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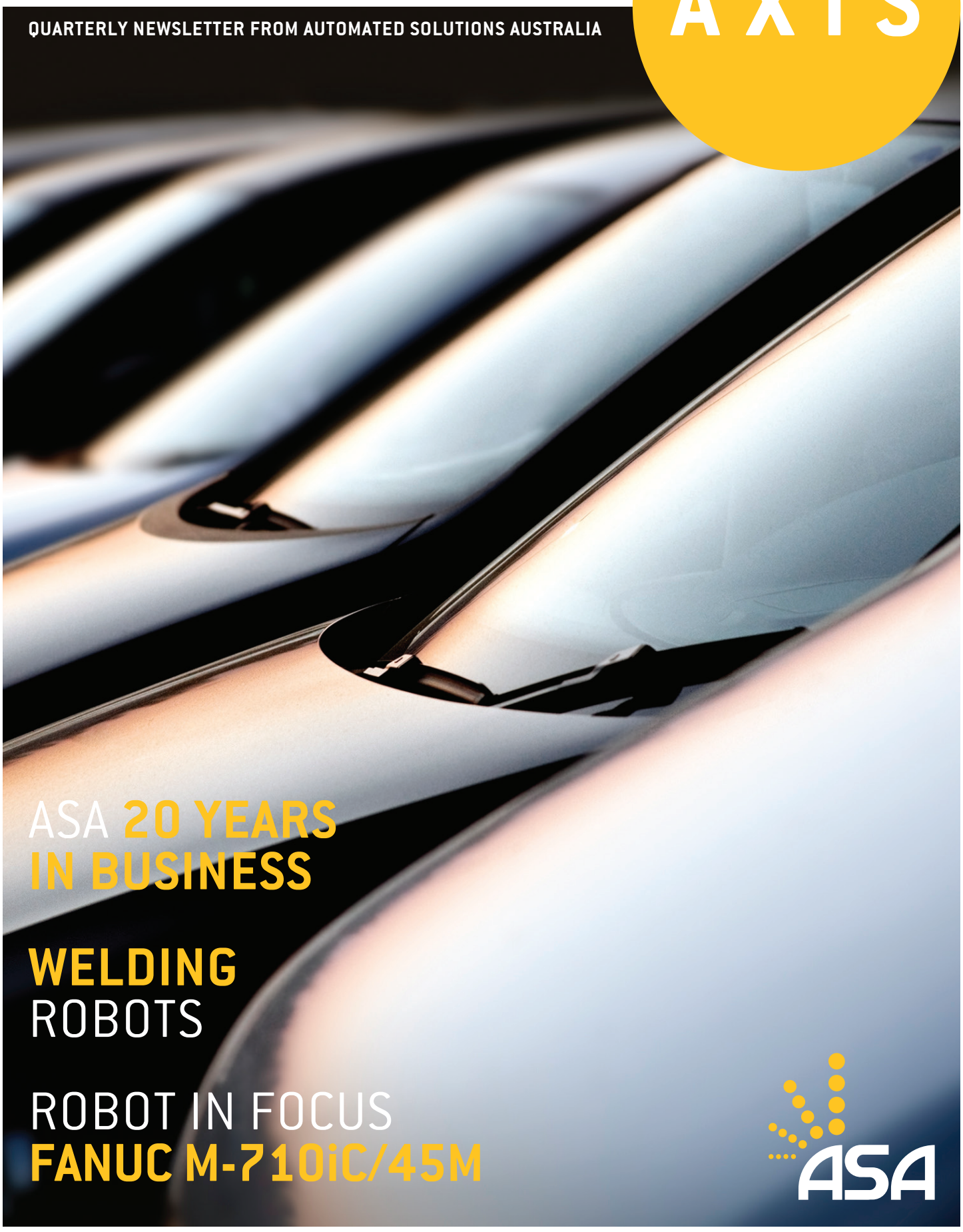
AXIS

QUARTERLY NEWSLETTER FROM AUTOMATED SOLUTIONS AUSTRALIA



ASA 20 YEARS IN BUSINESS

WELDING ROBOTS

ROBOT IN FOCUS FANUC M-710iC/45M

ASA

FROM THE **DIRECTOR'S DESK**

Welcome to our Spring 2022 Edition of AXIS Newsletter.

Now that daylight savings time is in effect, the days are officially longer, and I hope you're making the most of it like I am. Christmas seems to be rapidly approaching, and as usual, there is a great deal to accomplish between now and then. In November, members of our team will visit the International Machine Tool exhibition in Japan as part of the AMTIL delegation, and in December, we'll have a delegation travelling to the United States, which will include a visit to the Defense Manufacturing Conference in Tampa, Florida with our US partners, Aerobotix.

I have said many times, our people are our greatest strength and what proudly differentiates us. This quarter, we take stock, and reflect on just that, as we explore the 20 years that has been ASA.

I challenge our editorial staff in each issue of Axis to present you with engaging and instructive content. This month, we highlight one of ASA's unique clients, RC Williams, for whom ASA was able to deploy a demonstration model R2000 while they awaited the arrival of their new M710, yielding a rapid return on investment and an even quicker launch curve. In addition, we discuss welding and how automation may assist even small jobbing shops with welding applications, as Australian transforms from the lucky country, into the smart country.

We move the technology spotlight onto the FANUC M710iC/45M, a robot designed with as few mechanical components as possible, with the intention of increasing mean times between failures and reducing spare parts needs to the absolute minimum. We picked the /45M because it is a superb multifunctional robot with a large work envelope thanks to its long arm reach and a great mid-range payload of 45 kg, making it very adaptable to a variety of robotic applications.

We also interview Michael Sparrow, as we recognize our most important point of differentiation - our people. Michael joined ASA in 2015, shortly prior to the Holden plant's closure, after spending twelve years with the automaker. Michael discusses the challenges he confronted working on a project in Korea, as well as his favourite aspects of his profession, and why he enjoys being an active member of the ASA team.

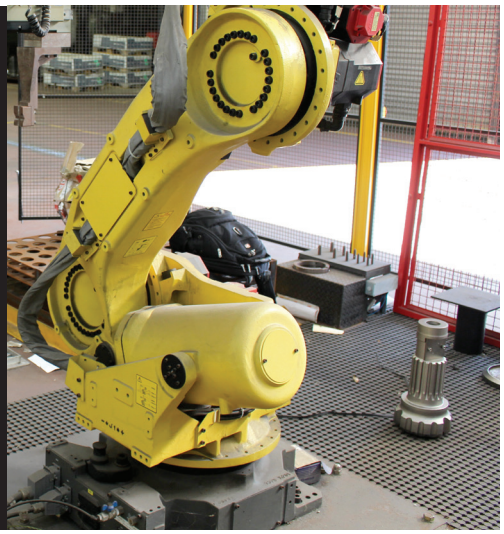
We hope you like this issue of Axis, which will be distributed on social networking sites. Follow us on Facebook and LinkedIn for additional interesting articles and the latest industry news, if you haven't already. We always appreciate your input as we aim to become your preferred integrator. On behalf of the ASA team, we appreciate your continued support and look forwards to keeping you abreast of the newest breakthroughs in automation, while meeting your requirements today and in the future.

Pat Green, Director

HAVE YOU BOOKED YOUR **CHRISTMAS SERVICE?**

Call ASA on 1800 ROBOTS (1800 762 687) to book.

Just like a car needs regular servicing, the same applies to your robots. Your robots work hard for your business, sometimes operating 24 hours a day for long periods, so annual servicing of your robots will ensure your FANUC robots remain in optimal condition. Greasing, battery replacements, checking for excessive wear and measuring back lash ensure motion repeatability, as well as continuing to provide you with a great consistent outcome for your manufacturing processes. Annual servicing helps maintain a high level of Mean Time Between Failures (MTBF), as well as potentially forecasting issues that may be developing.



ASA – 20 YEARS IN BUSINESS

Back in the Summer of 1999, Pat Green and Troy Holmes first crossed paths while working together as Automation Engineers. Pat was 31 at the time, having worked 5 years in robot and PLC programming as an Electrical Controls Systems Designer.

Troy on the other hand was 23, still in University, and working on trying to create a market for paint robots in Australia after his stint with Ford Motor company. Pat had a career progression opportunity, and went onto to become a Robotics Division Manager, while Troy completed his university studies, and went to work in the US for what was FANUC Robotics America at the time. While Pat was busy managing a robotics division for the next 2 years, Troy continued to travel back and forth between the US and Australia, with the paint robot business in Australia growing exponentially across a multitude of different OEM's and Tier 1's. The two continued to keep in contact primarily via SMS and email, sharing a common interest in light-hearted humour.

Automated Solutions Australia (ASA) was conceived as an idea back in 2002, and by July of that same year, it had been registered as a company. The idea was to be a specialist company in paint robotics, as many other rival automation companies considered paint to be a bit of a black box of sorts. Paint is far more focused on the overall system, and maintaining ideal spraying conditions, whereas your typical robot programmer is focused more on AND and NOT statements in programs, and picking or placing, or welding, fixed points. Paint has far more variables, and the robots have to be purpose built to operate in Class 1, Division 1 environments, so it is very much a specialist niche area of robotics.

The two of them discussed setting up, one in Adelaide, and one in Melbourne, to service the customer bases in those cities accordingly. They put trust in one another's abilities, as neither had ever run a business in their own right at the time. Initially, it would be the two of them, attending breakdowns, and providing support to customers, in what they framed as "Automated Facilities Support Agreements", or AFSA's. Pat found a desk space in an office space upstairs in a Karate studio in inner Melbourne, while Troy worked out of a cafeteria initially at one of the OEM facilities. They reached out to one of the local installation contractors who they had been using heavily, SONNEX Engineering, and spoke with Jano about his experiences in setting up and running a business. Jano referred them to Matthew Worrell at PFA and Associates, who later went on to open Worrell and Co Accounting. Matt and his team still continue to work with ASA to support accounting functions within the business to this day.

With the company set, and structured, it was time to impose a branding strategy. The FANUC brand, who ASA were aligned with in terms of servicing and support, had a strong yellow brand image in their logo. However, the paint robot, unlike most of the other FANUC robot range, was silver, not yellow. Troy knew of a friend who was working in the UK as a graphic designer and brand keeper, so he engaged him in the process of designing the brand image. The intent was to create an industrial feel, without it being cold, and incorporating the yellow associated with FANUC, as well as the silver of the paint robots, into the brand. The initial design was a business card that appeared as a stainless steel piece of diamond plate. This was veto'd, in lieu of a smooth, slightly textured card, that featured embossed dots above the A, giving a slightly more modern feel.

Continued next page

Along with this brand image came the very first development of a website, specific to paint automation.

Prue Lieberg arranged the company's international travel in 2003 at the Flight Centre travel agency at Elizabeth Shopping Centre, because of its proximity to the Adelaide headquarters. As with many account managers, she moved on, and on October 23, that year, the team got an email from Alex Prez, who was succeeding Prue at Flight Centre. This started a partnership that has lasted for the past 19 years, with Alex serving as the company's outsourced travel agent. Alex's tale is one of a kind, and he lives by the credo "promise low, deliver high." Alex has collaborated with ASA to provide exceptional travel outcomes for our team, developing an efficient travel management programme for ASA that enables the team to focus on core business operations. Finding a person or company with a development mentality, and collaborating with them to improve and achieve success, is a recurring theme at ASA. Alex is the embodiment of this philosophy.

A year later, it was by a repair on the PC that again promised low, and delivered high, that led to an chance encounter with Michael Boonzaayer. His philosophy was to deliver over and above, and this mentality was exactly what underpins ASA's core values, as its employees are its strength, and its greatest point of differentiation. Mike was convinced to come aboard and is now in his 18th year at ASA as the Paint Process Supervisor, completing offline work, and directing our Paint team across the globe.

By 2005, 3 years into its infancy, ASA had grown from 2 to 5 Full Time Equivalent (FTE) employees. In 2005, the company was recognised as a finalist in the Telstra Small Business Awards, as well as the Entrepreneur of the Year program in the Central Region, and the Engineers of Australia Architecture Awards for the 2,500 m2 commercial premises that had been constructed at the GM Supplier Park facility at Edinburgh Parks. The facility was designed for large scale modular builds and customer training. The company was growing.

In parallel to this, the AFSA that Pat was completing in Melbourne was spanning into far more than just paint. Pat was taking free-issued FANUC yellow robots, and installing them onto plastic moulding machines, and machine tools.

In 2006, the team took stock, and organised a retreat where the business plan was reviewed, and the overall strategy revisited.

By 2007, a repeat paint robot customer approached ASA about a robot system for preparation of their plastic moulded parts. This would be a yellow robot system, featuring an M710iC/20L robot. It would be the first fully integrated non-paint system that ASA would provide, and a diversion from the original business model of being specialists, focused on painting and dispensing applications.

In the same year, ASA began working with Okuma through the Melbourne office. ASA would design a bespoke machine tool tending solution for a customer, Okuma would procure the robot that was identified for the system, and ASA would integrate it into the cell, and provide training and support. This was the beginnings of what is now deemed our Australian division, where ASA integrates yellow robot (non-intrinsically safe, general purpose robots) for Australian and New Zealand customers. The model was very successful, and ASA continues to deliver some excellent outcomes for Okuma and other machine tool companies.

In 2008 came the dreaded Global Financial Crisis, or GFC. Significant consequences were noticed in the automobile industry, as capital expenditures were reduced. During the GFC, ASA was extremely fortunate that a large system was already ordered and being built in Australia for one of the OEMs, which was one of only a handful of projects occurring in this market segment around the world at the time. ASA made the deliberate decision to retain its whole staff, despite the lack of projects to bill them against. There was a time when the team stayed in the office for six weeks without any billable tasks, developing training materials in the expectation that this too would pass. And it did. After six weeks, things began to gradually improve.

In the aftermath of the Global Financial Crisis, ASA saw the need to diversify its revenue streams and reduce its dependency on the automotive industry in Australia. This meant two things – the first being a clear and purposeful investment in the expansion of the non-paint sector in Australia. ASA also anticipated that investment in low-volume capital intensive automobile facilities in Australia would likely dry up, even with the great product that was being produced in Australia. This would necessitate a pivot, and that personnel spend more time abroad and concentrate on establishing business offshore in markets such as Asia and the Americas.

As ASA moved into the next decade, ASA continued to grow in the two business streams

" Finding a person or company with a development mentality, and collaborating with them to improve and achieve success, is a recurring theme at ASA. "

- supporting overseas paint projects, while growing its non-paint business in Australia. The first half of the decade saw a large number of projects being executed in the Asia-Pacific region, with a large focus on support in China and Korea, while in Australia, ASA began to unlock opportunities with large scale mining tooling companies for turnkey automation systems.

By 2015, ASA had grown to 15 staff, and with it came the expansion into the USA, as Automated Solutions America LLC. ASA LLC facilitated a means for ASA to be recognised as an Authorised System Integrator (ASI) to FANUC America, while allowing ASA to employ personnel state-side for project execution activities on the ground in the USA.

In 2022, ASA opened ASA Defence, and today, the collective ASA group employs over 20 Automation Engineers, programmers, designers and support staff. ASA has offices in Adelaide, Melbourne and Detroit, and has executed multiple projects in Australia, New Zealand, Korea, India, Thailand, China, Malaysia, Mexico, South Africa, Brazil, Argentina, the USA and Canada.

As we celebrate our 20th year in business, we are reminded of all the people we have met and all the customers and partners we have formed deep connection with. Thank you for being part of ASA's journey over the past 20 years. We value your loyalty and friendship and are extremely excited to continue to work with you, delivering tomorrows solutions today.

ARC MATE

ROBOTS HAVE MADE IT POSSIBLE TO WELD WITH MORE ACCURACY AND REPEATABILITY

Welding requires a steady hand, focus and attention to detail. Welders or Boilermakers are in high demand as Australian companies in every industry scale up, export more or re-shore their manufacturing. Production welding can be a difficult job - demanding hours of repetitive motion, sometimes awkward ergonomic positioning and high levels of concentration.

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Having a Fanuc ARCMate welding robot is like having your best welder on the job, all day, every day. By automating your welding process, you can expect high quality welds, completed at a consistent production rate all while reducing the OH&S risk to your business. By employing a welding robot on the shop floor, your highly skilled welders are now available for those more precise or intricate jobs, requiring the human eye, dexterity and years of welding experience.

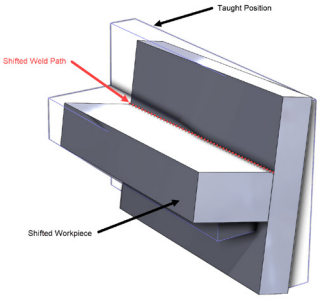
Robotic welding technology has significantly improved in recent time thanks to smart and high-speed communication with the welding power source and wire feeder. Gone are the days of misplaced welds, limited part access and difficult programming.

Robots are extremely good at doing what they are told – but what happens when a joint doesn't fit quiet as well as it once did? Or the fixture isn't holding the parts as perfectly as it could? This used to be the Achilles heel of welding robots! To overcome this issue, Fanuc ARCmate MIG welding robots feature two distinct technologies 1. Touch Sensing and 2. Through Arc Seam Tracking.

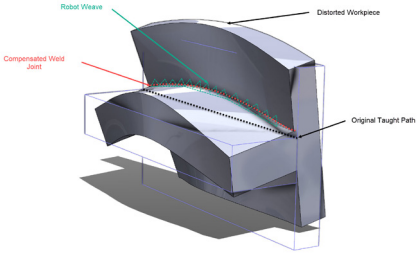
The robot is able to detect and offset its taught positions by utilising a Touch Sense function. When performing the Touch Sensing function, the robot and weld power source work together, the welder applies a low voltage to the weld wire and waits for contact to be made with the part or fixture as the robot moves towards the direction of the part. Once contact is made, the position data is saved to the robot and the deviation to the taught position is calculated automatically by the robots software. This deviation is then used to shift or offset the robots weld path to ensure an accurately placed weld.

The touch sensing function is able to detect and account for displacements and rotations in all six axis. Meaning it can find a part that has shifted in any direction and rotated in any direction. This powerful feature is able to find the position of Fillet welds, V-Groove Butt welds as well as inside and outside diameters of circular items such as sockets or bosses.

A Similar function can also be achieved with an external laser sensor if the application demands it.



Through Arc Seam Tracking (or TAST for short) enables the robot to modify its taught weld path on-the-fly, accurately following a weld path that may deviate in position due to imperfect joint fitment or distortion in the part. TAST is a feature that must be supported by the weld power source and coupled with the Fanuc TAST software feature.



During welding, the robot is commanded to weave in a Sine wave motion, during this weaving the welder is constantly monitoring the change in welding current and reporting the deviation from nominal back to the robot. Using this information, the robot then dynamically modifies its taught path to keep the deviation in welding current to a minimum. This feature is able to accommodate major deviations of the part, sometimes as much as 20mm or more.

Automated Solutions Australia (ASA) are able to integrate a range of FANUC welding robots.

Continued next page

FANUC robots provide the industry with the largest selection of industrial robots and collaborative or cobots for arc, spot and laser welding. FANUC have welding robots for every task size, reach, and payload to meet your individual requirements.

Fanuc ARCMate welding robots are specifically designed for a variety of industrial welding applications, including MIG and TIG welding as well as laser and spot welding. They can even be deployed for laser and plasma cutting. Different versions are available to fulfil a range of needs, and they all have a number of accessories to enhance their flexibility, including automatic torch neck changers as well as a multitude of external part positioning systems including 7th axis linear rails, rotary stages and 2-axis positioners. The FANUC ARC Mate series of welding robots ranges in payload capacity from 7 kg to 25 kg and in reach from 911 mm to 3123 mm.

"Having a Fanuc ARCMate welding robot is like having your best welder on the job, all day, every day."

The collaborative Arc welding robots or cobots, include the brand-new FANUC CRX and come with FANUC's tried-and-true, user-friendly ARC Tool Software, which is intended to increase your profitability by decreasing programming time. The simple-to-program interface enables basic applications, but also gives you access to FANUC's sophisticated capabilities, including Weaving, Seam Tracking/TAST and Multi-pass. The Fanuc CRX robot is capable of hand guided teaching, which significantly reduces programming time as well as making smaller volume production robot welding more economic.

Automated Solutions Australia are capable of supplying and integrating all popular welding brands to meet your shops standards. Major brands supported are Lincoln Electric, Kemppi, Fronius and Abicor Binzel.

Whether you are a large or small manufacturer, if you are looking at welding robots for your manufacturing process, we invite you to contact the experts at Automated Solutions Australia to discuss your application and explore the FANUC range today on 1800 ROBOTS.

ROBOT IN FOCUS - FANUC M-710iC/45M

The M-710iC series is a unique line of lightweight robots intended for a variety of applications. The FANUC M-710iC/45M features a slender wrist, robust arm and high axis speeds, making it ideal for a variety of industries. Its 2606 mm of reach, and 45 kg payload, make it ideal for transporting small pallets, combining speed and a wide work envelope.

FANUC M-710iC/45M Applications

- Assembly
- Arc Welding
- Palletising
- Load/Transfer
- Dispensing
- Spot Welding
- Material Removal

FANUC M-710iC/45M Features

The extended reach of the FANUC **M-710iC/45M** arm makes it suitable for transporting pallets over a larger work area. It is ideally suited to high speed transfer operations. The slender body and small wrist allow optimum adaptability in a variety of settings when space is limited. J1 provides multidirectional action through a complete 360-degree rotation.

FANUC M-710iC/45M mounting options include choices for the floor, inverted, and at an angle provide maximum versatility.

The **FANUC M-710iC/45M** comes with full IP67 protection against water and dust for the whole wrist and body of a robot in harsh environments.

How can Automated Solutions Australia (ASA) help?

Automated Solutions Australia has decades of experience integrating FANUC robots to suit our customer's needs. ASA can manage your project from start to finish, including system specification, design, programming, installation, commissioning, and servicing. Contact our expert team at ASA today to discuss how our FANUC M710iC/45M can help transform your production processes.Whether you are a large or small manufacturer, we invite you to contact Automated Solutions Australia to explore the FANUC range today. Our industrial engineering team at ASA are FANUC robot specialists, from concept to system designs, installations, programming and support. At Automated Solutions Australia (ASA) we thrive on helping business of all sizes

achieve their automation goals, enabling manufacturers to compete on the world stage while building sovereign capability. Call us now on 1800 ROBOTS (1800 762 687).

If you're looking for a multifunctional robot, get in touch with us today to see if the FANUC M-710iC/45M is the right robot for your application.

MEET THE **ASA TEAM** - MICHAEL SPARROW

Michael "Spoggy" Sparrow joined the ASA team in April of 2015, having previously worked with a number of different robots during this 12 years at GM Holden in Elizabeth, where he worked as a Die Machinist and Tool Technician. Michael came very highly recommended to the ASA team, and quickly adapted his robot experience to FANUC paint robots. Since 2015, he has been a much loved member of the ASA team, where he has functioned in the role of a Paint Process Engineer. We look the time to talk to Michael, and ask him some questions about his time with ASA.

What has been your favourite robot to work with?

The P700 Paint Robot. It's flexibility enables it to be used for interior or exterior applications and by having the rail for the robot to move along means that the robot is playing in the same orientation regardless of where it is in the booth, which as a paint programmer, makes things much simpler.

What's been your most interesting project?

Working at a plant in South Korea would definitely rank up there as the most challenging and interesting. We were programming changes across two production lines using a combination of rotary atomisers (bells) and TRP gun applicators, so the vehicle may have been common, but the paths were very different. Added to that complexity was the number of styles, which was significantly more than you'd experience as a model mix in any automotive assembly plant. This, coupled with the fact that one line was was continuously moving (line tracking), while the other was an indexing stop station, meant that we were using just about every programming skill at our dispose to make this combination of paths. Both lines required a very specific and thorough approach to ensure the correct film build thickness and quality standards were achieved across multiple colours, so the project was a great success, but it certainly required the broadest application of skill sets I've encountered.

What's been your biggest challenge you've had to overcome on a project?

Working on a project after other functional groups have already demobilised and addressing customer concerns may be challenging, but also extremely gratifying. I appreciate knowing how to listen to client problems, being honest and forthright with them, and reassuring them that we would help them handle the issues. You may not have the immediate expertise to handle these issues, but it is simply a matter of knowing who to contact so they can do so and pass the information back to you for implementation on-site. When this occurs in a location where English is not the native tongue, the language and cultural barrier makes these tasks exponentially more difficult, but also more rewarding and gratifying when we get the end result we are all looking for.

What do you enjoy most about working at ASA? (Best part of your job?)

The chance to collaborate with and assist various company divisions. At any moment, I may be involved in process and robot programming, electrical and safety systems design, installation, and commissioning. You can have clean hands and be working on your laptop in the office one minute, then be in the workshop disassembling a robot the next!

What has been your biggest achievement to date?

For me, it's always gratifying to be requested by name for future upgrades and installations by customers. Being able to maintain a good rapport with the customer and collaborating with them to achieve successful new installations and upgrades to meet and deliver to their expectations is key. Maintaining a positive relationship with customers and cooperating with them, and seeing those customers go on to become repeat customers, because you not only met, but exceeded their expectations, is always for me my biggest achievement.

What does a typical day look like for you and what are you currently working on?

Currently I am working on offline projects for paint and sealer applications to be used onsite by various car manufacturers all over the world, and I'm doing it all out of our office here in Adelaide. This involves working office type hours, whilst communicating effectively with other members of the team who are also assisting with these tasks, but may be in another country. This work is challenging and has to be meticulous, so these programs can drop into customer sites seamlessly.

Three words to describe your role?

Varied, Challenging, Meticulous

RC WILLIAMS: AN ADELAIDE SUCCESS STORY

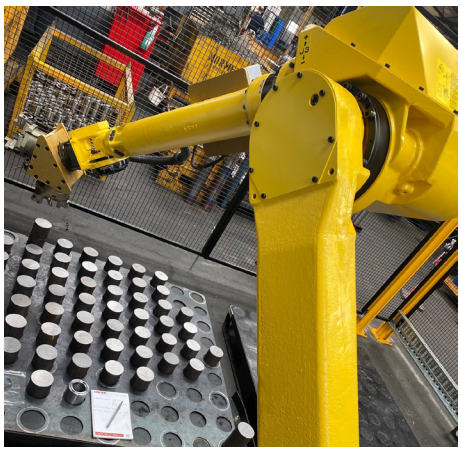
RC Williams is a true Adelaide success story. Founded by Ron Williams in 1967, RC Williams began as a small family business. Their evolution into precision, repetition and general engineering is today run by Nick and Sam Williams, who as third generation Williams' continue the tradition started by Ron.

With a workshop full of machines, RC Williams capabilities include design, reverse engineering, manual and automated machinery, light to medium fabrication as well as general maintenance. With a wealth of knowledge in a broad range of industries, RC Williams is a one stop shop with production runs from one to thousands of parts varying in complexity.

The issue for any machine shop, is to make the right choice from a multitude of competing technologies, to identify the trade-offs, and, where feasible, to combine the most sophisticated technologies and programming strategies. RC Williams are a great example of a business that has carefully selected a range of manual and automated machinery over the years, used in combination with their talented engineering team to deliver quality workpieces, precisely and as promised.

Back in 2021 RC Williams came to ASA looking to fit out their Multitasking Okuma U3000 machine with a fully flexible, reliable FANUC robot system, with the ultimate goal to run their machine unmanned 24/7 to increase productivity due to high demand for products and workpieces. At that time with Covid-19 impacting shutdowns across the world, robot ex-factory times were beginning to be impacted, while RC Williams were keen to get their Okuma U3000 serviced by a robot as soon as possible.

To turn around a solution to get this machine operating 24/7, and in a timely manner, ASA had to come up with a creative solution. With a warehouse in Adelaide housing a small fleet of reconditioned robots with low hours, ASA deployed one of the stock demonstration units to RC Williams, with a view to replace that robot once the new one arrived. Pat Green, Director of ASA, said 'Covid affected lead times on brand new robots substantially, so we needed to think outside the box to come up

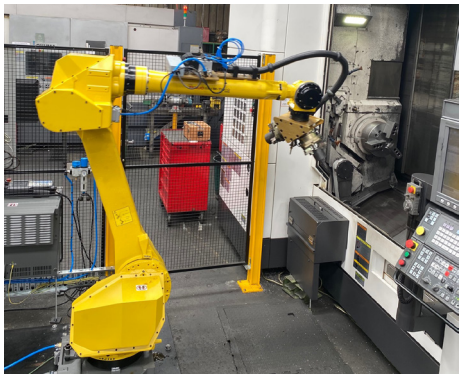


with a way to help our customers meet their automation goals sooner.'

Early this year ASA installed one of their FANUC R2000iB demonstration units to temporarily tend to RC Williams Okuma U3000, which increased throughput significantly by tending to the machine around the clock to unload machined parts and reload raw stock as soon as the machine was ready. All of the electrical and physical installation was done at this time knowing in the back of their minds that the robot would be swapped out when the new one arrived, so commonality in design of the baseplate, end effector brackets and the like was critical to reduce time and cost when it came to switching the robots over. Installing a low hours demonstration unit as a temporary installation allowed ASA to decrease the wait time for the customer, whilst providing an immediate return on investment. Because the robot was in stock, the solution was able to be turned around very quickly, much to the delight of RC Williams.

Recently ASA returned to RC Williams to remove and replace the reconditioned robot with a brand new FANUC M710/45M. The FANUC M710/45M was chosen from a unique lineup of lightweight FANUC robots for RC Williams. The M710iC/45M features a slender wrist, robust arm and high axis speeds. It's 2606mm reach and 45kg payload make it an obvious choice to tend to an Okuma U3000.

Pat Green noted 'New CNC equipment and automation is a significant investment for an SME, and so it's critical to get that equipment repaying the investment as soon as possible. At ASA, we are acutely aware



that our customers aren't buying a robot to have a robot, they're buying extended production hours, that second and third shift, that completed production run on Monday morning. This solution for RC Williams helped bring about that reality 4 months early.'

Time to remove and replace the robot was less than 48 hours, Sam Williams, Director of RC Williams commented that 'The knowledge and experience of the ASA staff ensured a smooth transition with minimal disruption to production. Having the loan robot in 4 months early helped enormously with our production requirements and gave us a chance to explore the full flexibility of the system before the brand new robot was installed.'

RC Williams remains proudly Australian owned making Australian parts out of their machine shop in Adelaide, to find out more or contact RC Williams, visit:

www.rcwilliams.com.au

DELIVERING TOMORROW'S SOLUTIONS, TODAY

ASA is a privately owned, wholly Australian company specialising in the design, engineering and integration of flexible automation solutions for the Australian manufacturing sector.

Whether your application is pick and place, palletising, packaging, part transfer or assembly, the development of a robotic solution offers significant benefits in almost any industry that is operating at high levels of throughput.

- Achieve uninterrupted speed, saving valuable production time.
- Achieve maximum repeatability, reliability and accuracy
- Lower costs versus manual labour
- Eliminate health and safety risks related to repetitive, tiring or dangerous operations

Contact ASA for more information or visit our website automatedsolutions.com.au

1800 ROBOTS (1800 762 687)

ASA

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