

D&L and Yaskawa collaborate to deliver world-class solutions

Gavin Walter, director of D&L Engineering Solutions, and Rudi von Fintel, branch manager for Yaskawa Southern Africa's Durban branch, talk about their collaboration and the delivery of state-of-the-art robotic welding solutions for South Africa's automotive industry.



D&L Engineering Solutions is a Durban based family business run by Gavin Walter and his brother-in-law, Dirk van der Merwe. Founded in 1993 as a small engineering facility doing breakdown support in the FMCG market in the Durban area, the company has grown into a turnkey engineering and robotic solutions provider.

"On the FMCG side, we have the likes of Unilever, Tiger Brands and Pioneer as key longstanding clients and we have grown into also supporting local Tier 1 automotive suppliers with tooling and robotic automation solutions," says D&L Engineering's Gavin Walter. "From our engineering facility we design machines and reverse engineer components; we then do CNC and conventional machining, and a large portion our work is fabrication and welding of steel, stainless steel and aluminium components.

"In addition, for Tier 1 local distributors of automotive tools and machinery such as L&J Tools, we design and manufacture bespoke tooling and robotic welding cells for local automotive OEMs," he tells *AF*.

On the collaboration with Yaskawa, he says that goes back to 1991 when Gavin Walter was working for Toyota South Africa. "Terry Rosenberg and I go back a very long way. I did my apprenticeship at Toyota in electronic engineering and started dealing with Terry on the installation of Motoman robots.

"I met Rudi in 2002 when I joined a company called Design Group, a company that builds full body shop production lines for the automotive industry. When we started working there, there were about 30 people. Today, they have over 600 employees doing work all over the world," he says.

"I saw the need for a smaller line builder in the Durban area, so I joined D&L. Rudi joined Motoman as the Durban branch manager, so about four years ago we started collaborating. Our first enquiry came on a Friday from L&J Tools, an urgent request for a MIG/MAG welding robot because the installed one could not keep up with their customer's demands. So, I contacted Rudi and asked him if he had a MIG welding robot to spare, and he pulled a new one out of his training cell. By the following Friday, L&J were running successfully with that robot on their production line. That is where our relationship kicked off and we have since done numerous projects together," he adds.

Giving Yaskawa's perspective, Rudi von Fintel says that arc welding robots have been the bread and butter for Yaskawa in South African for many years. "We've installed hundreds into the local automotive industry. The Toyota chassis plant, alone, has roughly 300 arc welding robots installed," he says, adding that Yaskawa can fully integrate its welding robots with power sources from any OEM, including

Fronius and OTC, to give customers the solution that best meets their needs.

Five or six years ago, Yaskawa started to specialise in spot welding equipment as well. "Spot welding guns have changed from being pneumatically driven to using a servo drive system, which makes them easier to integrate with our robot controllers. This enables far more accurate control and synchronisation of the key parameters: the contact pressure, current, arc time and hold time," he explains.

"Yaskawa's servo-driven spot welding actuators are mounted onto the end of the robot arm, and they fully integrate into the robot as a seventh control axis. This allows all aspects of a spot welding sequence to be optimised and synchronise from the Yaskawa robot controller," von Fintel explains.

Yaskawa's new robotic spot welding solution is far easier to implement as it offers a one-stop solution. Cycle time can be reduced drastically, because the opening angles of the gun can be synchronously manipulated while the robot is moving between spots.

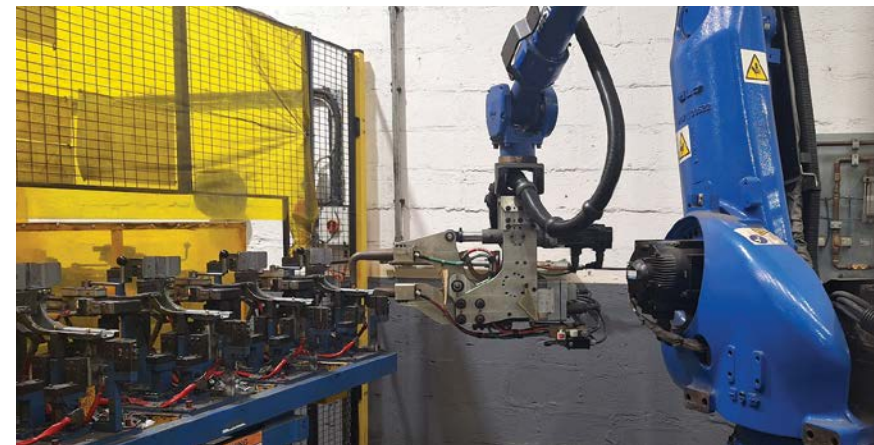
A manufacturing line for safety critical automotive components

The latest collaboration project between D&L Engineering Solutions and Yaskawa Southern Africa is a component production line for the assembly of a safety critical component for an OEM brand associated with very high quality and toughness.

"We are currently building a line for L&G Tools for a multi-stage welded assembly process, which starts with some manual spot welding of brackets onto C-channel sections. From there, the component travels through a robot arc welding cell; and then a robotic spot welding cell; before a final component is added manually at the end of the line.

"So, it's a whole production line facility for a safety critical component," Gavin Walter explains, before unpacking the line in more detail.

For all the robotic spot welding, Yaskawa



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servo technology is being used, although a mixture of manual and robotic spot welding is used to make good use of labour and to reduce the total automation costs. "We are good at customising our solutions to meet South African circumstances. And it often makes sense to have an operator doing a couple of simple spots, particularly for non-safety-critical welds," he adds.

Once the brackets have been added at the start, the C-channels get loaded onto the turntable of the robotic arc welding cell. "The operators do this while the component is being welded on the other side of

the cell. As soon as welding is completed, the cell rotates the new component in for welding, while the now welded component is removed and a new one loaded. "This station has to do 52 arc welds, each 50 mm long," he informs *AF*.

From there, the component is loaded into one of Yaskawa's robotic spot welding cells, which also uses a turntable for simultaneous welding and loading: the operator loads the channel and the additional components so that, as soon as a part is completed, a new one can be rotated into place and welded without delay. "There are

30-odd spot welds that need to be done by each robot at this station, and there are two robots in this spot welding cell," he adds.

"Finally, one more part is welded on manually, although we are now looking at automating this last part as well, depending on the productivity improvements we can achieve compared to the additional cost implications," says Gavin Walter.

"Successful manufacturing of safety-critical automotive parts depends on the quality and consistency of the welding. Robotic welding delivers repeatability. It does the same thing every time, so it tends to be worth the cost of investing in robots for any safety-critical component line," notes Rudi von Fintel.

We have been working really closely together for the last four years and we have become quite dependent on each other "Our clients have realised this as well. If they want to use Yaskawa robot solutions, then D&L are going to be able to do the tooling, jiggling and the process studies: and vice versa: for a robotic production line, we are going to use Yaskawa's equipment.

"We have created a reputation for ourselves as team that can deliver very effective solutions," he concludes.

www.yaskawa.za.com



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