

# AUSTRALIAN WELDING



**JRS Skills Academy**  
Equipping ambitious individuals  
with specialised skills  
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**Hilton Manufacturing:**  
Dynamic. Diversified.  
Progressive.  
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A safer, more efficient, globally competitive manufacturing industry

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# UNLOCKING WOMEN'S WORKFORCE PARTICIPATION

We are facing a critical shortage of skilled workers. Australia will have a shortfall of at least 27,000 welders by 2030. Industry is already at capacity. Weld Australia's members are turning away work because they cannot find enough welders to complete the work. To combat this shortage, it is essential that women's workforce participation is increased.



Geoff Crittenden (CEO, Weld Australia)

New [economic research released by Chief Executive Women](#) has found that increasing women's participation in the paid workforce would address Australia's current skills shortage and have a long-lasting impact on productivity in Australia.

The analysis, conducted by Impact Economics and Policy, shows that unlocking women's workforce participation could fill job vacancies and address critical skills shortages predicted between now and 2026.

The report finds that halving the workforce participation gap between men and women would represent an additional 500,000 full-time skilled workers with post school qualifications. Job vacancies hit a record 423,500 in February 2022.

Engaging women in paid work at the same rate as men could unlock an additional one million full-time skilled workers in Australia. The National Skills Commission estimates the need for 1.2 million additional workers across the economy by 2026.

Gender equity and diversity in the construction and manufacturing industry workforce is a persistent problem that exacerbates skills shortages, reduces economic productivity, and constrains innovation. In fact, women account for less than

one per cent of Australia's overall welding and fabrication sector. This is a staggering statistic. To put this into perspective, on average, women comprise 48 per cent of Australia's entire workforce.

Encouraging the participation of women in male-oriented industries such as construction, manufacturing and welding is long overdue in ending the cycle of employment disparity, gender pay gap, and representation of women in management positions.

The research released by Chief Executive Women demonstrates that investing in well-paid, secure jobs, expanding the Commonwealth Paid Parental Leave scheme, making early childhood education more affordable and accessible, and making workplaces safe from sexual harassment were key to getting women into work. All these measures must be implemented by both our governments and private industry.

Weld Australia has long been an active advocate for the participation of women in the workforce, particularly in male-oriented industries like welding. In a post COVID-19 world, Australia's economy will not recover unless we combat skills shortages, particularly in our industrial, manufacturing and infrastructure sectors. The only way to do this is to broaden our labour pool

by attracting women into trades such as welding.

We need a proactive, targeted approach that engages and recruits women into the trades, new and innovative trade training programs designed specifically for women, and measurable gender diversity targets set by the Federal Government.

The [Australian Government has projected](#) that, to 2024, the number of job openings for structural steel and welding trades will be above average. In some states, advertised vacancies have shown substantial increases over the last few years; Queensland has seen welding trades workers vacancies increase by [87 per cent](#), Western Australia saw vacancies increase by [80 per cent](#), and Victoria saw an increase of [18 per cent](#).

And yet, the number of welding trade workers in Australia dropped by [8 per cent](#) in the course of just five years; from 75,800 in 2014 to 69,600 in 2019. In addition, completion rates of welding apprenticeships, including a Certificate III in Engineering (Fabrication Trade), continue to fall by as much as [23 per cent](#) annually.

Australia will have a shortfall of at least 27,000 welders by 2030. Industry is already at capacity. Weld Australia's members are turning away work



because they cannot find enough welders to complete the work. With experts forecasting a critical minerals mining boom, welders will be even more in demand. From lithium, cobalt, manganese, tungsten and vanadium, through to high purity alumina and silicon, Australia is home to the minerals inputs required for strategic applications like semiconductors and electrification.

These critical minerals are essential for defence, aerospace, wind farms, electric vehicles and battery storage. This mining boom will necessitate vast infrastructure—processing plants with structural steel, pipelines, and pressure vessels—all of which requires welding.

With Australian industry already desperate for welders, how will this extra demand be met?

### A Global Perspective

This skills crisis is not unique to Australia. By 2023, the United States is predicting that their workforce will need an additional [375,000 welders](#). To put this into perspective, that is equivalent to the size of the entire welding workforce in America as of 2019. Similarly, in a recent report released by the European Commission, welders and metal workers [rank third](#) on the list of occupations with the greatest workforce shortage.

The situation is much the same in Asia. For instance, according to data released in late 2021 by China's Ministry of Human Resources and Social Security, [58 of the 100 occupations](#) with the largest shortage of workers were classified as manufacturing roles, including welders. By 2025, the total number of skilled workers in 10 key areas of China's manufacturing industry will be close to 62 million, with a talent demand gap of nearly 30 million—a [48 per cent](#) shortfall.

Even with international borders opening post-COVID, immigration is not the answer to Australia's welding workforce crisis. There is no magic

pool of international welders from which to draw on—this is a global skills crisis.

### Increasing Diversity in the Workplace

Increasing diversity in the workplace is possibly the best way to alleviate the skills shortage. Every effort needs to be made to encourage women to become welders.

Weld Australia is already working on an innovative program designed to increase workplace diversity—a program that starts in high school. Last year, Weld Australia proposed an Advanced Manufacturing School Outreach Program to the New South Wales (NSW) Government. The Program received their support, with funding provided through the Department of Education's Vocational Education and Training Program for Secondary Students.

Over 30 augmented reality welding simulators were deployed in a pilot program in 16 schools across the state. The schools ranged from the Wagga Wagga, Lake Illawarra and Dapto high schools in southern New South Wales, to the Gorokan and Kurri Kurri High Schools in the Lower Hunter region. Based on the success of the pilot program, the NSW Department of Education ordered a further 20 simulators for another

10 high schools in regional areas including Bathurst, Cobar, Bourke and Broken Hill.

This engaging, exciting learning technology provides a very safe and efficient way to teach students skills in a profession where there is high demand. The program encourages participation in STEM learning from a young age—for girls and boys alike. While this is a long-term solution, rather than a quick fix, this program is focused on actively recruiting more women into trades as early as possible. Weld Australia believes this invaluable program should be rolled out nationally.

There are many advantages waiting for women who opt for a career in welding. There are significant economic benefits for women in non-traditional trades, from increased choice and availability of jobs, through to improved job security.

The welding industry is fast evolving. The advent of automation and other progressive welding technologies is paving the way for the manufacturing of high-tech equipment for the aerospace and defence industries, among others. Welding itself is no longer precarious, dirty work in dark workshops, but the precise work of the technically minded in bright, open workspaces.



# RECONNECTING WELD AUSTRALIA'S BOARD WITH MEMBERS



David Lake (Chair, Weld Australia).

Over the last two years, many of the grass roots activities, for which Weld Australia is known, weren't possible in the wake of the COVID-19 pandemic.

While our online webinars proved very popular during the pandemic, face-to-face member events help us deliver on one of our core functions: facilitating collaboration and fostering industry networking for welders.

Time and again, members tell us that, more than anything, they value the networking opportunities that our events deliver. In our last member survey, an overwhelming number of respondents indicated that they're eager to return to face-to-face events.

Many of our members tell us that the network, or community, aspect of membership is one of the key reasons they joined Weld Australia, or renew every year. Membership provides opportunities to meet

people from all walks of life – people you would be unlikely to cross paths with otherwise, but all of whom share interest (and even a love) for welding.

That is why I am committed to reinvigorating our grass roots activities.

I am very keen to reconnect Weld Australia's Board of Directors with the membership. It is extremely important that we are aware of the views of members across a whole range of issues, and that we understand the challenges that members are facing. In this way, we will be better placed to serve the interests of all members. As a member, your opinions are sought after and appreciated – we really do value member feedback and refer to it regularly in the planning and development of services, programs and events.

We are reinvigorating our local State Committees and have already increased the number of technical

events being held. We are also in the process of running smaller member events more often by establishing Regional Committees. Our newest Regional Committee is in Mackay, and has already held its first face-to-face event. If you would like to help Weld Australia establish a Regional Committee in your local area, contact [membership@weldaustralia.com.au](mailto:membership@weldaustralia.com.au).

David Choudry, our newly appointed and very enthusiastic Membership Manager, is working on a range of new ideas and initiatives to help foster member networking and connection more than ever before. I'd like to welcome David to the Weld Australia team.

If you have any ideas on how we can best reinvigorate our grass roots activities, including face-to-face events, feel free to reach out.

I am looking forward to once again meeting with members in-person, learning about their operations, and hearing about their challenges, so that Weld Australia can continue to serve the industry.



**As a member,  
your opinions  
are sought after  
and appreciated  
– we really do  
value member  
feedback and refer  
to it regularly in  
the planning and  
development of  
services, programs  
and events."**



# BREAKING NEWS

## Gippsland Announced as Priority for Australia's First Offshore Wind Assessment

The Federal Government's Department of Industry, Science, Energy and Resources has announced that Bass Strait off Gippsland will be the nation's first priority area to be assessed for suitability for offshore wind developments. The focus will be on identifying existing users of the marine area that will need to be taken into account when considering any future offshore renewable energy infrastructure activities, particularly offshore wind projects.

Important users include: the environment, such as marine life and migratory birds; existing maritime infrastructure and industries such as fishing and shipping; and other marine stakeholders and local communities.

The announcement is the first step to developing a strong Australian offshore wind industry that: serves to secure affordable energy; creates jobs and investment; and increases the economic growth of regional and coastal economies.

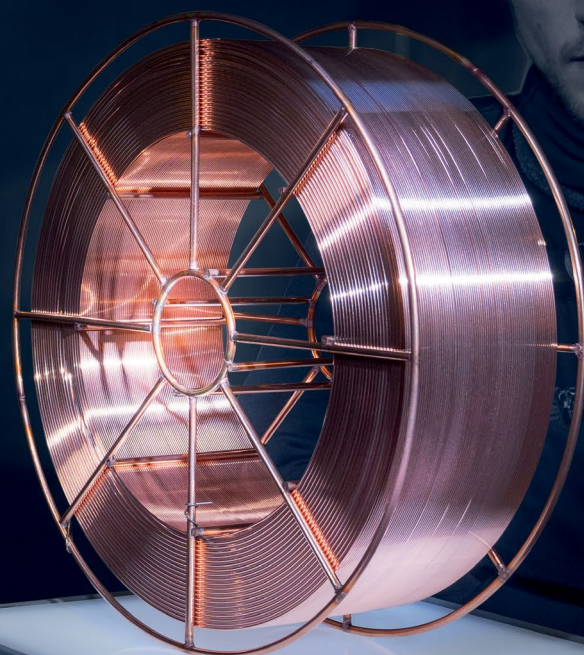
## South Australia Moves to Build Hydrogen Power Station

The South Australian Government has moved on its promised construction of the country's first green hydrogen powered electricity generation station. This project is part of its Hydrogen Jobs Plan, which was promised before the recent state election.

Premier Peter Malinauskas announced the opening of a Hydrogen Jobs Plan Market Sounding and the introduction of legislation on hydrogen production, storage and transportation, at the Australian Hydrogen Conference in Adelaide.

The purpose of the Hydrogen Jobs Plan Market Sounding is to seek input from local, national and international organisations to provide technology and commercial approaches to help shape the delivery of a hydrogen production facility near Whyalla in the state's mid-north.

Whyalla is the planned site for a major, federally-backed hub for green hydrogen from renewables production and export, with the state government already extending the export jetty at nearby Port Bonython.



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# BREAKING NEWS

## Austal to Build Two Additional Cape-Class Patrol Boats

Austal Australia recently announced that the Department of Defence will order an additional two Evolved Cape-class Patrol Boats for the Royal Australian Navy, for \$124 million. The two new vessels are in addition to the six Patrol Boats currently being delivered by Austal Australia.

Austal's Chief Executive Officer, Paddy Gregg, said, "We are incredibly proud to be supporting the Royal Australian Navy by providing and enhancing fleet capability; working in collaboration with the Department of Defence and Industry partners. This announcement for additional Evolved Cape-class Patrol Boats further strengthens and supports Australian sovereign shipbuilding capability and provides Austal, and our outstanding supply chain partners, with a level of continuity that will provide stability and security for the National Naval Shipbuilding Enterprise. Austal will also continue to invest and develop our facilities in Henderson to ensure we have the capability and capacity for the future program of work."

## Fortescue Awards Schlam \$90 million Mining Agreement

Schlam recently announced that it had been awarded a multi-million-dollar supply agreement with Fortescue Metals Group for both its products and services. The contract will see Schlam Payload Solutions supply Fortescue with dump bodies and buckets, whilst Schlam People Solutions will provide skilled on-site mechanical and fabrication services for a minimum of three years, with options to extend.

Schlam Chief Executive Officer, Matt Thomas, said, that he expected the agreement's value to reach over \$90 million. "Like Schlam, Fortescue is a proud and innovative West Australian company, who we have been working with for almost a decade. This relationship strengthened when we trialled a Hercules dump body suited to their fleet of 240 tonne class trucks in 2018. At the time, it was the lightest 240 tonne body we had manufactured, and through working with innovative partners, like Fortescue, we've been able to develop the next generation of payload products, including the Hercules EXO."

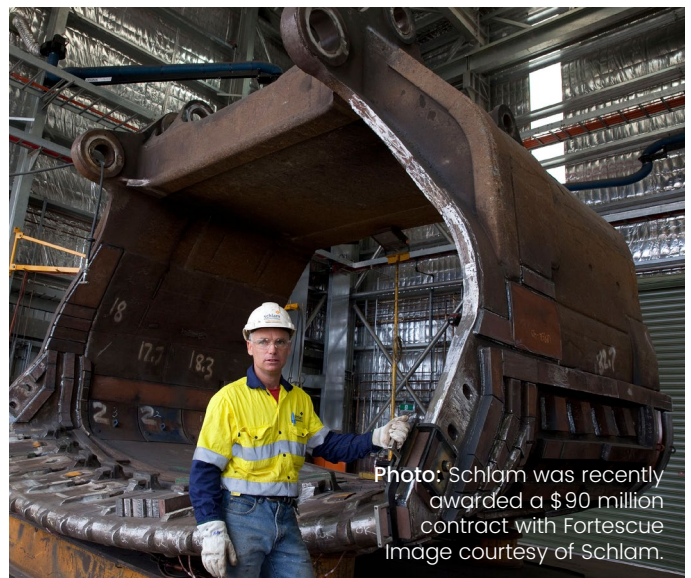
## New CRC to Accelerate Australia's Sovereign Manufacturing Industry

The Sovereign Manufacturing Automation for Composites Cooperative Research Centre (SoMAC CRC) was recently confirmed as the second Cooperative Research Centre to receive funding under Round 23 of the CRC Program.

Then Minister for Science and Technology, the Hon Melissa Price MP, and Minister for Industry, Energy and Emissions Reduction, the Hon Angus Taylor MP, announced that the SoMAC CRC would receive \$69.9 million in Australian Government funding which will leverage more than \$189.3 million in cash and in-kind from 36 partners. This will strengthen Australia's composite manufacturing industry and solve its major challenges, while generating thousands of new jobs. The SoMAC CRC's vision is to transform Australia's established composite technologies capability into sovereign leadership, creating a world-class, highly automated, digitally enabled, network of designers, manufacturers, and service providers.



**Photo:** The first Evolved Cape-class Patrol Boat, ADV Cape Otway, was delivered on 23 March 2022. Image courtesy of Austal Australia.



**Photo:** Schlam was recently awarded a \$90 million contract with Fortescue. Image courtesy of Schlam.





Photo: BlueScope's TRUECORE® steel. Image courtesy of BlueScope.



Photo: Rheinmetall's LYNX Infantry Fighting Vehicle. Image courtesy of Rheinmetall.

## BlueScope Distribution Opens Hub and Announces Investment

BlueScope Distribution's National Product, Processing and Solutions Hub announces plans for further capability investment to help deliver significant projects Australia-wide.

In February 2022, BlueScope Distribution announced a \$6.9 million investment into a custom site in Unanderra, NSW to help its customers deliver significant renewable energy, defence and infrastructure projects Australia-wide. The facility officially opened on 12 May 2022, with BlueScope announcing plans to pursue further investment to enhance the site's capabilities in processing a broader range of steel and aluminium products required in defence and mining.

Earlier this year, the Australian Government awarded BlueScope a Modern Manufacturing Initiative grant of \$55.4 million which triggered a further investment of \$161.6 million by BlueScope and its Illawarra partners. This investment will create an Advanced Steel Manufacturing Precinct at the Port Kembla Steelworks, and a new fabrication facility to manufacture components for the renewable energy, defence and other sectors, as well as upgrades of the Port Kembla Plate Mill.

## BAE Systems Australia Novel Approach to Future Careers

BAE Systems Australia and the employer association Ai Group will launch the nation's first degree apprenticeship program at the start of the 2023 academic year.

Delivered by Victoria University, the degree apprentice program will aim to dramatically increase skilled participation in major defence projects and has already received the endorsement of major employers in the sector.

BAE Systems, Ai Group and Victoria University will pilot an integrated learning program that will include on the job training and academic studies focused on a degree in Systems Engineering. Course specifications were developed in consultation with Apprenticeships Victoria and Engineers Australia.

BAE Systems and Ai Group are collaborating with employers to define requirements and outcomes. These companies include Dassault Systems, Advanced Fibre Cluster, Air Radiators, Navantia Australia, Memko and Systra. The course will take between 20 and 40 students in the 2023 academic year. Success would see the program broadened to include a variety of engineering degrees.

## Rheinmetall Opens Maryborough Defence Manufacturing Facility

Four years in the pipeline, and two years after construction began, Maryborough's biggest industrial plant in decades was officially opened by then Minister for Defence, the Hon Peter Dutton MP.

The state-of-the-art \$60 million artillery shell forging factory includes a 1,200 tonne forging press and computerised machinery that will produce the world's most technically advanced 155mm projectiles for the Australian Defence Force, as well as export markets.

When fully operational later this year, the plant will have the capacity to produce 30,000 shell cases per year with a workforce of up to 100 people, from line supervisors, skilled operators, maintenance staff, labourers and apprentices.

Australian company BADGE Constructions led the building phase for the project, which has had multi-level government backing with a \$28.5 million grant from the Federal Government's Regional Growth Fund on top of \$7.5 million from the Queensland Government's Regional Jobs and Investment Fund.

# AUSTRALIAN MANUFACTURING WEEK

Owned and operated by [AMTIL](#), the inaugural [Australian Manufacturing Week](#) (AMW) exhibition took place at the International Convention Centre Sydney (ICC Sydney) in Darling Harbour from 7-10 June 2022. Australia's premier manufacturing solutions event, the theme for 2022 was *Where technology meets innovation*.

According to Shane Infanti (Exhibition Director, AMW), "As Australia's leading showcase for the latest advanced manufacturing equipment and processes, Australian Manufacturing Week provides an unrivalled opportunity for you to see the latest state of the art technology up close, and discuss potential applications that will help your business to deliver innovative, value-added solutions. The show offers the ideal setting for people from across Australian manufacturing to exchange ideas, access useful resources, engage in networking with new and existing contacts, and to explore new ways to help our industry grow."

AMW occupied more than 9,000m<sup>2</sup> of floor space at the ICC Sydney, with more than 170 organisations taking

stands to exhibit some of the very latest manufacturing technologies, processes and support services.

The AMW exhibition consisted of six dedicated zones offering a comprehensive view of the modern manufacturing landscape. The Austech Machine Tools and Ancillary Equipment Zone hosted an extensive range of metalworking and machine tool technology, including the latest state-of-the-art cutting tools from Iscar Australia. The Australian Manufacturers Pavillion celebrated the very best in Australian manufacturing, providing a showcase for some of this country's most accomplished component manufacturers, precision engineering firms, toolmakers, advanced manufacturers, and general engineering companies.

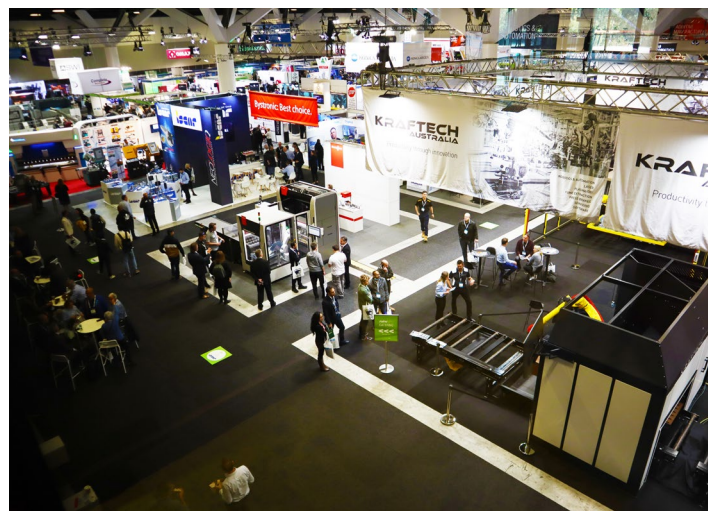
The Weld Solutions Zone featured the latest cutting-edge welding technology. Exhibitors included Novarc Technologies, Lincoln Electric, Ensitech and Supagas, just to name a few. Weld Australia also exhibited, with our Soldamatic augmented reality welding simulator on-hand.

AMW enjoyed a visit from the Hon

Stuart Ayres MP, the New South Wales Minister for Enterprise, Investment and Trade, and Minister for Tourism and Sport, and Minister for Western Sydney. Minister Ayres opened the Advanced Manufacturing Research Facility (AMRF) *Make the Future* event. Presented by the NSW Government and the Western Parkland City Authority, the brief for the AMRF is exciting on many levels. Stage One will be the next generation fabrication district in Western Sydney, built in the new Bradfield City. This is scheduled to open in the third quarter of 2023.

The full-scale AMRF will incorporate advanced electronics and semiconductor manufacturing to service defence, aerospace and emerging industries. The Western Sydney International Airport will be built and active right next door.

The Women in Manufacturing event also proved popular, with Kim Banks (Head of Events, AMTIL) and Erika Hughes (Commercial Director, Integra Systems) speaking to the crowd. There were many stories about business ideas, mountains climbed, and contracts won.



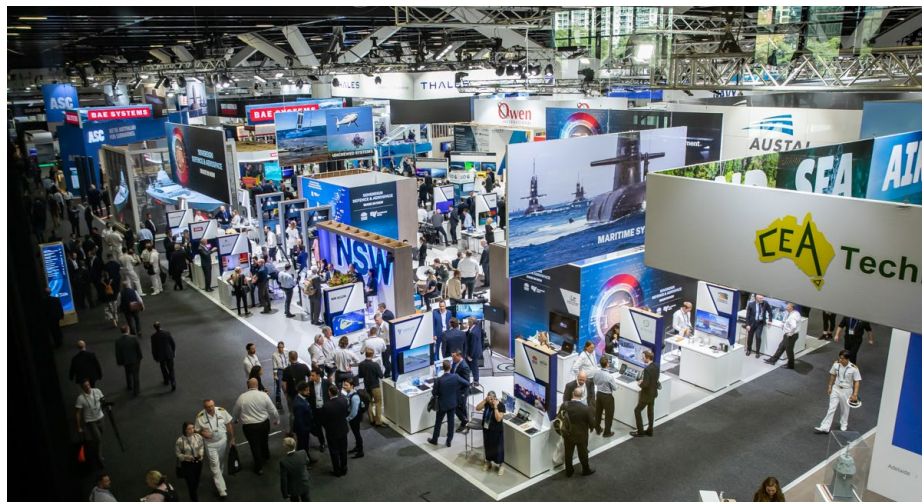


# INDO PACIFIC 2022

The INDO PACIFIC 2022 International Maritime Exposition featured the largest exhibitor turnout in the event's 20 year history. It is believed to be the largest defence industry event ever held in Australia, after a record number of participating exhibitor companies presented at the event at Sydney's International Convention Centre in early May.

Weld Australia's stand proved popular with attendees, with people keen to try their hand at the Soldamatic augmented reality welding simulators. INDO PACIFIC proved to be a great opportunity to talk to members and other industry experts about the opportunities available in shipbuilding.

In all, INDO PACIFIC 2022 had more than 25,000 visitor attendances across the three days, and 736 participating exhibitor companies from 23 countries—a 12% increase on 2019 and the largest number of participating companies in the history of any AMDA Foundation event. Weld Australia was one of these exhibitors. The exhibition space was 11% larger than the previous record set in 2019, and there were over 70 symposia and presentations. More than 40 nations were represented, with 39



Chief of Navy Counterparts or their representative from around the world in attendance.

Justin Giddings, CEO of INDO PACIFIC 2022 organiser AMDA Foundation, said INDO PACIFIC 2022 comprehensively achieved its goal of bringing the maritime and defence communities together. "This was my first INDO PACIFIC, and it was overwhelming to see the support of not only Navy, but also the exhibitors, sponsors and visitors," Giddings said.

"From day one there was a hum of activity in the halls that continued for

the entire event. INDO PACIFIC was delayed from 2021 because of COVID, and it was clear that industry is very happy to be talking face-to-face again, so the vibe on the floor was electric. We thank the Royal Australian Navy for its commitment and engagement with INDO PACIFIC 2022, and for its service to the nation."

"Set for 7 to 9 November next year, INDO PACIFIC 2023 will return the event to its traditional schedule, and although that is only 18 months away, we hope that everyone will be back next year for an equally successful event," said Giddings.





# THE FIRST STEP IN WELDER SAFETY: MAINTAINING YOUR EQUIPMENT

Welding and fabrication is underpinned by safety standards and practices. One of the most crucial health and safety checks that welders need to undertake regularly is an equipment inspection. Regular equipment maintenance is essential in ensuring the quality and longevity of welding equipment, as well as the health and safety of all team members.

According to Geoff Crittenden (Chief Executive Officer, Weld Australia), the maintenance of equipment involves a range of routine checks.

“Simple actions such as checking that equipment is dry and well maintained and installing shut down mechanisms such as fuses and low voltage safety switches can save lives. Ensuring that all employees are equipped with the knowledge to undertake routine safety equipment checks is key to preventing incidents in the workplace,” said Crittenden.

Taking care of welding equipment and machinery should be one of the first steps in any welding safety program. Conducting a safety check does not take long, but it can deliver a range of benefits, including:

- Enhanced safety for your team
- Increased quality and performance of welds
- Longevity of equipment
- Cost-savings for the future

The level of maintenance required for welding equipment typically depends on the type of equipment in operation. Some machinery, like stick (MMAW) welding equipment requires very little maintenance, while GMAW (MIG) and GTAW (TIG) welders require a bit more care and attention.

“Welding safety requires constant vigilance to ensure that all equipment is maintained, operating correctly and

being used with best practice in mind. The 10 minutes required to complete a thorough check can prevent serious injuries and fatalities within the workplace,” said Crittenden.

## Caring For Welding Equipment

Welding machinery continues to push the boundaries of new technology and innovation.

However, with advanced technology, comes extra responsibility. Many well-known brands of machinery have plugs and supply leads that do not boast the strength required to run at peak performance at all times. As such, welders need to understand the capacity of their equipment, maintain appropriate currents, and conduct regular safety assessments.

Even when using smaller, more risk-averse equipment, welders should keep a close eye on the details. For example, stick welding equipment (MMAW), does not require daily maintenance but welders should still monitor the device’s performance over time, and replace parts when appropriate.

The most significant maintenance concern in stick welding relates to electrodes. When electrodes are left in the open air, they tend to collect moisture, putting them at risk of rusting and long-term damage. As such, electrodes should be properly stored in a sealed container. Finally,







electrodes should be stored in an upright position to prevent damage that can occur when rods bump against one another—dented rods that are missing the extruded coatings can negatively impact welding performance.

Unlike stick welders, wire welders (such as GMAW (MIG) and flux-cored welding) feature many more peripheral items, including the gun liner, gun contact tips and the shielding gas hose. As such, this equipment requires much more regular care and attention. For instance, the drive rolls and gun liner can experience a great deal of dirt, dust and grime buildup. It is good practice to blow out the drive rolls and liner with compressed air at least once a week, or to remove the rolls and clean them with a wire brush.

While caring for GMAW/FCAW equipment has many elements, there's an easy way to spot a potential maintenance problem – visible porosity holes in your weld. With any gas-shielded process, visible porosity in the weld indicates a procedural problem or a shielding gas problem – it signifies that you're out of gas, the nozzle is clogged or there's a hole in your shielding gas line. So, pay attention to your weld quality – it's an easy barometer of whether or not your machine maintenance is up to date.

#### What to Look Out For

Like all equipment, welding machinery is susceptible to wear and tear. However, there are some indicators that your equipment is not operating correctly and requires immediate action, including:

- Dust and dirt build up
- Sparks
- Intense light
- Fumes and gases
- Poor weld quality, including visible porosity holes

#### Further Information

For further information and resources on welder health and safety, visit Weld Australia's [Resource Centre](#).

**“Welding safety requires constant vigilance to ensure that all equipment is maintained, operating correctly and being used with best practice in mind.”**

Other key areas to keep a close eye on include:

- Cones and diffusers
- Diffuser screws
- Gun contact tips and nozzles
- Shielding gas bottle and hose
- Cooling fans
- Transformers
- PC boards

Importantly, all welding equipment should be unplugged before starting any safety or maintenance routine. The use of Weld Australia's 'Daily MMAW Power Source Daily Inspection and Pre-Start Check List' published in our [Technical Note 7](#) and [Technical Guidance Note TGN-SW07](#) is highly recommended. Both documents are available for free download from [Weld Australia's Resource Centre](#). Similar pre-start checks should also be conducted on GMAW/FCAW equipment.

A welding supervisor can assist with any particular areas of concern and questions. In some cases, a qualified technician may be required to evaluate the inside of welding equipment, where rust, dirt, and grime can build up. Thorough, regular servicing of your machinery will help to prolong its service life. Most importantly, it will help keep you and your team members while at work.



# TOP TIPS FOR LODGING YOUR BUSINESS ACTIVITY STATEMENTS

Small businesses make up around 20 per cent of the Australian Tax Office's total revenue collection, and approximately 30 per cent of GST. They are the backbone of the Australian economy, and essential for nation-building and the delivery of crucial services. If they are GST-registered, small businesses are required to lodge Business Activity Statements (BAS), which summarise revenue, and report on a few key expenditures too. Preparing and lodging a BAS doesn't need to be a difficult task for a small business owner, particularly with these top tips.

## What is BAS?

A Business Activity Statement (BAS) summarises the revenue you take in over a specific period of time, and reports on a few key expenditures too. GST-registered small businesses submit a BAS to the Australian Tax Office (ATO) to determine:

- Their GST bill or refund
- What tax has been withheld from employee pay and must be sent to the ATO
- Their income tax instalments if they're in the pay-as-you-go (PAYG) system

\$75,000. This is \$150,000 for not-for-profit organisations.

Most small businesses fall into the quarterly reporting cycle. The due dates for this cycle are:

- July, August and September: due 28 October
- October, November and December: due 28 February
- January, February and March: due 28 April
- April, May and June: due 28 July

## How to Complete a BAS Statement

Anyone who completes a BAS needs to report how much GST was collected from customers, and how much GST was paid to suppliers. Those numbers should be in your business accounts. If not, you'll need to look back through your receipts and invoices or bank statements. If you pay employees, your BAS must report how much PAYG tax you've withheld from their pay during the period. That information will be in your payroll system. And if you're

A BAS can also be used to record other taxes and credits, such as fringe benefits tax, luxury car tax, wine equalisation tax, and fuel tax credits.

## Who has to lodge a BAS and when?

If you're GST registered, then you have to submit business activity statements. Any business can register for GST and certain businesses are required to if:

- Your income passes a certain amount ([check the amount with the ATO](#))
- You want to claim fuel tax credits

Small business owners should be aware of BAS deadlines:

- Quarterly: when a business' GST turnover is less than \$20 million
- Monthly: when a business' GST turnover is \$20 million or higher
- Annually: when the business is voluntarily registered for GST, and annual GST turnover is under





making PAYG instalments on business income, then your BAS must also include an estimate of the tax you owe. That number is based on your sales for the period, which you can find in your P&L report. You can set up accounting software so that all these numbers flow automatically through to the BAS when you complete it online.

### How to Lodge Your BAS

Before lodging your BAS, check that the accounting data you're using is correct. Most accounting software will generate an audit report detailing all the transactions included in the BAS. Use this to double-check that all expenses and receipts for the period have the right GST amounts entered. Once you're confident the BAS is accurate, there is a suite of options available for lodging BAS, including:

- Via your online accounting software like Xero or MYOB
- Through your myGov account if you're a sole trader
- Through ATO Online Services for Business
- By having a registered tax or BAS agent (generally an accountant or

bookkeeper) submit it for you

### How to Pay Your BAS

The quickest and easiest way to pay your business activity statement (BAS) is with BPAY, a credit card or debit card. You can also pay using a payment reference number (PRN) if you lodge online. You must pay on time to avoid paying interest. To offset your future BAS liability, you can voluntarily make early payments. You will need your PRN, and you can use any of the payment methods.

### Fixing BAS Mistakes or Making Adjustments

Correcting a mistake made on an earlier BAS is different to making an adjustment. An error or mistake relates to an amount that was incorrect at the time of lodgment. An adjustment relates to a reported sale or purchase that was correct at the time of lodgment, but something occurred later that changed the amount of reported GST. Examples of mistakes include:

- Clerical or transposition errors
- Classifying a GST-free sale or purchase as taxable

- Classifying a taxable sale or purchase as GST-free
- Double counting purchases

You can fix a mistake on your next BAS or revise the original BAS. Conditions apply depending on if it's a credit or debit error. Many mistakes relating to GST and fuel tax credit can be corrected in your next BAS. If you can't correct your mistake in your next BAS, you need to lodge a revision.

A lot of Australian businesses have an accountant or bookkeeper who can take care of their BAS and tax obligations. Besides checking that the BAS is accurate, these professionals can give advice on improving business profitability. BAS is another admin job but it doesn't have to be a big one. It mostly comes down to whether or not your accounts are up to date. If you do daily bank reconciliations and have good bookkeeping habits, it won't be a problem.

*Disclaimer: this article is for informational purposes only. You should consult a professional for advice that is directly related to your business.*



## The ATO's Top Tips for Lodging Your BAS

Here are the ATO's top tips to help you complete your BAS this quarter:

- Lodge online. It's quick, easy and secure and you may receive an extra two weeks to lodge and pay.
- Use the ATO's online services to lodge and you'll get reminder messages as you complete your BAS, to help you get it right and avoid errors.
- Fuel tax credit rates changed from 30 March 2022. Use the fuel tax credit calculator to correctly calculate your claim.
- Even if you have nothing to report, you still need to lodge your BAS as 'nil'. The easiest and fastest way to lodge is online. Simply select 'Prepare', then 'Prepare as nil' option on your BAS form and you won't need to fill in each label as a zero. You can also lodge a 'nil' BAS by phone on 13 72 26. This is an automated service and you can call anytime (24 hours a day, seven days a week). You will need to have your BAS document identification number (DIN) handy.
- If you no longer need your GST registration, you need to cancel it. If GST is your only obligation, you'll no longer receive a BAS. Remember to also finalise all outstanding lodgment and payment obligations.

# WHAT DOES IT MEAN TO BE MENTALLY FIT?

In the same way there are processes and training available to help avoid physical injuries in the workplace, mental health and its associated symptoms require the same level of attention. With workers in construction and trades like welding and fabrication at an increased risk of mental illness, employers and employees alike are encouraged to work together towards positive mental health habits.

Suicide is the leading cause of death for Australians between 15 and 44 years of age, and men are three times more likely to die by suicide than women. Workers in construction and other trades—including welding—are even more at risk. Tradies are 70% more likely to die by suicide than their behind-the-desk counterparts. This means that every second day an Australian tradie takes their own life.

Despite these alarming statistics, mental health definitely isn't something that tradies talk about at smoko or after knocking off. But this trajectory can change, with a focus on improving mental fitness.

## What is Mental Fitness and How Does it Help?

Mental fitness involves a state of wellbeing and awareness around how people think, act and feel about their daily lives. Mental fitness is about training the brain to deal with daily stresses without feeling overwhelmed, upset or worried.

This unlocks a balance between personal and professional choices. For example, when an employee is mentally fit, they recognise workplace stresses and use time and space to respond in a healthy manner.

Mental fitness should not be a destination, it is an ongoing journey that requires community connections and a wide support network.

Just as physical fitness provides us with an increased ability to respond to life in all its richness, mental fitness helps in the same way. It provides us more space to choose how to respond to a situation, whether that situation is a forethought, an external stimulus, or a feeling. As a result, we are less likely to sustain (or cause) emotional and relational injury.

When you are more mentally fit, you recognize that you have a choice when that first angry statement comes your way. Mental fitness gives you the ability to pause and respond in the way you would like, in the moment, rather than having to reset or mend fences later. In some ways, it's like accessing the wisdom of hindsight in the present moment.

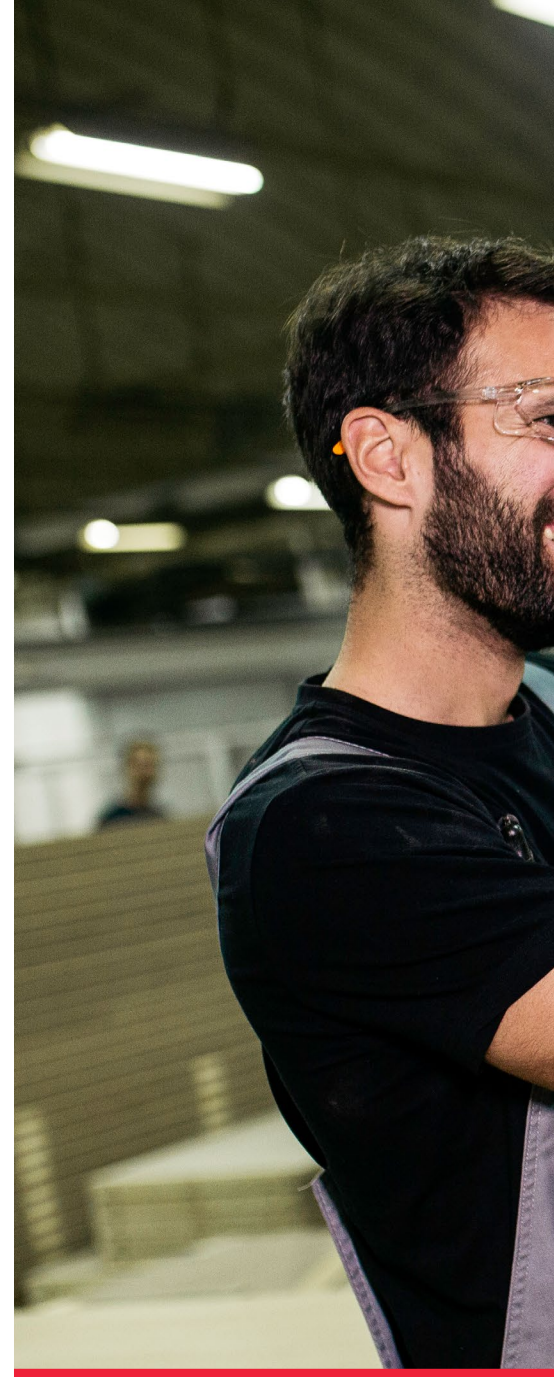
## How Does Mental Fitness Work?

Our brains carry thoughts along neural pathways. These pathways are like ruts that have been created and reinforced over time. If you always take the same route to work, you may notice that you can get there on 'autopilot'. When we repeat a certain thought pattern many times, that neural pathway is reinforced, and the thinking becomes automatic.

The issue with automatic thinking is when it causes us to react in ways that are unhelpful in the current situation. Our reactions are based on well-worn pathways to past emotions or triggers.

Automatic thinking comes from our survival brain, the limbic system. It is constantly scanning the environment for threats and has been throughout evolution. We inherited the limbic system from chimps and it can protect us. But in the modern world, it can give rise to thoughts and actions that hurt us, too.

It is the human part of the brain that we can develop and re-program. With the same deliberateness that we strengthen certain muscles or fine-tune a movement, we can create neural pathways that better serve us and benefit our lives. This is the essence of what we mean by mental fitness training.







### The Benefits of Mental Fitness

Mentally fit people can enjoy a range of benefits:

- Being present: where people hold information, listen, and gain an overall awareness of any workplace concerns.
- Responding rather than reacting: where people have more control over their emotions and thoughts when they take their time to think.
- Improved cognitive function: which is crucial in the welding space in which focus, speed, concentration and quality are crucial skills.
- Positive emotions: which encourages people to engage with positive thoughts and an increased awareness about those

around them. This is central in the welding and fabrication sector, which is heavily based around a team environment.

- More confidence: increasing self-esteem can allow workers to believe in their strengths and workplace abilities.
- Positive habits: when employees feel emotionally in touch, they will form better habits, which leads to a better quality of work and life balance.

These attributes are crucial in a small business, where employers have a responsibility to look after employees both physically and mentally.

Source: <https://www.betterup.com/blog/what-does-it-mean-to-be-mentally-fit>

### Working Together

Weld Australia has partnered with [Gotcha4Life](#) to help build the mental fitness of Australia's welders. Weld Australia and Gotcha4Life believe that, together, they can strengthen the emotional muscle to help build strong social connections, which in turn develops the resilience required to deal better with the challenges that life throws at us.

### Further Information

If you'd like further details, or are keen to run a mental fitness program, contact us via: [membership@weldaustralia.com.au](mailto:membership@weldaustralia.com.au)



# JRS SKILLS ACADEMY

## Equipping ambitious individuals with specialised skills in steel manufacturing

JRS Manufacturing Group recently launched the JRS Skills Academy at their Wilsonton premises in Toowoomba. An Australian-first hybrid learning framework, the JRS Skills Academy will help strengthen the Toowoomba and Surat Basin's emerging advanced manufacturing ecosystem. It is set to achieve this through the implementation of a resilient supply chain model that combines industry innovation, end-to-end product design and development, with formal skills recognition. With support from Weld Australia and Aviation Australia, students will graduate with a competitive edge thanks to JRS custom trade qualifications that drive Industry 5.0 concepts like leadership, collaboration, design thinking and communication.



The JRS Skills Academy is the brainchild of Jasmine Riddle (Chief Operating Officer, JRS Manufacturing Group). According to Jasmine, the first step in establishing the Skills Academy was in-depth research.

"The JRS Skills Academy came about through a fair bit of research around what training programs were available in regards to trade skills. We also took an inward look at the steel manufacturing specifically, and the types of training that had been done in the past," said Jasmine.

"For us, it was a big investigation piece initially. We decided that, from what we'd learnt, the best way to create a workforce for the future and leave a legacy in the industry was to develop the Skills Academy. It's main focus is to introduce young people and job seekers to a trade environment, and also give them these really transformative skills that would make them incredible humans in the future within industry."

### Overcoming Barriers

As Jasmine explained, there are

massive limiting factors and big assumptions around the trade environment that discourage young people from joining the manufacturing and welding workforce

"A lot of young people believe that, in a trade environment, you're not well-paid. It's dirty, yucky work and there is no pathway beyond your trade. We started by mythbusting these limitations," said Jasmine.

In fact, there are many advantages waiting for young people who opt for a career in welding. The welding industry is fast evolving. The advent of automation and other progressive welding technologies are paving the way for the manufacturing of high-tech equipment for the aerospace and defence industries, among others. Welding itself is no longer precarious, dirty work in dark workshops, but the precise work of the technically minded in bright, open workspaces.

Plus, with the JRS Skills Academy, graduates have the potential to earn an above average industry wage of \$101,000 per annum and gain

opportunities to continue professional growth with a variety of programs delivered by skilling partners.

"Through the JRS Skills Academy, we seek to redefine the manufacturing skills landscape by re-engaging young people through human centred skills transformation to understand the value of trade apprenticeships and future employment security," said Jasmine.

### The Skills Academy Experience

Prospective students apply for a position in the Skills Academy and undertake a series of interviews.

"Generally, students come to the Skills Academy via a pre-vetted environment like a high school or a transition pathway (such as Defence), so that we have a really good understanding of their level of dedication to being a trades person," explained Jasmine.

"If successful, you become an employee of JRS Manufacturing Group and begin the training interface with TAFE Queensland. You really





Photo: Col Batzloff (TAFE Queensland) and Jasmine Riddle (JRS Manufacturing Group).



Photo: JRS Manufacturing team member hard at work.

are training all the time once you commence.”

TAFE Queensland trainers deliver accredited courses on-site at the JRS Manufacturing Group facilities and liaise with JRS Supervisors’ throughout. As a result, students are more confident and comfortable—they have the opportunity to train in a familiar environment, using their own equipment.

“Ambitious individuals develop best-in-class skills in steel fabrication and welding, CNC machining and have exposure to the latest technology through specialised industrial and aerospace coatings and electroplating with additional focus on leadership, collaboration, design-led thinking and being able to communicate,” said Jasmine.

“These are all critical components if you’re going to be a leader and innovative in your trade. If you want to move forward beyond your trade certificate into other pathways, we want to see that human-centred approach to transformation.”

### An Incredible Future

“Australian manufacturing has an incredible future ahead of it. There is an incredible opportunity here and we want to have the people in the industry that can do the job,” said Jasmine.

“Our business would fail if we didn’t invest in people and these opportunities. We wouldn’t be able to achieve our goals. We’d let our manufacturing partners down, which is a horrible outcome. And, more broadly, Australian manufacturing wouldn’t be able to achieve its desired outcomes, which would be tragic.”

Growing from a team of five to thirty over the last six years, the JRS team has diversified its product offerings from stand-alone manufacturing as boilermakers, to a hybrid manufacturing hub offering a multi-disciplinary end-to-end production pipeline, using the latest technology.

The traditional manufacturing model is based on multiple skillsets across boiler making, welding, sandblasting, specialised surface coatings and

finishing, CNC machining and logistics solutions, to deliver the final product to the customer. This requires various trades, across different industries and locations, to work cohesively to ensure customer timeframes and deliverables are met.

Identifying the opportunity to pivot to a multi-disciplinary manufacturing supplier, JRS Manufacturing Group is pioneering the workforce of the future and preparing to skill the workers to match.

The first intake of students is already delivering positive outcomes. “We have ten new apprentices that have signed on. They have come from outback Queensland. They’ve come from interstate. They’ve come from different lines of work—office jobs, beauty salons, abattoirs. We’ve had a really diverse range of individuals sign up and want to be a part of the Academy. They’ve connected really well and it’s fantastic to see the manner in which they’re picking up the skills. The excitement that they’re generating has already bled into our organisation more broadly—it



“Through the JRS Skills Academy, we seek to redefine the manufacturing skills landscape by re-engaging young people through human centred skills transformation to understand the value of trade apprenticeships and future employment security.”

is thrilling to watch. We’re seeing the results of the mentorships we’ve built within the business and the mindset we’ve encouraged our staff and industry partners to take on. The first year of the Academy is going to be incredible—we’re going to have some great results.”

“This model is critical to the success and the future of the manufacturing industry. It is absolutely something I would share with any other business that is keen to take on that human-centred transformation around training,” said Jasmine.

#### Partnering with TAFE Queensland

JRS has partnered with TAFE Queensland to launch the Skills Academy. JRS Skills Academy provides training and assessment of accredited qualifications on behalf of TAFE Queensland.

According to TAFE Queensland’s Manufacturing Faculty Director, Col Batzloff, “Throughout its 140 years, TAFE Queensland has demonstrated its agility in meeting emerging industry needs. The future is now and our partnership with such an innovative company ensures the evolution of traditional trades to meet the needs of a new generation. This is an exciting opportunity for everyone involved that will have real world impact.”

#### Qualifications Available at the JRS Skills Academy

##### Boilermaker - Fabrication & Welding

Assemble fabricated components, perform sheet and plate assembly, interpret technical drawings, and perform gas tungsten arc welding, manual metal arc welding, gas metal arc welding and welding to code standards. You will acquire industry-specific skills, as well as skills in planning, engineering measurement, interpreting technical drawings, and computer technology.

##### Mechanical - Fitting, Turning & CNC

Theoretical and practical aspects of the manufacture, repair and replacement of engineering components for a variety of machinery. You will design and manufacture modifications and gain skills in the maintenance of plant and equipment. Develop the ability to work effectively and safely using specialist tools and equipment and execute CNC programming.

##### Aircraft Surface Finishing Trade

Prepare the surfaces of aircraft and aircraft components for the application of surface finishes, apply paint, specialist finishes and decals or stencils. Also required for the application of aircraft registration markings, national markings and organisational logos.

##### *Courses currently under development:*

##### Specialised Industrial Surface Preparation and Coating Application

Skills and knowledge required to perform a wide range of surface preparation and protective coating application operations which occur across a range of typically heavy industry and infrastructure.

##### Electroplating and Specialised Chemical Finishing

Skills and knowledge required to perform a wide range of surface preparations for both standard metals and composite materials. Understanding of chemical make up, testing and balancing, standards and systems utilised to support aviation, industrial and automotive applications.







## About JRS Manufacturing

JRS Manufacturing Group is a Toowoomba-based steel fabrication and welding company that specialises in fabrication consultation and construction of plate, pipe and structural steel products for clients in the civil, energy, mining, agricultural, oil and gas industries.

Established in 2014 with a small team of five people, the company originally rented a small shed and focused on boilermaking. In the years that followed, JRS grew quickly. The company expanded its service offering, quickly realising that in-house sandblasting and painting capabilities were needed to complement their fabrication services. In 2015, JRS purchased a separate paint shop, which increased their fabrication output. In 2019, with a strong future firmly on the horizon, JRS purchased a much larger workshop.

Today, the company boasts a workforce of more than 50 people and is looking to employ a lot more apprentices to handle the company's expected future growth. Their services encompass pressure pipe fabrication and welding, abrasive blasting and coating, medium to heavy plate fabrication, specialised surface treatments, CNC and general machining and assembly.

## The JRS Approach

JRS guarantees to design, manufacture and deliver steel products that consistently meet unmatched quality standards. Their team ensures that any equipment and materials purchased are fit for their purpose, meet required safety standards and do not compromise on quality.

The JRS Manufacturing team adopts a two-pronged approach to each trade skill within its Hybrid Manufacturing Hub.

All their team members are more like 'skills architects', carefully and deliberately applying design-based strategy with building-based execution.

This drives outcomes that deliver superior quality, collaborative innovation and long term manufacturing partnership success.

## Further Information

For information, visit: [jrsskillsacademy.com.au](http://jrsskillsacademy.com.au) or [jrsmanufacturinggroup.com.au](http://jrsmanufacturinggroup.com.au)



# A CENTURY IN THE MAKING

**Bradken's 100 year history is founded on innovation, growth and the ability to overcome challenges**

Building on 100 years of manufacturing and engineering expertise, Bradken is embracing continuous improvement and taking a new approach to support customers in adopting innovative solutions. Bradken specialises in the innovative design and manufacture of cast and fabricated iron and steel products for the mining and resources sector, as well as the rail and transit, energy, structural and industrial casting and defence markets. From small equipment pins to buckets, Bradken manufactures products from 500 grams to over 25 tonnes. Bradken today is a far cry from its humble beginnings in the 1920s, which were grounded in luck, some true entrepreneurial spirit and a dedicated commitment by its founders.

## A Winning Bet

What began with a lucky bet led to a bold new venture and the beginnings of Bradken.

In 1920, Leslie Bradford (General Manager) and Jim Kendall (Chief Mechanical Engineer)—two BHP steelworks employees—got lucky at the races one day and pledged their £15,000 winnings to start a steel foundry business. The horse they backed, 'Jack Findlay' completed a remarkable sequence of five wins during 1919 and 1920. With each win, Leslie Bradford, Jim Kendall and a group of friends rolled-over their bets. By January 1920, they had won a small fortune.

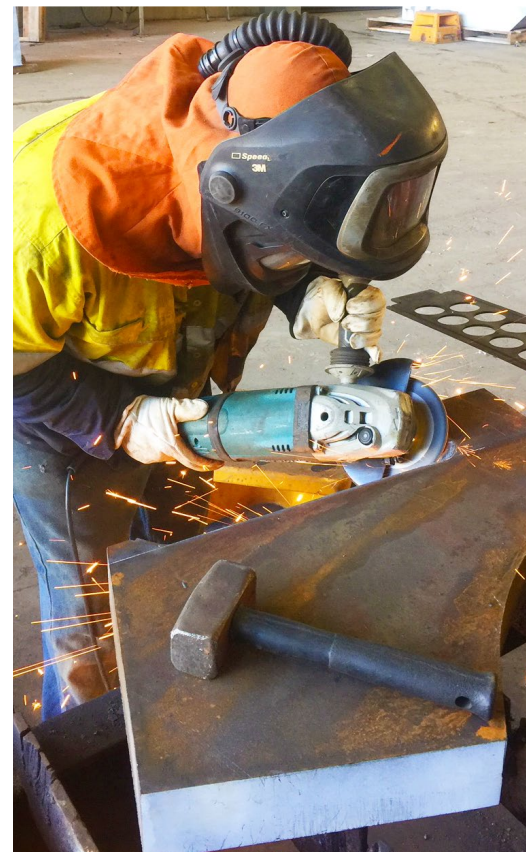
On 28 April 1920, the group used their winnings to establish the Alloy Steel Syndicate and build a steel foundry in Alexandria, Sydney to take advantage of what they saw as an untapped potential for industrial

growth. Bradford Kendall Ltd was incorporated on 20 March 1922.

With its entrepreneurial spirit, and by meeting the needs of customers in more challenging markets, Bradken quickly established a name for itself in Australia and overseas.

In 1926, Bradford Kendall started to manufacture licensed products including railway couplers and under-carriages. This was a development that led to the first of many strategic business relationships, including a close affiliation with American Steel Foundries, which still exists today. It began supplying manganese steel products to the mining industry and eventually began manufacturing dredge buckets for the Malayan tin industry – one of the first steps in developing an export business.

Adapting and changing to markets through the Great Depression and







#### Photos (clockwise from top)

Whatever part of the mining process you're involved in, Bradken has you covered from pit to port, including Hitachi truck trays like that pictured.

HITACHI AC-3 EH5000 ULW tray manufactured and tested by Bradken's Ipswich facilities—the only qualified OEM facility in Australia.

A 100% Bradken designed and manufactured coal rotary breaker barrel.

One of Bradken's welders hard at work at their Ipswich facilities.



World War II, Bradken revealed its true character as a company and thrived. The company was engaged by the Federal Government to build cast armour for the Australian Built Tank Program. While it began by producing aerial bombs, naval gun parts and tank hulls, its biggest contribution to the war effort was the development of the world's first one-piece cast tank hull in 1940.

After the war, Australia needed to rehabilitate its neglected railway systems and the introduction of diesel electric locomotives along with demand for higher speed and larger capacity freight trains were key forces behind Bradford Kendall's growth. In 1948, the company took advantage of this boom and listed on the Sydney Stock Exchange.



During the 1950s, 60s and 70s, Bradford Kendall continued to expand its local operations, as well as build on its early export success.



## Bradken Announces \$68 Million Investment for 2022

Bradken is investing a record-setting \$68 million throughout the 2022 financial year in infrastructure upgrades and capacity expansion projects at its sites around the world.

Craig Lee (Executive General Manager Manufacturing, Bradken) said the program is part of Bradken's broader innovation and sustainability strategy, to meet the challenges of our customers and to continue to be regarded as a leader for wear solutions in the global mining market well into the future.

"This year's investment surpasses our previous record investment by more than 13% and includes funding for two key capacity expansion projects at our foundries, as well as more than 180 other smaller projects spread across our worldwide network of sites," said Craig.

"Bradken has been part of the foundry industry since its beginning 100 years ago, and the truth is it's an energy exhaustive industry - we need to do our part to reduce the greenhouse gas emissions produced by our manufacturing sites from electricity and fuel consumption."

"Sustainability-focused improvement and site and equipment upgrade projects, like installing a dust extraction system and solar power at our site in Mt Thorley, Australia, a shakeout manipulator for reducing fugitive emissions in Coimbatore, India, and replacing the greens and extraction system at our foundry in Wodonga, Australia are just one way that we're working towards an environmentally compliant and carbon neutral Bradken, and the establishment of a world class sustainability culture that will see us still operating well into our next 100 years."



In December 1974, the company officially changed its name to Bradken Consolidated Limited.

Over the years, the company has changed ownership several times. In the early 1980s, the Company was purchased by Australian National Industries, which was then purchased by Smorgon Steel Group in 1999, and then sold onto CHAMP in 2001. In 2004, Bradken listed on the Australian Stock Exchange and, in 2017, became a wholly owned subsidiary of Hitachi Construction Machinery Co. Limited, a member of the Hitachi Group, leading the company into a new era.

### Durable, Reliable Solutions

Over time, Bradken has found a calling in the mining industry in the design, engineering and manufacture of high-quality ground engaging tools, undercarriage systems, buckets and blades, along with mineral processing and fixed plant wear solutions.

With worldwide manufacturing, sales and distribution networks, Bradken supplies to the world's major mining, industrial, rail, transport, defence, power and manufacturing companies.

According to Bradken's CEO, Sean Winstone, it is Bradken's dedication to utilising the latest technology and innovations, whilst partnering with customers will drive change in the industry that has been the key to their success.

"Bradken is a business committed to the evolution of mining and resources, with its people at the forefront of innovation and technology," Sean said. "To make it to 100 years, is quite a milestone for any company, and we're very proud. A business and the individuals involved with it have to be resilient and innovative, as well as committed to strong values."

"Throughout the years we have demonstrated and embraced the values at the heart of Bradken's success, such as taking on challenges, seeing the customer in everything we do and working collaboratively to achieve goals both for our customers and the business. Matching our history of working with customers to understand what they need and value with technology solutions is key to Bradken's future as we hone in on the mining and resources sector," Sean said.

Today, Bradken's digital solutions





offer performance and condition monitoring, analysis and reporting for mineral processing and materials handling operations, along with mining machine wear products. Their solutions allow planned maintenance to be scheduled within production programs, improving site efficiency.

Bradken supplies customers with solutions that support their asset management processes, via secure wear monitoring and reporting systems.

### Exceptional Welding Capabilities

Bradken boasts exceptional welding capabilities. With long-term team members who hold various licences and inspection qualifications, Bradken's welding is always completed to the highest quality standards.

Bradken's Ipswich workshop is the only facility in Australia qualified by HITACHI Tokyo to undertake direct OEM welding and fabrication. In order to gain this qualification, Bradken's facilities, capabilities and procedures underwent in-depth review by inspectors from Japan.

Bradken also has the only inspector in Australia qualified to undertake

direct OEM welding and fabrication ultrasonic testing. This also required confirmation from Japanese inspectors. Bradken's inspector also holds a certification to ISO 9712 Level 2 for penetrant, magnetic particle and ultrasonic testing.

In addition, Bradken is certified to a variety of Australian Standards, primarily AS 1554 Parts 1, 2, 3, 4 and 5.

### Building A Sustainable Future

Bradken aims to be a good corporate citizen, investigating ways to reduce any adverse impacts of their operations. Bradken has committed to the goal of becoming carbon neutral and having net-zero operational greenhouse gas emissions by 2030.

They're already taking steps to minimise their environmental impact. Approximately 75% of Bradken's energy is derived from renewable resources such as wind, solar and hydro. Plus, 98% of their mill liners are comprised of recycled materials and re-used liners.

Bradken also cares about their people, their safety and well-being, and the communities in which the

company works. Bradken strives to make sure their workplace is a diverse and inclusive place to work. They maintain a focus on operating at an industry-leading quality, with excellent customer satisfaction, high productivity and good governance.

In support of workplace diversity, CEO Sean Winstone recently announced Bradken's commitment of a \$20,000 contribution to Newcastle University's HunterWiSE STEM program. HunterWiSE is a partnership which supports women and girls in STEM careers and school subjects, nurturing the current and next generation of problem solvers in the local region.

"We look forward to what the future holds, and delivering innovative solutions that improve safety, sustainability, performance and productivity for our customers," said Sean.

### Further Information

For further information about Bradken and their capabilities, visit: <https://bradken.com>



The Australian Robotics Centre is working to improve the collaborative robotics capability within Australian manufacturing by training the next generation of manufacturing leaders, researchers, and technicians.





# AUSTRALIAN COBOTICS CENTRE

## A safer, more efficient, globally competitive manufacturing industry

Manufacturing in Australia is dominated by small to medium enterprises (SMEs). Many of these businesses are not in a position to adopt mass production manufacturing methods due to the small volumes and large variety of things they produce. Low-volume, high variability of product is considered a strength of these businesses as long as they can remain cost competitive. A combination of labour shortages, constantly improving health and safety considerations and the need for increasing efficiency of the manufacturing process are driving some of these SMEs to consider new ways of adopting collaborative robots (known as cobots).

The Australian Cobotics Centre is working to help SMEs adopt the use of cobotics. The Centre's research programs address both the technological advances and the human and design factors that need to be considered when adopting collaborative robotics. Through this research and its implementation, the Centre will support manufacturers in creating a digitally-capable workforce of the future and a safer, more efficient and globally competitive Australian manufacturing industry.

According to Jonathan Roberts (Centre Director, Australian Cobotics Centre), "Our five research programs and their projects have been designed to maximise collaboration

between industry partners and across the universities. The goal of the Biomimic Cobots Program is to allow collaborative robots to mimic humans in acquiring perception and awareness, learning, adaptation, and manipulation skills."

"The Human-Robot Interaction Program addresses how humans are made aware of the movement and intentions of robotic systems, and will look at how to leverage multimodal interaction, including Augmented Reality and Virtual Reality, with robotic systems."

"The aim of the Designing Socio Technical Robotic Systems Program is to embed holistic design as a

critical factor in creating seamless integration of humans and machines working together to improve human work conditions and environments, and increase effectiveness and efficiencies in production, as well as workforce acceptance," said Roberts.

"The Quality Assurance and Compliance Program will develop tools for the specification, capturing, monitoring and evaluation of such a digital thread in human-robot and robot-human collaboration scenarios."

"The Human-Robot Workforce Program aims to answer research questions associated with: future skills and training needs; design and safety of jobs of the future;



### About the Australian Cobotics Centre

Opened in August 2021, the Australian Cobotics Centre is funded for five years as part of the Australian Research Council's Industrial Transformation Research Program scheme. The Centre's aim is to create a safer, more efficient and globally competitive manufacturing industry. The Centre's objectives are to: improve the collaborative robotics capability within Australian manufacturing, and train researchers, engineers, technologists and manufacturing leaders with the skills and expertise needed to apply collaborative robotics technology. Headquartered at Queensland University of Technology (QUT), with two other locations at The University of Technology Sydney (UTS) and Swinburne University of Technology (SUT), the Centre is expected to build the human and technical capability needed to underpin Australia's global competitiveness in advanced manufacturing.

“There are ample opportunities for cobots to make businesses more efficient and improve the conditions of staff undertaking welding. We can potentially make welders’ job easier and better with cobots.”



ARM Hub's Mechatronics Engineer, Amelia Luu, and MetalTech Industries' lead welder program the cobot.

managing workplace readiness for the successful implementation of collaborative robotics; and the benefits of greater workforce diversity and longevity,” said Roberts.

“We’ve already completed a number of site visits to businesses and Weld Australia members who are interested in exploring the use of cobots in welding. These businesses stepped us through their existing operations, and we ran them through what other companies have implemented in terms of cobotics. What is clear from these site visits is that there are ample opportunities for cobots to make businesses more efficient and improve the conditions of staff undertaking welding. We can potentially make welders’ job easier and better with cobots.”

### Case Study: MetalTech Industries

Developing shop-floor capability of SMEs to adopt technology is essential for the growth of advanced manufacturing within Australia. The Cobic Centre’s industry partner, the ARM Hub recently worked with MetalTech Industries in Wacol to achieve just this.

ARM Hub’s Mechatronics Engineer, Amelia Luu, worked alongside MetalTech Industries’ lead welder to improve their jig design and co-bot program.

By working together they were able to augment his welding expertise with her knowledge of collaborative robot programming to trouble-shoot solutions and successfully perform small batch TIG welding of brackets

– a task that was previously unable to be fulfilled.

Although cobotic welding systems are commercially available and are increasingly in demand to address skills shortages, the user interfaces and variable support services post-commissioning, can be problematic for new users and traditional manufacturers – particularly when compared to the traditional machining systems (like CNC cutters and benders) that manufacturers are used to.

With the support of ARM Hub, MetalTech Industries’ adoption of advanced technology will enable digital capability growth, skills expansion and increased production.



## Industry Assistance Package

Weld Australia is offering its members the opportunity to become Secondary Partners under the Weld Australia umbrella.

According to Geoff Crittenden (CEO, Weld Australia), "Together, the Australian Cobotics Centre and Weld Australia are offering practical solutions to industry that flow from the research undertaken at the Australian Cobotics Centre. By participating in the program, companies can expect benefits like access to subsidised advanced manufacturing technology designed to solve specific manufacturing problems, enhanced productivity, increased safety, and minimised employee turnover."

Secondary Partners have the opportunity to jointly develop a specific project that provides value to their organisation without having to fund the associated research and development costs. It also provides access to workforce training and development to enable the implementation of cobotic and associated technologies.

As a Secondary Partner, you will receive:

- A planning workshop delivered by the Australian Cobotics Centre team to identify the project scope, outcomes and milestones
- A resulting proposal that outlines the project and any subsequent 'translation' projects that may be implemented
- A proposal that shows how the research applies to your project

Funding provided by the Secondary Partner will cover costs associated with equipment for prototyping solutions, the PhD scholarship of the student working with the organisation, and site visits. The Secondary Partner will also be responsible for directly procuring any equipment that might be required for the final solution.

There is also a range of other associated benefits, including: access to a network of industry partners with which to share experiences and resources that drive value-delivering technological and workforce changes; linkages to a network of suppliers who can assist with automation; and access to world-class research and infrastructure and facilities.

### Further Information

For further information, or to become a Secondary Partner, contact Geoff Crittenden (CEO, Weld Australia) via email: [ceo@weldaustalia.com.au](mailto:ceo@weldaustalia.com.au)

## Open Innovation Network

One of the most unique features of the Australian Cobotics Centre is its open innovation practices.

"Open innovation is a distributed innovation process based on purposively managed knowledge flows across organisational boundaries, using pecuniary and non-pecuniary mechanisms in line with each organisation's business model."

This Open Innovation Network is key in supporting the Centre's to increase the collaborative robotics capability and train researchers and industry, both within the Centre and beyond. The group:

- Brokers peer-to-peer collaboration and business knowledge transfer between Partner Organisations arising from Centre programs and outcomes
- Delivers industry-focused workshops for Centre students, researchers and Partner Investigators to explore wider industry application
- Offers demonstration events and workshops for Partner Organisations and manufacturing industry stakeholders to showcase Centre outcomes

For more information, visit:

[australiancobotics.org/open-innovation-network](http://australiancobotics.org/open-innovation-network)



# COBOTICS SURVEY RESULTS

## Advanced technology, production challenges, and critical job roles

The Australian Cobotics Centre conducted a survey of Weld Australia members in January and February 2022. The survey focused on cobotics knowledge, interests and requirements, as well as the workforce and technology challenges being faced by industry. 41 responses were received from all over Australia, with the majority of respondents located in Queensland and Victoria. Most survey respondents indicated that they operate in the manufacturing, mining, oil and gas, or power generation sector.

### Advanced Technology

When asked about their use of advanced technology, 39% of respondents indicated that they do not have advanced technologies in their workplace. Nine had robots, two had cobots, five used virtual reality, and five used augmented reality. One stated that they use automated welding and forming, and one uses straight line welding gantries and track welders.

When it came to implementing advanced technology, the survey revealed a range of attitudes. 14% of

respondents said their organisation had not considered implementing robotic or cobotic technology, while another 12% were undecided on its implementation. 7% had previously tried integrating advanced technology in their operations, but were unsatisfied with the results. Another 21% would like to implement cobots but either had barriers, or didn't know where to use them.

Fifteen respondents did not have any relationships with engineering firms to assist in implementing new production methods. A further

two had previous, but not current, relationships with engineering firms. Fourteen had current ongoing relationships with engineering firms or were engineering firms.

### Production Challenges

Respondents were asked to indicate their most difficult production challenges. 56% of respondents indicated that efficiency was a challenge, and 48% indicated that quality control was a challenge. Other common challenges included supply chain issues and worker safety.

Respondents identified several ergonomically or environmentally challenging tasks that may be a target for cobots to assist workers, including:

- Grinding
- Overhead welding
- Polishing
- Cutting
- Material handling and processing
- Repetitive manual handling
- Heavy lifting
- Radiography weld inspections

### Critical Job Roles

Organisations were asked to identify challenges associated with attraction, retention, training, diversity, and health and safety. The key challenge was identified as finding and recruiting skilled workers.

Training staff in new skills and processes and maintaining accuracy







in jobs subject to human error were also identified as major challenges.

A wide range of critical job roles were identified, with welding highlighted as the most critical. Other critical roles included project managers, supervisors, and staff with knowledge of welding and health and safety standards.

### Implementing New Technology

When asked to indicate the relative importance of factors when implementing new technology, 34% of respondents stated that the design and setup of the workshop is very important. Training staff in new skills, and the cost of the technology were also identified as very important. Addressing employee concerns related to operating new technology, safety, quality and job security was also identified as critical to implementation.

The Australian Cobotics Centre's research programs take a holistic approach to managing these challenges by addressing the design and human factors that arise when Cobotics are introduced to the workplace. The research programs aim to improve collaborative robotics capability within Australian manufacturing in ways that also help to attract, retain and develop workers for the future of manufacturing.

**Source:** Laundon, M., Williams, P. and Hearn, G. (2022) *Australian Cobotics Centre Survey of Weld Australia Members Summary Report*, Queensland University of Technology and Australian Cobotics Centre.

### Further Information

If you'd like further details, or are keen to get involved in the Australian Cobotics Centre visit: [australiancobotics.org](https://australiancobotics.org)

## The Benefits of Cobots

Cobots are specifically designed to share the work space with human beings, making automation easier for businesses of all sizes, particularly SMEs. Cobots are generally versatile, lightweight, require relatively little space, and are much easier to program than their industrial counterparts. They can also capture large volumes of data that can be deployed in areas such as predictive maintenance.

### Improved Productivity and Profitability

Robots and cobots play an essential role in creating lean manufacturing processes, helping reduce or eliminate redundancies, errors, bottlenecks and waste. The right type of technology can help eliminate workflow delays and duplications and accelerate entire processes through the automation of individual tasks.

### Superior Quality and Repeatability

The integration of cobots into production processes is proven to deliver superior quality outcomes and higher repeatability. Any process that improves weld quality and repeatability is worthwhile. Welding is not just a commodity, or a simple, straightforward process. When welds fail, the results can be disastrous. A poor quality weld can be hugely expensive, and can cause massive damage, injuries, and even fatalities.

### Growth in Domestic and Export Markets

With increased productivity, quality and repeatability, manufacturers are able to leverage new domestic and export markets. Increases in productivity enable manufactures to deliver on changing customer needs and mass customisation, while maintaining a sustainable competitive advantage.

### Safer Working Conditions

The use of robots and cobots has the power to improve safety for welders and manufacturing workers. As automation reduces routine, dangerous manual work, workplace injuries are expected to drop by as much as 11%. For instance, the use of robots and co-bots (particularly in confined spaces) helps to remove welders from immediate exposure to welding fumes, ultraviolet radiation, heat and sparks.

### Greater Job Satisfaction

A move towards the use of robots and cobots will unburden the average Australian of two hours of the most tedious and manual work each week. Approximately 62% of low-skilled workers will experience improved job satisfaction, and wages for non-automatable work will increase by around 20%. Introduction of cobots into production lines allow businesses to make better use of human skill and innovation, with machines taking over mundane tasks so that employees can focus on critical thinking, quality and creativity.

# HILTON: DYNAMIC. DIVERSIFIED. PROGRESSIVE.

## Precision engineered sheet metal products since 1976

Established in Dandenong in 1976, Hilton Manufacturing provides a complete product service, from inception right through to completion. Hilton's experience and expertise extends across all aspects of sheet metal manufacturing, including the rolling, forming, bending, pressing, folding, CNC routing, machining, welding and polishing of aluminium, mild steel and stainless steel. With a focus on quality control, lean manufacturing principles and robotics, Hilton is poised for even more success.

Since the company's inception in 1976, Hilton Manufacturing has set the highest of standards in precision engineering and manufacturing quality, living by their values of Dynamic, Diversified and Progressive.

Husband and wife team, Margo and Tom Hartley, established Hilton Manufacturing in Dandenong, in Melbourne's south-east. According to Todd Hartley (Managing Director, Hilton Manufacturing), "My mum and dad started the business in a little 300m<sup>2</sup> shed in Hilton Street in Dandenong—that's where the company name comes from."

A tool maker by trade, Tom already had a diverse range of experience under his belt. He'd completed his apprenticeship at Repco in Richmond, and worked at International Harvester and a couple of other sheet metal businesses.

"Tom had just been retrenched from another sheet metal company, and he thought 'bugger this, I'll go and start up my own business'. And so

that's how Hilton started. Our first workshop was across the road from International Harvester—they soon became our first client. From there, the company just grew. We stayed in Hilton Street for about five years, before moving into a larger premises to better service our growing client base," said Todd.

"In the late 1980s when the recession hit, we were purely a truck component manufacturer. We realised that we couldn't just rely on one industry. So, we looked at expected market trends for the next 20 to 30 years. Baby Boomers would be retiring and either buying a caravan and travelling across the country, or going into a nursing home. So, we approached a caravan assembler and became their preferred supplier for sheet metal, and followed a similar scenario for manufacturing hospital beds."

**Photos:** Hilton's main 20,000m<sup>2</sup> headquarters and manufacturing plant in Dandenong, Melbourne.







“Our key was to diversify outside the trucking industry, which helped fast track our growth. We had a business plan in place that emphasised measured growth, and we marketed our capabilities in trucking—rather than the industry itself—to bring other industries onboard,” said Todd.

Hilton Manufacturing remains a family owned and run business, and now operates from two modern manufacturing facilities. Their main 20,000m<sup>2</sup> headquarters and manufacturing plant is still in Dandenong, while their 6,000m<sup>2</sup> northern manufacturing is located in south-west Brisbane.

“Even with our significant growth and expansion, Hilton continues to be based in Dandenong. We think this is important. We see Dandenong as the largest manufacturing hub in the country. Not only is there a significant number of OEMs in the area, there is also an extensive supplier network, which is very convenient,” said Todd.

Hilton services the needs of clients across a range of diverse industries including transportation (truck, bus, rail and leisure), defence, civil, commercial, agricultural and health care.

Hilton is proud of its working associations with some of the world’s great vehicle brands, including Kenworth, Volvo & Mack, Daimler-Chrysler, Volgren New Age Caravans and Rheinmetall Defence. These manufacturers recognise and rely on Hilton to produce the highest quality sheet metal products and associated componentry, as well as original equipment.

Hilton’s product experience and quality has also led to providing products beyond the local Australian market into export markets for brands like Tata Daewoo in Korea; Hino, Nissan UD and Isuzu in Japan; Westport in Canada; and Scania in Sweden.

“We see ourselves as one of the largest sub-contractor sheet metal manufacturers in the country. We work with aluminium, stainless steel and mild steel, up to 16mm in gauge. We currently employ over 300 staff, and have a workshop with 80 pieces of CNC equipment. We’ve also invested heavily in automation over many years, and are having our 19th welding robot commissioned at the moment,” said Todd.

“We can make just about anything—no job is too complicated. Our business is very diverse, which allows us to be a preferred supplier not only for the truck industry, but for healthcare, caravans, bus, traffic management and defence. We’re even investigating opportunities in the power generation industry at the moment, which we think will be a





major growth industry for many years to come.”

### The Secret to Hilton's Success

When asked what their secret to success has been over the last 45 years, Todd had a straightforward answer.

“We’ve always had a philosophy of measured growth. We don’t like peaks and troughs. We maintain measured growth through efficiencies in the workshops, and investments in equipment and automation,” said Todd.

Hilton has heavily invested in its people, processes and plant to ensure the company remains highly competitive in a global economy. Many of their more repetitive high-volume processes are undertaken by robotics, to ensure cost effectiveness and consistency of outcomes. Despite this, Hilton is still very much a ‘people operation’ that supports its growing team. Hilton really only looks to robots where production volumes, capacity or safety dictate the necessity.

A lean manufacturing culture is also ingrained in Hilton’s DNA to ensure the company’s ongoing global competitiveness. Their processes encompass Lean Capability, 5S and Just in Time methodologies.

“We follow lean principles in our manufacturing, and try to simplify our processes wherever possible. We are continually reviewing our shopfloor layout for further efficiency. We currently manufacture over two million parts per annum so it is critical that we don’t over complicate things on the shop floor. Most of our efficiencies come from embracing lean principles, which make all our products highly price competitive,” said Todd.

Quality control and assurance has also played a key role in Hilton’s success over the years. Hilton is accredited to internationally



recognised standards ISO 9001 *Quality management*, ISO 14001 *Environmental management systems* and AS/NZS ISO 3834.2 *Quality requirements for fusion welding of metallic materials*.

“We worked closely with Weld Australia to become certified to AS/NZS ISO 3834 in 2020. At the moment, we’re working with Weld Australia again on certification to DIN 2303 *Welding and allied processes - Quality requirements to be met by production and maintenance companies for military products*. Once this is complete, we will also investigate certification to EN 15085 *Railway applications - Welding of railway vehicles and components*,” said Todd.

Environmental sustainability has also played a role. Hilton minimised their environmental footprint by investing in a Sun Tracking Solar Farm at their Melbourne facility. This now delivers 200 Kilowatts of capacity. Hilton also implemented variable speed drive compressors and power factor correction units at their facilities, which ensure minimal spikes in their power consumption.

### The Future of Hilton

Todd has his sights set firmly on the future. “We need to maintain our competitiveness, and keep investing in our facility and people. We have to continue to evaluate our waste, purchase more sustainably, and focus on growing industries like the electric vehicle market. We also need to continue investing in existing markets and products like our bullbars and bumper bars,” said Todd.

“I think there are enormous opportunities in the Australian welding industry at the moment. When the automotive industry closed down, manufacturing seemed to have been forgotten about. But, in the wake of the COVID-19 pandemic, it seems that the politicians are supporting the onshoring of manufacturing work.”

“The problem is, unless the local manufacturing industry has the staff and the capacity to undertake the work, it’s pointless. At the moment, the local manufacturing industry is at complete capacity—we just don’t have the capacity to manufacture the work that’s coming back into the country,” said Todd.



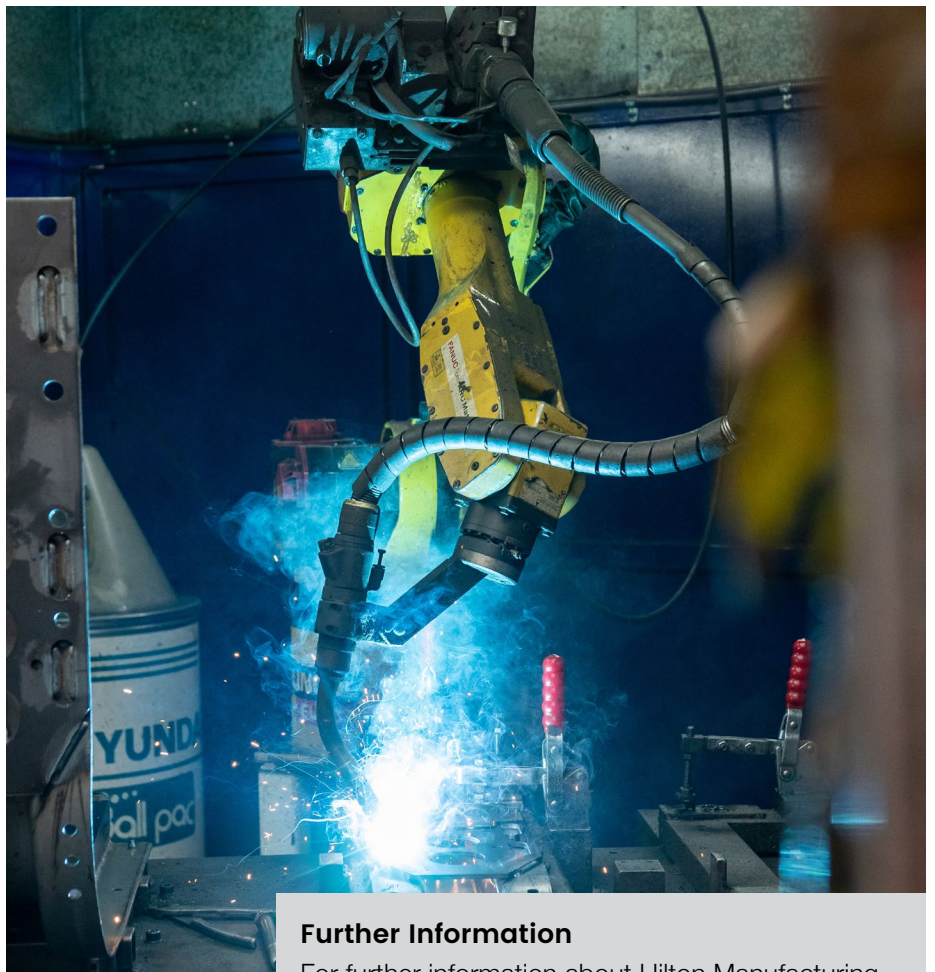
“ For a country like Australia to prosper, you need a strong manufacturing industry. The government needs to address the nation’s skills shortage before bringing manufacturing work back into the country.”



“Due to this looming shortage of welders, a number of years ago we initiated our own welding school at Hilton. We joined forces with Chisholm Institute, and had good success. The course features a modular way of training welders, with them working in our facilities for blocks of four to eight weeks.”

“SEMMA has taken the course onboard and supported enrollments, so that the course benefits the entire local region. The course could be rolled out across the state or even the entire country. We’ve been telling the government for many years now that the industry is thousands of welders short. Hopefully one day, the government will do something about the skills shortage and support the industry in finding and training the thousands of welders needed.”

“For a country like Australia to prosper, you need a strong manufacturing industry, manned by skilled workers,” said Todd.



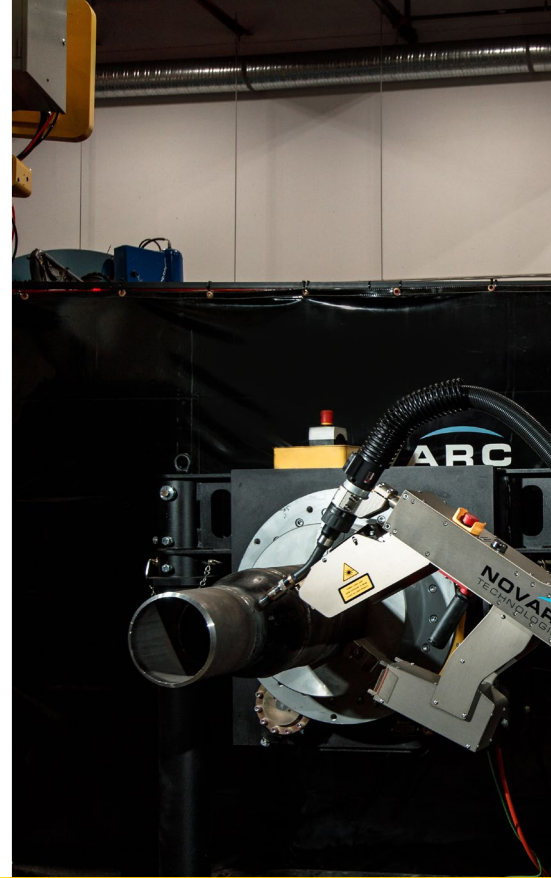
#### Further Information

For further information about Hilton Manufacturing and their services, visit: [hiltonmanufacturing.com.au](http://hiltonmanufacturing.com.au)

# THE MOVE TO AUTOMATION TO IMPROVE PIPE FABRICATION

BY SOROUSH KARIMZADEH (CEO, NOVARC TECHNOLOGIES)

There is currently an acute shortage of skilled welders required to meet the demand for pipe welding needed to construct the world's essential infrastructure: the construction of data centres, ships, hospitals, LNG plants and more. This workforce shortage combined with supply-chain management difficulties caused by the COVID-19 pandemic, has resulted in a significant challenge for the industry. Escalating costs and delays in scheduling have also created massive bottlenecks in the construction of industrial plants necessary to meet the needs of developed and developing economies world-wide.



To complicate this extremely challenging situation, pipe shops serving global industries such as oil and gas, energy utilities, water and wastewater, shipbuilding, chemical and nuclear plant construction and maintenance require highly skilled welders.

It is predicted there will be a shortage of nearly 30,000 welding operators in Australia by 2025. With an ageing welder workforce and a lack of uptake of the welder trade, there are no simple solutions to this welder demographic.

## Why Welding + Technology Makes Sense

Novarc launched the world's first welding cobot to minimise and help eliminate this bottleneck in construction by enabling welders to be significantly more productive and efficient. Novarc's collaborative Spool Welding Robot (SWR) was launched in 2016.

With Novarc's SWR, pipe fabrication shops can realise significant gains in productivity, weld quality, payback and support, typically seeing a 3-5x productivity increase in carbon steel welding, and a 12x increase in productivity in stainless steel welding. On the shop floor, introducing welding

automation technology helps junior welders take on challenging welds which previously could only be performed by senior welders, while senior welders can then broaden and extend their careers.

## Collaborative Welding

With Novarc's SWR, the collaborative robot works with the operator, who does not need to learn a special programming language or have multiple years of robotic experience. The cobot can be positioned anywhere in the shop, and only requires a 1.2m x 1.2m footprint, as the built-in safety system effectively eliminates the need for fencing. The cobot can integrate with two to five positioners for maximum arc-on time, and is fast and remarkably easy to set up, averaging two to three minutes between joints. The SWR cobot is capable of welding stringers and multipass joints to produce code-quality groove and fillet welds.

The cobot enables non-stop root-to-cap welding, with no need to shut off the arc between weld passes. The welder can use built-in features such as Tack Fusion™, Root Save™ and Repeat Pass™ to accommodate tack welds and variable joint fit-ups. These features were specifically developed with Welding Operators in

mind, to address the typical "everyday variability" associated with pipe welding and fabrication.

According to Cyrus Patel (Piping Superintendent, Western Allied Mechanical), Novarc's Spool Welding Robot is expanding their project capacity. "We're now going after projects that we were shying away from because of the size. Since we have implemented the SWR, we have been spooling a lot more and we are also taking on bigger projects, knowing that we have the capabilities of the welding in place. So it's actually helped us go after some projects that we were not going after before."

## What Semi-Autonomy Enables

The SWR cobot uses a laser scanner for tracking pipes that are 101.6mm (4") in diameter and larger that enables semi-automated seam tracking with 0.3mm accuracy. In addition, the SWR also maintains:

- Automatic stick-out distance control (tip to pipe distance) with 0.1mm accuracy
- Automatic positioner switch assembly (APSA) switching the welding cable and voltage sensing lead between multiple positioners based on operator's selection of positioner





#### Photos

**Left:** Novarc's cobot helps junior welders perform more-challenging welds previously only performed by senior welders while also allowing senior welders to broaden and extend their careers..

**Below (Left):** The cobot enables non-stop welding from the root pass to the final weld layer with no need to shut off the arc between weld passes

**Below (Right):** The pre-programmed procedures ensures that the SWR deliverables repeatable and reliable stainless steel pipe, fitting and flange welds.

### Increase in Stainless Steel Pipe Welding Productivity = Increase in ROI

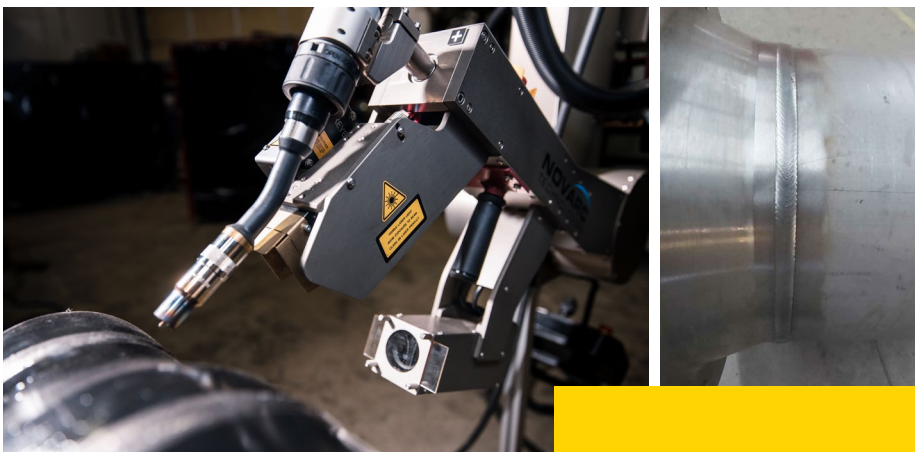
Using the collaborative SWR, pipe shops can increase their stainless steel pipe welding productivity by up to 12x, and see a 3-5x improvement in carbon steel pipe welding productivity, with a typical return on investment between six to 18 months. All while ensuring weld quality is maintained or improved.

"We were shocked to see that there was a three times increase in productivity using the SWR," said Peter Tuck (Regional Vice President, Black & McDonald). "But we're also very pleased at the high level of safety it provides our workers."

Typically, welders are producing 200-350 diameter inches per shift on carbon steel pipes, and 569-998 diameter inches per shift on stainless steel pipes with the SWR. Welders find it easy to scale up quickly, working with an easy-to-use Human-Machine Interface (HMI) which enables the welder to select the pre-programmed welding procedure, and easily tune the weld and motion parameters. Using this automation technology on stainless and carbon steel pipes helps welders achieve defect rates lower than 1%, compared to the North American average of 3% to 5% for semi-automatic welding. As well, the welding system meets the requirements of ASME Section IX,

B31.1 and B31.3, and key quality test requirements such as radiographic examination, charpy impact tests, hardness tests, bend tests and tensile tests.

This has significant practical benefits for many mechanical contractors working in pipe fabrication. According to David Ray (Fabrication Shop Foreman, W.W. GAY Mechanical), the decrease in time to weld pipes using automation technology is a game changer. "Our old way of welding stainless steel would be to TIG weld using an ID purge. A 16" schedule 10 weld would take 2 ½ hours or so to get a purge set up and the weld out. We now can do a 16" schedule 10 weld in 12 minutes that will pass RT."



Novarc's welding automation technology has revolutionised the manufacturing processes and is a productivity game changer for pipe fabrication shops serving the shipbuilding, building construction, oil and gas, and offshore industries.

#### Further Information

For further information, visit: [novarctech.com](http://novarctech.com)

# AN UPDATE FROM OUR HOTLINE

Weld Australia offers a 'Hotline' service to all Corporate Members. The purpose of the Hotline is not to provide a solution, but to advise the enquirer on practical next steps. For further advice, Weld Australia's highly experienced welding consultants can speak to you over the phone or visit your site in person. If you have a Hotline query, complete our online form: [www.weldaustralia.com.au/hotline](http://www.weldaustralia.com.au/hotline).

Weld Australia recently received a question on the appropriate application standard for the welding of wear plates to a AS/NZS 3678-250 support structure manufactured with AS/NZS 3678-250. Fillet joints were specified, and the client specified all welding comply with AS/NZS 1554.1 *Structural steel welding*, category SP.

The situation described is not uncommon. The first point to consider is that wear plates are typically manufactured as proprietary grades that are not covered by standards.

However, high strength quenched and tempered structural grades of steel are often manufactured to a standard such as AS 3597 *Structural and pressure vessel steel - Quenched and tempered plate*. This opens the door for standards that specify requirements for the welding of these steels. In Australia, such a standard is AS/NZS 1554.4.

Unfortunately, neither standard includes reference to wear grades of steel. As such, the welding of the 250 grade structural steel can proceed as per the client's request. However, the options for the welding of the wear plate are limited from a standards perspective and engineering judgement is required. Weld Australia recommended the following.

## Weld Joint

Select the appropriate weld joint

consistent with the client's request. In this case, it will be a fillet joint such as joint F1. Type F1 is identical for both AS/NZS 1554 Parts 1 and 4 and is consistent with the client's requirement.

## Welding Consumable

When welding different strength grades of steel, it is necessary to select a consumable that is metallurgically compatible with both steel types, and with the weld strength typically aligned with the strength of the weakest member.

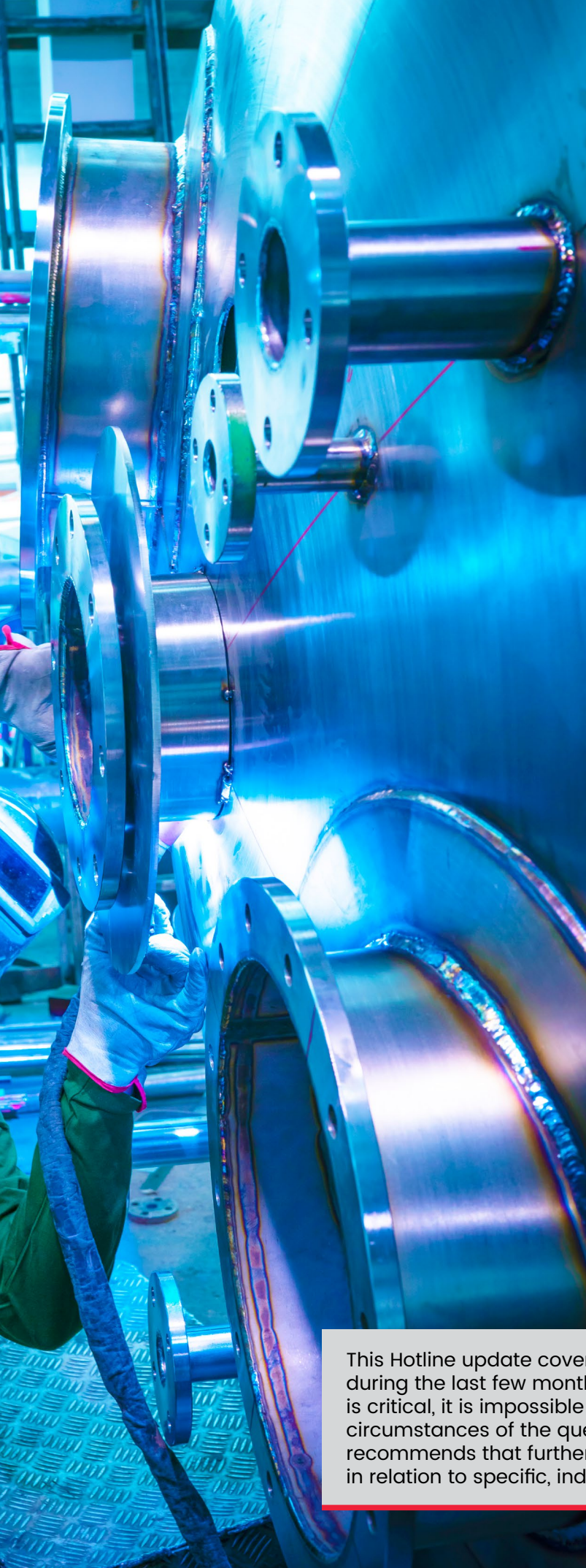
In this situation, a 490MPa consumable was recommended. However, due to the alloy content of the wear plate and its hardenability, a H5 low hydrogen welding consumable was selected. The fabricator's preference was to utilise a flux cored wire meeting these requirements and accordingly a readily available seamless FCAW wire was selected. This wire also had good impact properties down to -30°C according to its classification, further satisfying end use requirements and the minimum impact property requirements of AS/NZS 1554.4.

## Preheat and Interpass Temperature Limits and Heat Input Conditions

Preheat and interpass temperature requirements and heat input considerations are specified by the wear plate manufacturer. It is necessary to comply with these







requirements if a sound weld is to be produced. In addition, it is also necessary to comply with the preheat and heat input requirements specified for the AS/NZS 3678 grade 250 plate as defined within AS/NZS 1554.1. In many cases, the preheat and interpass temperature (including heat input) limits specified for the wear plate will overlap those for the 250 grade structural steel. As such, compliance with both requirements is usually straight forward.

### **Standards Conformance**

The scope of AS/NZS 1554.1 limits its application to steels with a minimum specified yield strength not exceeding 500MPa, and is limited in its application to the welding of conventional hot rolled steel products. However, the scope of AS/NZS 1554.4 is specific to the welding of quenched and tempered steels with a minimum specified yield strength not exceeding 1000MPa. Wear grades are typically specified by their minimum hardness usually in Brinell hardness numbers rather than strength, and in any event, their tensile strength is typically well in excess of that specified for quenched and tempered structural steel manufactured to AS 3597 and similar standards.

As the welding of wear plates falls outside the scope of both standards, it was recommended that the principles given in AS/NZS 1554.4 be applied. This meant that the selection of the joint design, welding consumable and welding conditions remain compliant with the principles of the standard. The defect acceptance levels specified in Section 6 of AS/NZS 1554.4 are also likely to be suitable. However, this should be verified via discussions and agreement with the client.

It is the qualification of the weld procedure that can be difficult, as many of the tests typically specified within Table 4.7.1 of AS/NZS 1554.4 are not applicable or are impractical to implement. Under such circumstances it would be reasonable to qualify such a procedure via two macros, omitting any alternative tests specified. However, this should be agreed with the client. Once the procedure is qualified, the welders can then be qualified via a macro as specified within AS/NZS 1554.4.

This Hotline update covers a specific query encountered during the last few months. Whilst accuracy in welding is critical, it is impossible to report in detail the full circumstances of the query. As such, Weld Australia recommends that further technical advice is sought in relation to specific, individual circumstances.



# THE CHANGING FACE OF AUSTRALIAN STANDARDS

Australian Standards are living documents. They reflect progress in science, technology and systems. To maintain their relevancy, all Standards are periodically reviewed, with amendments and revised editions published. The last few months have seen several developments, including an urgent review into Standards related to rubber hoses for welding, cutting and allied processes, and ongoing reviews into Standards related to pressure equipment and steel structures.

## Pressure Equipment

Committee ME-001 has revised AS 1796 *Certification of welders and welding supervisors*, and public comment on the draft has been resolved. The committee ballot to approve the final draft for publication has been completed and the standard was published on 24 June 2022.

As previously reported, users have reported a number of issues with the revised AS 3992 *Pressure equipment—Welding and brazing qualification* (published in June 2020), and amendments have been

prepared to address the issues raised. The proposed amendments opened for public review on 13 May 2022 and will close on 15 July 2022.

The revision of AS/NZS 3788 *Pressure equipment—In-service inspection* commenced on schedule in October 2021 and preparation of the draft for public review is well advanced. Completion of the draft for submission for preparation for public comment is currently on schedule.

## Welding of Structures

The revision of AS/NZS 1554.2 *Structural steel welding—Part 2: Stud*

*welding (steel studs to steel)* has been completed and the standard was published in December 2021. A conflict with another standard has been reported and a minor revision will be required to resolve the issues raised.

## Welding Consumables

Committee WD-002 met in March 2022 to review Australia's suite of ISO-based welding consumable standards. Projects have been initiated to revise the GMAW and FCAW suite of Standards including a proposal to supersede AS 4882 *Shielding gases for welding with*





ISO 14175 *Welding consumables — Gases and gas mixtures for fusion welding and allied processes*.

A project has also been initiated to adopt the GTAW consumable standard ISO 636 *Welding consumables — Rods, wires and deposits for tungsten inert gas welding of non-alloy and fine-grain steels — Classification* to complete the GTAW suite of standards, with the intention being to supplement and retain the existing AS/NZS 1167.2 *Welding and brazing — Filler metals Part 2: Filler metals for welding*.

#### **Welding Safety**

A proposal has been submitted to Standards Australia to revise AS1674.1 *Safety in Welding and allied processes—Part 1 Fire precautions*. The standard is used extensively in industry to establish fire preventative measures whilst welding in locations not necessarily designed for hot work. The project is intended to clarify what is meant by the term “hot work” and include provisions to assist small business and sole

traders. Associated with this project is a proposal to update AS 2812 *Welding, brazing and cutting of metals — Glossary of terms*.

#### **Bridges**

The revision of AS/NZS 5100.6 *Bridge design — Part 6: Steels and composite construction* is well under way and is intended to align the requirements the standard with the latest revision of AS 4100 *Steel structures* and the New Zealand steel structures design standard NZS 3404.1 *Steel structures*, and resolve known conflicts and anomalies via an amendment.

#### **ISO Update**

ISO TC44/SC10 has commenced the revision of the ISO 3834 *Quality requirements for fusion welding of metallic materials* series of standards primarily to take cognisance of changes to ISO 9001 *Quality management systems — Requirements* and the 2019 edition of ISO 14731 *Welding coordination — Task and responsibilities*. Parts 1 to 5 inclusive have been published.

ISO requested that Part 6 be revised to become an ISO standard instead or a technical report and work has commenced on this request.

TC44/SC10 has also been revising ISO 17660 *Welding—Welding of reinforcing steel*. This edition is planned to combine the two existing parts into a single document. A DIS ballot has been held and comments are currently under review. The sub-committee TC44/SC10 met on 24 May 2022 to progress these projects.

Similarly, ISO TC44/SC11 has commenced the revision of ISO 9606-1 *Qualification testing of welders—Fusion welding—Part 1: Steels* with the intention of combining all 5 parts into the one standard. This will simplify the ongoing maintenance and review requirements for the standards as parts 2 to 5 of ISO 9606-1 are in need of revision. A ballot on the status of the draft to date has been held and the next meeting of the working group is scheduled for June 2022.

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# AN UPDATE FROM THE AWTCs

Weld Australia has worked with partners around the country to secure State and Federal Government funding for the establishment of Advanced Welder Training Centres (AWTCs). Using the state-of-the-art Soldamatic augmented reality welding simulator, the training delivered at the AWTCs quickly qualifies welders to the only industry Standard in the world that is accepted in both Europe and America: ISO 9606-1 *Qualification testing of welders – Fusion welding*. This Standard is the minimum requirement for working on rolling stock, defence and infrastructure projects, which are crucial to onshore Australian manufacturing and a stronger national economy.

## Advanced Manufacturing School Outreach Program

In 2020, Weld Australia proposed an Advanced Manufacturing School Outreach Program to the New South Wales (NSW) Government. The Program received their support, with funding provided through the Department of Education's Vocational Education and Training Program for Secondary Students.

As a result, 32 augmented reality welding simulators were deployed in a pilot program in 16 schools across the state. The schools ranged from the Wagga Wagga, Lake Illawarra and Dapto high schools in southern New South Wales, to the Gorokan and Kurri Kurri High Schools in the Lower Hunter region.

The first pilot commenced at the beginning of Term 1 in 2021. The simulators were used to teach welding to students in Years 10-12 studying Manufacturing and Engineering, and Industrial Technology. Based on the success of the first pilot program, the NSW Department of Education ordered a further 20 simulators for another 10 high schools in regional areas.

The first tranche of the program was rolled out in the Bathurst region in January 2022. The second tranche of training took place in late February 2022 for high schools in Temora, West Wyalong, James Fallon, Shepherds Park and Junee.

In April 2022, Weld Australia commissioned another two Soldamatics for each of Cobar High School, Bourke High School and Wilyama High School in Broken Hill. We also rolled out teacher training for the machines.

## MEM 2.0 Learning Resources

Weld Australia is making significant progress with the national Metals and Engineering online learning resources project. Weld Australia is working with TAFEs across the country through the National TAFE Consortium to create excellent online resources.

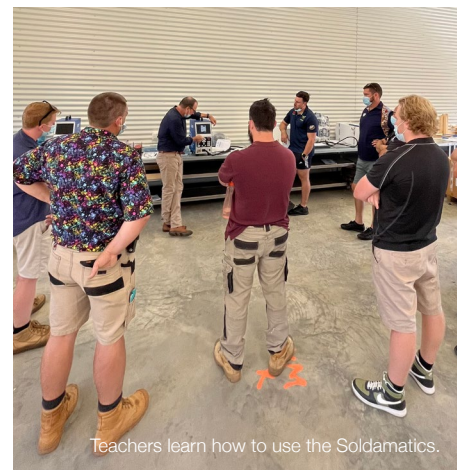
According to Michael Pitt, (National Manager Education and Training, Weld Australia), "We are creating a set of national resources mapped to the national MEM training package, so that learning resources for trade students are consistent across the country. This will help ensure consistent training, regardless of where in the country students undertake that training."

"The new resources are completely online and accessible via phone, mobile device or computer. This will allow students to access learning at the time, place and pace that suits them best. We are very excited about the project and are already seeing some great results," said Pitt.

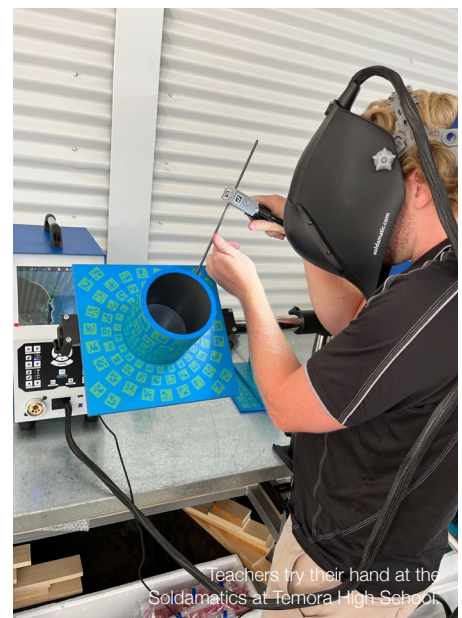
Weld Australia recently circulated the new learning resources to members of the National TAFE Consortium. The



Teachers at Cobar High School learn how to use the Soldamatics.



Teachers learn how to use the Soldamatics.



Teachers try their hand at the Soldamatics at Temora High School.



feedback was extremely positive. As a result, South Metropolitan TAFE in Fremantle, Western Australia is currently running an official pilot using the new units of competency and online resources. Once again, the feedback received from students and lecturers alike has been extremely positive. Weld Australia will continue working closely with all TAFEs nationally on further development and uptake of the learning resources.

### **VET Centre of Excellence in Welding at HM Prison Langi Kal Kal**

In 2022, Corrections Victoria expanded the VET Centre of Excellence model to deliver Fusion Welding to ISO 9606 certification standard to complement the Metal Fabrication industry at Langi Kal Kal prison. Federation University delivers the training program with the support of Weld Australia and on-site prison industry staff.

As part of the program, augmented reality (AR) training was introduced to expand the welding skills of the prisoner learners to meet international standards. A welding workshop sits alongside the AR training room so that participants can work on projects to use and practice their welding skills in the physical as well as virtual environments.

To participate in the program, prisoners are invited to submit an Expression of Interest and then selected through an interview process. Up to eight participants can be accommodated in the 14 week program. The VET Centre of Excellence model links participating prisoners with prospective employers and pre- and post-release support service providers. These connections provide prisoners with sustainable pathways to employment and support to reintegrate to society post-release.

According to Andrew Glisson (Federation TAFE Teacher), “The students all demonstrate potential and are showing excellent aptitude and skill development as we move forward through the course.”

“It has been enjoyable watching the students have ‘light bulb’ moments in their own personal skill development. It has also been rewarding to see a student develop confidence when they discover they are capable of more than they thought.”

Student Damien said: “I wanted to take part in this course to not only further my knowledge and experience of welding but to be able to give myself the ability to provide a positive, reliable, and sustainable future for my family. When I am released I am keen to find as much work as possible in the engineering trade working in the railways, or similar areas that require good welders. I don’t see my life revolving around prison and I want to have real work opportunities in the community when I’m released.”



### **ABOUT HM PRISON LANGI KAL KAL**

The land where HM Prison Langi Kal Kal currently resides was first settled as a 70,000-acre farming property in about 1838. A substantial farmhouse was built in approximately 1900. After World War II the land was subdivided and the central area, including the farmhouse, was set aside for prison purposes. The first prisoners arrived in September 1950 and the prison was officially opened in February 1951. In 1965 the prison became a youth training centre, but again became an adult prison in June 1993.

Situated on the Western Highway at Trawalla, approximately 140km west of Melbourne, Langi Kal Kal is an open camp, minimum security protection prison with all prisoners required to work during their stay unless they are over retirement age. As a pre-release prison, Langi Kal Kal specialises in getting prisoners ready for release through on-the job training and employment in a range of industries.

# WELDING FUNDAMENTALS TRAINING COURSE DELIVERS TANGIBLE BENEFITS

Weld Australia recently facilitated a two day Welding Fundamentals course for Schenck Process Australia, a leading manufacturer of mineral processing and bulk material handling equipment. The training was conducted at the company's Sydney based head office in North Ryde and was attended by 18 engineers from Sydney and Newcastle.

Schenck Process is a global leader in applied measuring and process technologies. The company makes processes work in all areas of industry throughout the world with a focus on improving the reliability, efficiency and accuracy of its customers' processes. With over 50 years of experience in the Australian mineral processing industry, Schenck Process Australia combines outstanding equipment with its process know-how to deliver innovative solutions for weighing, feeding, loading and screening applications.

At the heart of it's ability to deliver on customer expectations, is the company's engineering capability. In Australia, Schenck Process employs over 100 professional engineers that are located in Sydney, Melbourne, Newcastle and Perth.

According to the company's Design Office Manager, Dean Tiplady, ensuring that its engineers are at the forefront of technology represents a competitive advantage for the company, and so investing in the professional development of its engineering team is a key focus area.

"We design and build some of the most advanced vibrating screens, feeders and train loaders in the world which are relied on by many leading mining companies. These machines are deployed in some of the harshest operating environments on the planet, so must be designed and built to last," said Dean.

Rectification of equipment failures in the field is often difficult and expensive, however repair costs are paled into insignificance by the revenue losses sustained by mining companies due to unscheduled

production downtime. For this reason, the integrity of the company's equipment, which depends on the quality of its engineering and manufacturing practices, is vital.

"High quality welding is a critical element that contributes to the strength and fatigue resistance that influences the performance and life of our equipment. As we increase the outsourcing of our component parts, the opportunities for our designers to walk into a workshop and consult with a professional welder are greatly diminished," said Dean.

Dean says that the Welding Fundamentals course from Weld Australia bridges this gap by providing practical knowledge and hands on welding experience using a welding simulator.

The course content included standard



**Photo:** Schenck Process' Australian engineering team designs some of the most advanced vibrating screens in the world which are built at the company's state-of-the-art production facility in Western Australia.

Last year First Quantum Minerals Limited commissioned the company to produce three of the largest banana scalping screens ever to be built.

These 85 tonne giants were recently shipped to FQML's Cobre Panama mine site where they will help the company to increase the mine's production from 85-100mtpa.



fundamentals that underpinned additional content tailored by Weld Australia to align closely with Schenck Process' needs. The course was delivered in an interactive manner with the opportunity for participants to ask questions and dig deeper into their areas of interest.

"This was highly beneficial, ensuring that we took from the course what was relevant to the work that we do and what we need to know. One key outcome of the course has been a more detailed understanding of welding complexities and the governance required according to Australian Standards, and how this might translate into cost and duration of manufacturing – something that isn't always front of mind for engineering teams specialising in machine design," said Dean.

"I believe the training provided by Weld Australia has enhanced the capability of our Engineers and Designers to apply broader and more critical thinking when assessing and specifying welding, facilitating weld optimisation for the benefit of the design, the project, and ultimately our customers," said Dean.

Joe Sandor (Welding Technology Trainer, Weld Australia) tailored the course content specifically for Schenck Process, with a focus on

critical clearance, heat affected zone and distortion.

According to Joe, "The course went really well. It was the first time we have delivered the course face-to-face and there were a lot of questions, which was excellent—it showed that the students were all engaged in the course. We took a Soldamatic augmented reality welding simulator along to the course as well. Some of the students had a go and they were impressed with how close to the real thing it was without any risk of getting burnt."

#### About Weld Australia's Welding Fundamentals Course

Industry is finding it increasingly important to control fabrication, construction, maintenance and repair costs. Knowledge of welding and fabrication is vital to achieve such control. Many companies are utilising short, focused training courses for employees to expand their technical capabilities.

The [Welding Fundamentals course](#) gives professionals an understanding of some of the significant issues that may arise with welded components, and provides an overview of welding processes, weld defects, testing and welder qualification as required by various Australian and international Standards.

“

I believe the training provided by Weld Australia has enhanced the capability of our Engineers and Designers to apply broader and more critical thinking when assessing and specifying welding, facilitating weld optimisation for the benefit of the design, the project, and ultimately our customers.”

Weld Australia can also deliver this course in-house, tailoring the content to suit the needs of your business and employees. Our expert team will provide a comprehensive lists of topics, from which you can select the six that will be most beneficial for your team.

For details or to book, contact:  
[training@weldaustralia.com.au](mailto:training@weldaustralia.com.au)



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# AN UPDATE FROM WELD AUSTRALIA'S INDUSTRY GROUPS

Weld Australia's Industry Groups provide a forum for technology transfer and research and development, linking members with industry and research organisations. Weld Australia works with Technology Network members to ensure they remain diverse and resilient in the ever-changing and increasingly challenging global markets.

## PROCESS SAFETY INDUSTRY GROUP

The Process Safety Industry Group last met via Zoom on 27 October 2021 with 13 members in attendance.

### Baseline Audits

Lara Kayess (Aurecon) recently facilitated a self-assessment safety audit process of member companies. This process has enabled members to compare their systems and processes to industry best practice. Entities that participated included Loy Yang, CS Energy, Delta Electricity, Energy Australia and Synergy.

The resultant report included several recommendations for member companies. Delta Electricity and CS Energy gave an update of subsequent actions within their organisations.

### Safety Alerts

Several safety alerts were reported by members, including:

- Emergency Shut Down (ESD) valve failed to close during annual check
- Plant modifications performed on boiler components without management of change documentation
- Forced Draft fan blade actuator failed when the unit was at load
- Generator hydrogen leak

The issue of Permit To Work (PTW) systems was raised, particularly in terms of positive identification of equipment and potential use of coloured tags. Members shared details of their systems: barcoded equipment with KKS codes to match the PTW; use of ePAS; and Lock Out Tag Out (LOTO) systems

### Good Practice Guide

The Process Safety Industry Group is developing a Good Practice Guide to facilitate the management of safety processes and procedures. The document is undergoing final edits, and the current revision was discussed, focusing on:

- Safety Critical Devices (SCDs)
- Commonality of approach
- Identification of SCDs and their management
- The issue of non-critical work
- The use of appropriate performance standards
- Critical assets with no PMs
- Maintenance systems, identification and flagging at the activity level, and coding on the actual work orders
- Rationalising of PMs
- Safety critical functions and plant, and safety procedures

The next meeting of the Process Safety Industry Group will be a much-anticipated face-to-face meeting in June 2022 in Brisbane.

## BOILER INDUSTRY GROUP

The Boiler Industry Group met on 3 November 2021 via Zoom. There were 43 members in attendance.

Geoff Crittenden (CEO, Weld Australia) provided an update on:

- Online training during COVID-19
- International Institute of Welding (IIW) training
- Certification of companies
- JAS-ANZ approval which will enable certification to ISO 45001 and ISO 9001





- Licensing scheme for welding personnel
- Fabrication and manufacturing activity, as well as advocacy and access to politicians during COVID-19

Attendees then heard from several industry experts, including Mark Rooney and Stanton Puts of Loy Yang B, who gave a presentation on the failure of a reheater tube in Loy Yang B's Unit 1 Reheater 2. Ian Rawlings (CS Energy) gave an overview of boiler screen tube failures experienced at Callide B.

Doug Bell (IrisNDT) gave a presentation on the use of digital radiography to measure depth of circumferential and longitudinal cracks in water wall tubing.

Mehdi Soodi (Laserbond) gave a presentation on the refurbishment of large power generation componentry up to 28 tons and components with odd shapes and forms, where the use of low heat input using lasers is advantageous. Aron Abolis (ALS Global) and Warwick Payten (MEC Consulting) gave a presentation on their recently developed real time stress and damage monitoring software (RTDMS).

Warwick Robinson (HRL) gave a presentation on the proposed group funded flexible operations project. The project will be delivered by HRL and Uniper over a four month period. Uniper has already prepared EPRI

Guidelines and produced The High-Level Flexibility Assessment for EPRI. EPRI has a whole series of articles on flexible operations that it has produced over the last 20 years. The current study is needed to:

- Confirm the information still required
- Confirm how to perform a risk analysis on low load
- Provide information tailored for the Australian market and our type of power stations (such as brown coal)

It was noted that since the Group first proposed a flexible operations project, most organisations are a lot more prepared, have headed down the low load route, and have had experience putting units offline for periods of time. However, the National Energy Market (NEM) is changing so rapidly that plants will need to operate in an even more flexible manner, necessitating the proposed work.

While understanding that a number of power generators have information, equipment or plant that they are unwilling to share with the broader industry, the hope was expressed that generators would share broader learnings about what has helped to make their plants more flexible and what has not worked.

These learnings would leverage outcomes for the industry. A number of power generators agreed, and confirmed their willingness to be involved.



### **WELD AUSTRALIA WELCOMES NEW INDUSTRY GROUPS MANAGER TO THE TEAM**

Andrew Davies joined Weld Australia in February 2022 as Manager, Technical Industry Networks. Andrew boasts over 40 years of in-depth engineering and asset management experience across a number of power stations in New South Wales, including coal fired, gas turbines and hydro plant. Andrew will manage our Industry Groups, facilitating meetings and networking. This role was previously carried out by Alistair Forbes who has now retired. We wish Alistair all the best in retirement and thank him for all his work with the Industry Groups.

At the end of the meeting, Ian Rawlings gave an update on the activities of the Power Generation Process Safety Industry Group (PSIG), including work on guidelines for classifying and characterising process safety events and safety critical elements. The Group has assisted members to recognise that process safety is a journey and participation does enable members to determine what they don't know and what 'good looks like'.

The next meeting of the Boiler Industry Group will be a face-to-face meeting in June 2022 in Brisbane.

### **Power Generation Number 9 Project (PG-9)**

The objective of the Power Generation number 9 Project (PG-9) is to develop a database of certified weld procedures that can be accessed by the project members. The project is funded and managed by members. The database is well developed and populated. The logistics around access and procedures for future qualifications and certifications are being addressed by members.

### **FLEXIBLE OPERATIONS PROJECT**

HRL Technology Group is currently undertaking a review of flexible operations in the power generation industry. This project grew from the

Boiler Industry Group and has been underway since February 2022. HRL is partnering with a specialist consultant (Uniper-UK) to deliver the reports required by members. The final report is expected in June 2022.

### **ASSET INTEGRITY BOARD**

The Asset Integrity Board last met in April 2020. The next meeting will be face-to-face in June 2022 in Brisbane. The Asset Integrity Board will discuss the key priorities and strategic issues related to the Power Generation Industry Group. The aim is to ensure that the Power Generation Industry Group remains relevant to the members and provides ongoing value to the members.

### **DEFENCE INDUSTRY GROUP**

The Defence Industry Group fell into a hiatus during the COVID-19 pandemic and associated restrictions, and is now being re-established. A webinar is planned for 5 July to allow participants to discuss current issues in the defence industry and how a Defence Industry Group may be of benefit to members. It is proposed to include members from prime contractors, sub-contractors and suppliers to the industry.

### **WELDING SAFETY COUNCIL**

The Welding Safety Council (WSC) met on 4 May 2022. Membership of

the WSC includes safety regulators from around Australia, suppliers to the welding industry and the Australian Institute of Occupational Hygienists (AIOH).

Bruce Cannon (Principal Welding Engineer, Weld Australia) provided an update from the International Institute of Welding. In particular there was some concern regarding the importation of a new form of handheld laser welding machine. These are potentially available to the public and may pose significant safety issues to untrained users. Weld Australia will review further and will also review standards and regulations in relation to the use of such lasers.

Bruce also provided a presentation on some of the dangers associated with voltage controls on some DC welding machines. There are some machines where the DC output has fluctuating ripple in the voltage which may act as alternating current and give rise to a safety issue with users. Bruce will prepare a briefing paper on this issue.

An update was also provided on the AIOH conference held in March 2022. In particular the issue of the health effects of welding fumes was discussed. The AIOH also advised that the [AIOH Annual Conference](#) will be held in Brisbane from 3 to 7 December 2022.

A paper on women's health in the welding and electrical trades was presented. The study revealed no marked difference between the welding and electrical trades. There was no significant increase in fetal loss in welding trades compared to electrical work. The study did identify some actions (vibration and extended work rotations) which appear to be potentially modifiable factors of some importance.

A report of an electrical shock during welding was discussed. While the nature of the electric shock was low level, it had the potential to be higher and more serious.

The next meeting of the WSC will be held in late 2022.







# INVEST IN THE SUCCESS OF YOUR BUSINESS: **DEFENCE INDUSTRY NETWORK**

**Weld Australia's Industry Networks collaborate to engineer innovative solutions that enhance safety, manage risk, reduce cost, and optimise operating efficiency.**

As a result of COVID and a certain amount of industry turbulence, the Weld Australia Defence Industry Network experienced a hiatus. It's now back—bigger and better than before.

The Defence Industry Network will focus on companies who are either already operating in the defence supply chain, or have ambitions of joining it. Our aim is to ensure that contractual commitments to Australian Industry Content and Indigenous Participation are honoured.

Membership of the Defence Industry Network will be free of charge for all Weld Australia Premium Corporate Members.

Weld Australia will organise and facilitate all meetings, with agendas and areas of interest driven by members. Areas of Proprietary or Confidential Information will be recognised and appropriately managed by all participants.

## **Further Information**

For details, contact: Andrew Davies (Manager Technical Industry Networks) on 0438 428 966 or [a.davies@weldaustralia.com.au](mailto:a.davies@weldaustralia.com.au)

## **Interested in Joining?**

Weld Australia is proposing an initial online meeting to determine the level of interest and possible agenda items. Event details:

- Date: 5 July 2022
- Time: 11am – 12pm AEST
- Venue: Online Zoom

To register, scan the QR Code or visit:  
<https://portal.weldaustralia.com.au/events/>



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## **BENEFITS FOR INDUSTRY**



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Learn from the experience of other companies



Discuss supply chain issues and solutions



Focus on skills shortages and workforce solutions



Address technical and welding concerns



Address Australian Industry Content (AIC) issues and concerns



Access Weld Australia training, resources and specialist personnel



# WELD AUSTRALIA'S MEMBER DIRECTORY

Our new Member Directory provides all company members free exposure on our website. Every Corporate, Premium Corporate and Industry Group member can create a listing in the Directory with contact details, a logo, a short description of the business and their services, and industries served.

The following member types are eligible to have a listing in the Member Directory:

- Industry Group Members (always displays at top of results, logo listing and Industry Group badge)
- Premium Corporate Members (displays above corporate member listings, logo listing and Premium Corporate Badge)
- Corporate Members (standard logo listing)



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**Connect with  
Other Members**



**Demonstrate Your  
Membership**



**Help Foster Industry  
Collaboration**



## HOW TO SET UP YOUR MEMBER DIRECTORY LISTING

You can create your listing from within your Weld Australia profile. Just [log in](#) and select 'My Business Listing' from the dropdown menu under your name.

Click on 'Create', fill in your company's details, then hit submit. It's as easy as that! Listings are approved by Weld Australia prior to going live, so there may be a delay between you submitting a listing and it appearing in the directory.

**Visit the Member  
Directory**







There are two fusion welding courses that adhere to ISO 9606 Qualification test of welders on Training.gov.au. This is the authoritative source of nationally recognised training and Registered Training Organisations (RTOs). These two courses were developed in Victoria in 2018 and use augmented reality welding simulators as a key component of the training.

### TRANSITION WORKERS

To be awarded a certificate for the Course in Fusion Welding to AS/NZS ISO 9606 for Transition Workers, you must successfully complete seven units of competency (four core and three elective). Core units:

- Simulate fusion welding processes using augmented reality equipment
- Identify welding processes, safe welding practices and use of hand and power tools
- Interpret and apply AS/NZS ISO 9606 for fusion welding processes
- Perform fusion welding procedures to meet the procedures of ISO 9606-1 (Steels – carbon steels)

### EXPERIENCED WELDERS

To be awarded a Statement of Attainment for the Course in Fusion Welding to AS/NZS ISO 9606 for Experienced Welders, you must successfully complete three units of competency (one core and two elective). The core unit is: Interpret and apply AS/NZS ISO 9606 for fusion welding processes.

### FURTHER INFORMATION

For further information, contact: [training@weldaustralia.com.au](mailto:training@weldaustralia.com.au)



### ENROL IN A FUSION WELDING COURSE TODAY

Enrol in a fusion welding course through any Advanced Welder Training Centre below.

#### ACT

Canberra Institute of Technology  
[cit.edu.au](http://cit.edu.au)  
81 Mildura Street, Fyshwick

#### Queensland

TAFE Queensland

[tafeqld.edu.au](http://tafeqld.edu.au)

- Cairns Campus: Gatton, Newton, Eureka and, Wilkinson Streets, Manunda
- Townsville (Trade Centre Bohle) Campus: 763 Ingham Road, Bohle
- Toowoomba Campus: 100 Bridge Street, Toowoomba City
- Ashmore Campus: Benowa Road & Heeb Street, Ashmore
- Nambour Campus: 91 Windsor Road, Burnside
- Bundaberg Campus: 118 Walker Street, Bundaberg West

#### South Australia

TAFE SA Regency Campus

[tafesa.edu.au](http://tafesa.edu.au)

137 Days Road, Regency Park, South Australia

#### Tasmania

Tasmanian Minerals and Energy Council

[tasminerals.com.au](http://tasminerals.com.au)

13 Wellington Street, Burnie

#### Victoria

Box Hill Institute

[boxhill.edu.au](http://boxhill.edu.au)

465 Elgar Road, Box Hill, Melbourne

#### Bendigo TAFE

[bendigotafe.edu.au](http://bendigotafe.edu.au)

23 Mundy Street, Bendigo

#### Federation University

[federation.edu.au](http://federation.edu.au)

Lydiard Street South, Ballarat





# Securing the Future of **Australia's Welding Industry**

