believes that the Panasonic TAWERS robot welding system delivers 'best-in-class' performance for most welding applications. This opinion is based on local and international experience in automated robotic manufacturing, predominantly for the automotive Tier-1 sector, but also in a wide spectrum of manufacturing industries.