

WAUSTRALIAN
WELDING
INSTITUTE


WELDED



FJ HAWNEY
PTY LTD

BUILDING
AUSTRALIA
FOR MORE
THAN 50
YEARS



Sponsors	Index	Page
<p>Outsource Institute of Technology http://www.outsourceinstitute.com.au/</p> <p>South Pacific Welding Group http://www.spwgroup.com.au/</p> <p>Smenco http://www.smenco.com.au</p> <p>Victor Technologies 'Cigweld' www.cigweld.com.au</p> <p>Bureau Veritas http://www.bureauveritas.com.au</p> <p>Southern Cross Industrial Supplies http://www.scis.com.au</p> <p>Technoweld http://www.technoweld.com.au</p> <p>Hardface Technologys http://www.hardface.com.au</p>	<p>FJ Hawney - Company Bio</p> <p>Weld costing</p> <p>Training Opportunities</p> <p>NanoSteel and EndoTec</p> <p>Welding Supervisors Exams</p> <p>Smenco</p> 	<p>3</p> <p>5</p> <p>12</p> <p>13</p> <p>14</p> <p>16</p>
<p>AWI operates this service for members. Information and comments in AWI publications are the opinions of specific individuals and companies, and may not reflect the position of AWI or its Directors. Information on procedures and processes herein, as well as any advice given, are not sanctioned by AWI, and AWI makes no representation or warranty as to their validity, nor is AWI liable for any injury or harm arising from such entries or from reliance on any entries. Participants should independently verify the validity of information prior to placing any reliance thereon.</p>	<p>Cover Page</p> <p>FJ Hawney is a steel fabrication and general engineering company based in Yennora, NSW. The company fabricates all types of tanks, conveyors, furnaces and furnace components (cupola recuperators, holding furnaces, and blast furnaces) plus fabrications for the mining industry which include sides for mining crushers and fan castings.</p>	

F J HAWNEY Pty Limited

Proudly Australian owned and operated

FJH is a steel fabrication and general engineering company based in Yennora, NSW. The company fabricates all types of tanks, conveyors, furnaces and furnace components (cupola recuperators, holding furnaces, and blast furnaces) plus fabrications for the mining industry which include sides for mining crushers and fan castings.



They are a company known for their troubleshooting and repairs and maintenance capabilities which is a bonus as the company completes a lot of onsite erections, fabrications and welding.



The company's current Director is Mr Greg Dawes. FJ Hawney was established in 1961, Greg began working for FJH as Boilermaker when he was 27, and became foreman and manager progressing quickly in the company.

The Dawes family took over the business in 2002. Greg and Walter forged a reputation of excellence and in 2012, Walter retired from the business after having



seen the development of FJH as a proudly, family owned and operated business with a solid history of workers (not much changeover of staff) and great relationships with suppliers, clients and workers

Developing and maintaining those great relationships are key to the company's success in sectors which include mining, oil and gas, infrastructure, defence, water, chemical, aviation, automotive and maintenance.

The list of key clients is a long one and some are listed below:

- Alcoa ARP
- Coregas
- CSR Limited
- Endeavour Energy (Integral Energy)
- Water Infrastructure Group
- Visy Paper
- One Steel
- Blue Scope Steel
- Nuplex Industries
- Siemens
- UEA Electrical
- Air Liquide
- Turnkey Engineering Group
- Rheem

FJH have been the preferred supplier of Alcoa ARP for over 20 years – fabrication and general engineering for their Yennora site, providing furnace tubs, furnace components, scrap bins, loaders, general engineering and maintenance

The company has also held the status of preferred supplier for over 15 years to Endeavour Energy. FJH maintain ALL substations from the Blue Mountains to Wollongong and the Central Coast. They fabricate, maintain and supply all components for Endeavour Energy's substations, including the building of the actual substations and large switch yards plus performing general engineering and maintenance

What is unique about FJH?

Greg states that one of the unique features of the company, is its old fashioned customer service.

However, FJH does have a large, fully fitted factory of over 600m². Most of the work is undertaken in the factory or on site; for fast turnaround. Another plus point is that very little outsourced, which allows for exceptional quality control



One other key area which makes FJH unique is that the company can (and regularly does) provide a high standard of troubleshooting to its customers.

These unique attributes led to them being chosen by Turnkey Engineering Group to build 2 rotary furnaces.

These units were built in the factory and then transported to site. Each furnace barrel weighed in at 25 tonne and the sub-frames were 23 tonne each. There was a large amount of manpower involved in the project which took 3½ months to build and install on site.

How has the company changed over the years?

Greg states that evolving FJH by constantly keeping up to date with industry standards plus re-inventing the company ensures it is always able to offer fresh services which is in keeping with the demands of its clients



Those changes and evolution of FJH have seen it continue to hold a strong piece of the market even after a lot of changes such as the turndown caused by the 'Global Financial Crisis' to the recent introduction of the Carbon tax.

While a lot of business are being moved overseas, Greg makes the point that due to the service provided, FJH customers have remained loyal, and have committed to use FJH rather than seeking cheaper alternatives or moving their fabrication procurement business overseas.

So what are the future plans for FJH?

Greg states that establishing new clients is a key driver for the company but key, is maintaining the great service to its existing clients and the unique heritage of FJH. The contact details are below:

F J Hawney Pty Limited

Phone: (02) 9632-6749
Orders Fax (02) 9632-2667
Email: enquiries@fjhawney.com.au
Website: <http://www.fjhawney.com.au>



TWI Welding Job Knowledge

Welding costs – Part 1

A previous article from the TWI (number 95), dealt with the methods of determining the weight of deposited weld metal in a joint, enabling the cost of welding consumables to be calculated.

This is obviously the first step towards calculating the cost of actually making a welded joint but there are many other factors that need to be considered but which are beyond the scope of these articles. The most significant of these costs is the overhead; the cost of providing a welding workshop or site and the costs of managing and running the organisation.

These costs are dependent on the accounting practices of the organisation. They comprise factors such as rent, rates, bank interest, cost of indirect workers, *i.e.* those not directly involved in fabricating, depreciation of plant etc. In addition, other accounting decisions (for example, where the costs of machining and assembly are absorbed) may affect the decisions on which is the most cost-effective joining method.

One of the most significant costs is that of labour and this inevitably varies with industry, time and country. The costs mentioned above cannot generally be influenced by the decisions made by a welding engineer. These articles will therefore concentrate on those aspects of welding activities that are not subject to accounting practices, overhead or labour costs.

There are many costs, other than the cost of depositing weld metal that will affect the price of a welded fabrication.

The work done by the designer in designing the most cost-effective joint in an item that can be placed in the most advantageous position for welding will have major effect on costs.

For example, the type of joint preparation the designer selects; a single or double-V preparation can be flame cut.



A J-preparation must be machined and is generally far more expensive. A machined J-preparation, however, may have less volume than a single-V, depending on thickness; will be more accurate and therefore quicker to assemble within tolerance and may result in a lower repair rate leading to a lower cost than the V preparation.

Costs that are directly affected by welding engineering decisions, in addition to the cost of actually depositing weld metal, are therefore; joint preparation, assembly time (which includes positioning in any jig or fixture and tacking), cleaning and dressing the weld, removal from jigs or fixture, post weld heat treatment, costs of non-destructive testing and cost of repairs.



The amount of weld metal deposited is rarely the same as the amount of filler metal purchased.

This is the result of losses when, for example, GMAW or submerged arc welding wire is trimmed back to the contact tip, when the wire reel runs out and the length of wire between the drive roll and the contact tip is scrapped or the wire or reel is damaged.

Such losses tend to be quite small but this is not the case with coated electrodes. Damaged flux coatings, incorrectly stored electrodes and the stub ends discarded by the welder all contribute to as much as a third of the purchased weight of manual metallic arc electrodes being scrapped.

Some electrode manufacturers' catalogues give figures for these losses which can vary depending on electrode type and diameter.

To assist in calculating the amount of welding consumables to be purchased. Table 1 gives some multiplication factors for the more common arc welding processes.

The weight of weld metal in the joint should be multiplied by this factor to give the amount of welding consumable required. These figures assume good housekeeping and shop floor discipline such that consumables are not wasted or scrapped unnecessarily.



Arc welding process	Multiplication factor
MMA (SMAW)	1.5
TIG (GTAW)	1.1
MIG/MAG (GMAW)	1.05
Sub Arc (SAW)	1.02
FCAW	1.2
MCAW	1.1

Table 1 Multiplication factor. Weight of weld metal to give the weight of filler metal required

The other consumables in this cost equation are shielding gases or flux.

The conventional shoulder height welding gas cylinder contains approximately 10,000 litres of shielding gas at a pressure of 200bar. As the gas flow rates normally used in production are around 12 to 15 litres per minute, this typical cylinder should provide in the region of 10 to 12 hours of welding time, allowing for losses at the beginning and end of the arcing period.

The rate of flux consumption in submerged arc welding is approximately 1kg of flux for every 1kg of deposited weld metal. This assumes good housekeeping and an efficient flux recirculation system.

Calculation of the amount required (and hence the cost) of these consumables is therefore relatively straightforward.

The cost of the welder's time to weld a joint does not depend solely on the deposition rate of the process. A most important factor in determining the time required by the welder is what is known as the 'duty cycle' or 'operating factor'.



This is a percentage figure giving the amount of time that the arc is burning and weld metal is being deposited versus the total time that the welder is working.

Table 2 gives some figures for the more common arc welding processes. Note that these do NOT include set-up or assembly time and individual circumstances can increase or decrease these figures.

Arc welding process	Duty cycle %
MMA (SMAW)	15 - 30
TIG (GTAW)	25 - 40
Mechanised TIG	80 - 90
MIG/MAG (GMAW)	30 - 45
Mechanised MIG/MAG	80 - 90
Sub Arc (SAW)	80 - 95
FCAW	25 - 45
Mechanised FCAW	70 - 85
MCAW	30 - 45

Table 2 Duty cycles for arc welding processes

The lost time in this figure can be accounted for by considering all of the other activities that the welder performs.

In MMA welding, for example, time is required for tacking, de-slagging and cleaning a weld pass, for changing electrodes, for changing position, for rest breaks and for removal of the item from a fixture. Similar activities need to be performed using the other welding processes.

Increasing the duty cycle is therefore one method of increasing productivity, either by organising the shop floor such that lost time is reduced or by the use of a higher duty cycle process.

However, remember that the arcing time may well be only a very small proportion of the total time to manufacture and attention to other aspects of the

manufacturing cycle may give better returns than simply increasing the welding duty cycle.

Reference to Table 2 also suggests that mechanisation is one method to increase the duty cycle.

Caution needs to be exercised, however, if the total (floor to floor) time is to be reduced. For one-off or small batch items the time taken to prepare and set up a mechanised system to weld the item may be longer than that taken to weld using a manual process.

Note also that if a mechanised system is used, the duty cycle may in fact decrease, as the welding speed is increased and the weld is completed in a shorter time although the number of items welded per day will increase.

It is therefore essential to consider the complete manufacturing cycle to achieve the most cost effective solution.

Welding Costs – Part 2

Part 1 of this article, dealt with the methods of determining the weight of deposited weld metal in a joint, enabling the cost of welding consumables to be calculated.

This is obviously the first step towards calculating the cost of actually making a welded joint but there are many other factors that need to be considered but which are beyond the scope of these articles. The most significant of these costs is the overhead; the cost of providing a welding workshop or site and the costs of managing and running the organisation.

These costs are dependent on the accounting practices of the organisation. They comprise factors such as rent, rates, bank interest, cost of indirect workers, i.e. those not directly involved in fabricating, depreciation of plant etc.

In addition, other accounting decisions (for example, where the costs of machining and assembly are absorbed) may affect the decisions on which is the most cost-effective joining method.

One of the most significant costs is that of labour and this inevitably varies with industry, time and country. The costs mentioned above cannot generally be influenced by the decisions made by a welding engineer. These articles will therefore concentrate on those aspects of welding activities that are not subject to accounting practices, overhead or labour costs.

There are many costs, other than the cost of depositing weld metal that will affect the price of a welded fabrication.

The work done by the designer in designing the most cost-effective joint in an item that can be placed in the most advantageous position for welding will have major effect on costs. For example, the type of joint preparation the designer selects; a single or double-V preparation can be flame cut, a J-preparation must be machined and is generally far more expensive. A machined J-preparation, however, may have less volume than a single-V, depending on thickness; will be more accurate and therefore quicker to assemble within tolerance and may result in a lower repair rate leading to a lower cost than the V preparation. Costs that are directly affected by welding engineering decisions, in addition to the cost of actually depositing weld metal, are therefore; joint preparation, assembly time (which includes positioning in any jig or fixture and tacking), cleaning and dressing the weld, removal from jigs or fixture, post weld heat treatment, costs of non-destructive testing and cost of repairs. The amount of weld metal deposited is rarely the same as the amount of filler metal purchased. This is the result of losses when, for example, GMAW or submerged arc welding wire is trimmed back to the contact tip, when the wire reel runs out and the length of wire between the drive roll and the contact tip is scrapped or the wire or reel is damaged.

Such losses tend to be quite small but this is not the case with coated electrodes. Damaged flux coatings, incorrectly stored electrodes and the stub ends discarded by the welder all contribute to as much as a third of the purchased weight of manual metallic arc electrodes being scrapped. Some electrode manufacturers' catalogues give figures for these losses which can vary depending on electrode type and diameter.

To assist in calculating the amount of welding consumables to be purchased Table 1 gives some multiplication factors for the more common arc welding processes. The weight of weld metal in the joint should be multiplied by this factor to give the amount of welding consumable required. These figures assume good housekeeping and shop floor discipline such that consumables are not wasted or scrapped unnecessarily.

Arc welding process	Multiplication factor
MMA (SMAW)	1.5
TIG (GTAW)	1.1
MIG/MAG (GMAW)	1.05
Sub Arc (SAW)	1.02
FCAW	1.2
MCAW	1.1

Table 1 Multiplication factor. Weight of weld metal to give the weight of filler metal required.

The other consumables in this cost equation are shielding gases or flux.

The conventional shoulder height welding gas cylinder contains approximately 10,000 litres of shielding gas at a pressure of 200bar. As the gas flow rates normally used in production are around 12 to 15 litres per minute, this typical cylinder should provide in the region of 10 to 12 hours of welding time, allowing for losses at the beginning and end of the arcing period.



The rate of flux consumption in submerged arc welding is approximately 1kg of flux for every 1kg of deposited weld metal.

This assumes good housekeeping and an efficient flux recirculation system. Calculation of the amount required (and hence the cost) of these consumables is therefore relatively straightforward.

The cost of the welder's time to weld a joint does not depend solely on the deposition rate of the process. A most important factor in determining the time required by the welder is what is known as the 'duty cycle' or 'operating factor'. This is a percentage figure giving the amount of time that the arc is burning and weld metal is being deposited versus the total time that the welder is working. Table 2 gives some figures for the more common arc welding processes. Note that these do NOT include set-up or assembly time and individual circumstances can increase or decrease these figures.

Arc welding process	Duty cycle %
MMA (SMAW)	15 - 30
TIG (GTAW)	25 - 40
Mechanised TIG	80 - 90
MIG/MAG (GMAW)	30 - 45
Mechanised MIG/MAG	80 - 90
Sub Arc (SAW)	80 - 95
FCAW	25 - 45
Mechanised FCAW	70 - 85
MCAW	30 - 45

Table 2 Duty cycles for arc welding processes

The lost time in this figure can be accounted for by considering all of the other activities that the welder performs. In MMA welding, for example, time is required for tacking, de-slagging and cleaning a weld pass, for changing electrodes, for changing position, for rest breaks and for removal of the item from a fixture. Similar activities need to be performed using the other welding processes.

Increasing the duty cycle is therefore one method of increasing productivity, either by organising the shop floor such that lost time is reduced or by the use of a higher duty cycle process. However, remember that the arcing time may well be only a very small proportion of the total time to manufacture and attention to other aspects of the manufacturing cycle may give better returns than simply increasing the welding duty cycle. Reference to Table 2 also suggests that mechanisation is one method to increase the duty cycle. Caution needs to be exercised, however, if the total (floor to floor) time is to be reduced. For one-off or small batch items the time taken to prepare and set up a mechanised system to weld the item may be longer than that taken to weld using a manual process. Note also that if a mechanised system is used, the duty cycle may in fact decrease, as the welding speed is increased and the weld is completed in a shorter time although the number of items welded per day will increase. It is therefore essential to consider the complete manufacturing cycle to achieve the most cost effective solution.

Welding costs - Part 3



Flux cored arc welding

The previous two articles dealt with the mechanics of costing a weld: how to calculate the weld volume and how to calculate the amount of welding consumables required to fill a weld preparation. The final step in costing a weld is to determine the length of time to deposit this weight of weld metal. This is obviously a function of the deposition rate of the process.

The deposition rate is generally expressed as kgs/hr or lbs/hr deposited at a given welding current, welding continuously and without any breaks for electrode changing or deslagging.

The deposition rate will be affected by many factors and it will not be possible within the limitations of these articles to list the precise deposition rates for any specific process or welding current. Such data can be found in publications referenced below or by a web search. The ranges of approximate deposition rates for the commoner arc welding processes are listed in Table 1.

Welding Process	Deposition Rate kgs/hr	
	min	max
MMA	0.4	5.5
MAG	0.6	12
FCAW	1.0	15
Single wire SAW	3	16

Table 1 Indicative deposition rates - arc welding processes

To obtain an accurate figure for the specific parameters to be used is a relatively simple exercise. Weighing a plate, depositing weld metal using the required parameters on this plate for a fixed time and then re-weighing the plate will give an accurate figure that may be used for estimating purposes.

There is one golden rule for minimising the cost of making a weld and, whilst this may seem to be self-evident, it is worth repeating: deposit the minimum amount of the highest quality weld metal with the largest gauge electrode or wire at the highest current in the shortest possible time. This is obviously the ideal and can seldom be achieved in practice because of limitations on heat input, access etc.



The implications of applying the golden rule are:

1. To deposit the minimum amount of weld metal the designer, aided by the welding engineer, must select the smallest weld preparation that is capable of providing the required weld quality. If the included angle is too narrow then lack of side wall fusion is a possibility with the consequent costs of repair; too wide an angle is wasteful in terms of deposited weld metal. Remember, though, that the cost of providing a weld preparation (by flame-cutting, edge planning, milling *etc*) must also be included in any costing exercise as must the cost of assembly. Machined weld preparations are more accurate than flame cut edges and this may result in faster set-up times and a reduced weld repair rate. It may be possible to use a square edge preparation by using the deep penetration characteristics of some of the welding processes; electron beam and laser welding are the best examples of this technique. Plasma-TIG and activated flux TIG can penetrate up to 10mm in a single pass; the 'finger' penetration of spray transfer MAG welding can penetrate up to 6mm and a submerged arc weld can penetrate up to 15mm. There is also the benefit when using a square edge preparation in that the consumption of filler metal is substantially reduced, the bulk of the weld metal being provided by the parent material. The final option on reducing costs when butt welding is for the designer to specify a partial penetration joint. The most expensive weld pass in any full penetration butt weld is the root pass and if this can be eliminated by using partial penetration joints then substantial savings can be made. However, the decision to use partial penetration welds should not be taken lightly but only if service conditions permit the presence of a large crevice at the weld root.

The designer will therefore need to consider whether fatigue, creep, corrosion etc are likely to occur and must clearly specify where the joints are permitted and the minimum acceptable weld throat.

2. Depositing the highest quality weld metal infers that the weld repair rate will be reduced. Repair weld metal is very costly, particularly if the unacceptable defects are detected late in the fabrication programme; perhaps after final assembly where access is difficult or after post weld heat treatment. Accurate weld preparations and fit-up, easy access for the welder, welds made in the flat position and well trained welders will all help to minimise the weld repair rate.

3. Depositing weld metal with the largest electrode or wire at the highest current will obviously give the highest weld deposition rate and shortest joint completion time. The deposition rate figures in *Table 1* give the minimum and maximum deposition rates at minimum and maximum welding currents. As an example, a 1.2mm diameter MAG wire at 120amps will deposit around 1.2 kgs/hr, at 380amps around 8 kgs/hr. To enable high welding currents to be used the item must be placed in the flat position and there must be easy access for the welder. One benefit of using the high welding currents is that the number of weld runs to fill the joint will be reduced and this, in most circumstances, will result in less distortion than a large number of low current weld passes. Remedial work to correct distortion can therefore be reduced. A further benefit when welding the ferritic steels is that high current and therefore high heat input may allow any preheat to be reduced or eliminated entirely.

However, there are limitations to this approach to improving productivity. If achieving high toughness is a factor then it is likely that heat input will need to be controlled when welding the ferritic steels, placing a limit on the welding current and travel

speed. High welding currents also imply a large, fluid weld pool and it may not be possible to control this pool when welding in any other than the flat position - for example, MAG welding cannot be performed using spray transfer (high welding current) in the vertical position due to the absence

of a flux to hold the pool in place. Using a manual process at such high currents also results in increased welder fatigue resulting in a reduced duty cycle. A solution to this problem is to mechanise or automate the process.

To achieve the most cost effective solution to producing a welded structure is therefore not simply to increase duty cycle or deposition rate but to consider all aspects of fabrication from the design stage to final inspection, involving all members of the team from designer to welder.

*This article was written by **Gene Mathers**.*

References:

*Procedure Handbook of Arc Welding,
Publication - Lincoln Co.
Standard Data for Arc Welding, Publication -
TWI (out of print)
Welding Handbook Vol 2 Welding Processes,
Publication - American Welding Society*

These articles were written by **Gene Mathers**.



Copyright © TWI Ltd 2014

The content of this article was correct at the time of publication. For more information visit:

www.twi-global.com





Appreciation of Engineering Quality

Documentation Review Course

Course Code: WIS 21

The AWI and TWI have joined forces to bring relevant course material to the industry. A course designed to assist those involved with welding quality but do not require the detailed knowledge of the welding coordinators course. The Appreciation of Engineering Quality Documentation Review program has been a success in two venues but there are still two to go. Don't miss out on the last of the series

Dates / Venue 18th August NSW
20th October SA

Duration 3 days

Cost \$990 AUD

Course is suitable for: Personnel involved in compiling and reviewing mechanical / engineering quality documentation for client acceptance. Inspectors, engineers, document controllers looking to expand their current knowledge of Quality Control activities. Course entry is not restricted, however it is recommended that students have some knowledge / experience of the engineering / construction industry.

Course content: Analytical review of engineering documentation: material test certificates; Post Weld Heat Treatment; Visual, weld audit and weld history reports; fundamental knowledge requirements for QC personnel to carry out document review; in-depth assessment of documentation.

Course Objectives: To be able to identify and quantify fabrication or procedural non-compliances against specified procedures. To register your interest contact AWI or TWI

admin@austwelding.com.au,

mark.grogan@twi-australia.com

NOTE: Courses are run subject to numbers

Get qualified in 2014 - Eddy Current Testing (ET) now covers testing of tubes and aerospace

Kuala Lumpur 3 – 14 November 2014

The course is ideal for all NDT personnel, inspectors and technicians responsible for, or engaged in, practical application of eddy current testing and writing techniques and instructions for detection of flaws in cast and wrought product, material identification/determination of properties, coating thickness measurement, tube testing and weld inspections. Also suitable to personnel engaged in inspection of aerospace materials, components and structure.

Course Objectives:

To detect cracks, surface and near-surface, in aircraft components, structures, tubes and welds

- To detect corrosion and thinning in non-magnetic materials
- To grade and sort materials on the basis of conductivity and permeability
- To write clear and concise inspection instructions and test reports
- To meet the syllabus requirements of CSWIP/PCN Level 2

Examination of cast forged and wrought products or tubing such as that found in condensers, heat exchangers and air conditioning units. This course covers the techniques of surface inspection and/or internal bore inspection and is supported by examinations complying with BS EN ISO 9712. The course ends with the certification examination. Training in accordance with the requirements of ISO 9712.

TWI Technology (S.E.Asia) Sdn. Bhd., Malaysia

Tel: +603 61573526

Email: inquiry@twisea.com



NanoSteel and EndoTec cored-hard facing wire does more with less

NanoSteel's Super Hard Steel (SHS) and EndoTec cored wires for weld overlay applications are patented steel alloys which provide superior wear performance in extreme service environments for increasing the life of industrial parts and components.

When welded, NanoSteel SHS and EndoTec cored wires form a near nano-scale microstructure with a unique combination of high hardness and toughness properties.

This results in a uniform hard matrix with maximum hardness and wear resistance consistent throughout the entire SHS material layer.



SHS achieves maximum performance in one layer, requiring less material to exceed conventional alloy performance and resulting in a better price/performance ratio.

Application processes: Gas Metal ARC Welding (GMAW), Open Arc Welding (OAW). Alternatives to chrome & complex carbides, tungsten and carbide alloys for wear.

About NanoSteel

NanoSteel is the world leader in proprietary nano-structured steel material designs.

NanoSteel has created generations of iron-based alloys from surface coatings to foils to sheet steel and powder metals. For the oil & gas, mining and power industries, NanoSteel has introduced commercial applications of metallic coatings to prolong service life in the most extreme industrial environments.



The company has formed a close relationship with Castolin Eutectic to support customers throughout the world. NanoSteel is distributed, sold and supported in Australia by SMENCO.

About SMENCO

SMENCO is one of Australia's leading distributors of welding equipment, consumables, and associated welding technology from around the world. Among other leading international brands, SMENCO is the national distributor for Fronius welding equipment and Castolin Eutectic (both recognised as leaders in Welding Technology and Wear Solutions), Bohler Welding Consumables, Kemper Fume Extraction, Bug-O Automated Welding Systems, and BOA Bore Repair Systems.

Based in Melbourne with offices in Brisbane, Sydney & Perth plus representatives in many regional centres, SMENCO personnel have an enviable reputation for knowledge, experience and commitment to their customers and their industries.

SMENCO company trained and experienced field staff are backed by a comprehensive national Distributor Network to provide customers with service that's never far away.

SMENCO Pty Ltd
1 Longview Court
Thomastown Victoria 3074
1300 731 873 www.smenco.com.au

Welding Supervisors Exams have achieved great success



The recent examinations for certification as Welding Supervisor to either **AS1796:2001** or **AS2214:2004** have been held in venues in NSW and WA.

Papers A, B1 and B2 were available for candidates. Many took the opportunity to sit all three papers and gained themselves both Supervisor qualifications!!

The feedback from the candidates to AWI™ has been good and some of the comments are below:

".....it wasn't an easy exam but I appreciated the efforts you guys have gone to..."

"The facilities were great...well done to the AWI"

"...I like the idea of being able to sit all three exams if you wanted to, what a great idea"



Photograph of some of the NSW exam candidates

As representatives of the Australian welding and fabrication industry, a key aim of the AWI™, is to provide a national welding qualification system for its members that is recognised by the industry's key stakeholders and which extends across all states and territories.

The industry has been waiting for the return of a practical, relevant qualification, which is a cost competitive alternative to the offerings of the WTIA. Not only has the AWI™ been running **AS1796:2001** Certification 1 to 9 for many months now, but as you are aware, this year, the AWI™ extended the program to include:

AS1796:2001 and **AS2214:2004** certification for welding supervisors in the pressure vessel industry (certificate 10) and structural steel industry.

Certification 1 to 9 has seen a steady growth in the numbers of welding personnel again, wanting a cost competitive alternative to the offerings of the WTIA.



The AWI™ hope that the trend will follow on into the Welding Supervisors arena. The AWI™ are making this happen!

Examination papers have been written and validated by industry experts that have extensive experience in the relevant disciplines. The AWI™ is raising the bar



on these important industry qualifications as well as giving you a quality alternative.

AWI™ encourages its 600+ members and the Australian Welding and Fabrication Industry to embrace these qualifications. We have established an alliance with a number of TAFE Colleges nationally and take pleasure in supporting and promoting their programs.

The details of the next rounds of exams follow on the next page. Application forms are available through selected TAFE Colleges or from:

admin@austwelding.com.au

AWI™ Welding Supervision qualifications

Given the initial success of our offering of exams to date, the AWI™ is rolling out the next few round of examinations for certification for Welding Supervisors for

- AS1796 – Certificate 10 and
- AS2214 – Welding Supervisors – Structural Steel Welding.

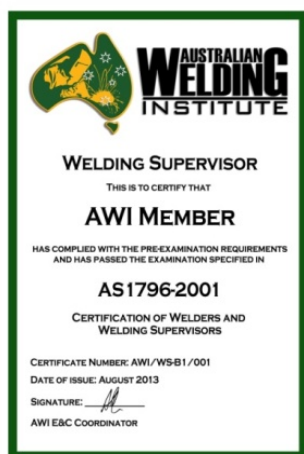
Feedback from running the initial round of examinations support that we are on track:

'they are based much more on what we need to know in the workshop' and

'it was a very detailed exam but based on practical application of being a supervisor'.

The AWI™ has listened to key stakeholders - Industry, but more importantly -YOU - and have provided a

certification system that measures the skills and knowledge of welding supervisors. For example, there will not be questions on MIAB or Laser welding in the exam. Instead, we have elected to use the examination period to focus on the more 'relevant skills'.



Examinations will be held in capital cities around the country based on demand on the following dates

- **September 26th and 27th**
- **November 28th and 29th**

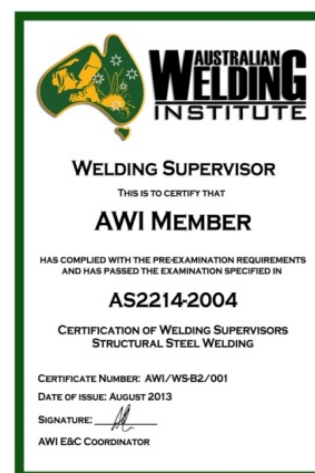
To apply for these examinations contact your local AWI™ contact or email admin@austwelding.com.au

The appropriate forms will be forwarded so you can complete them ready for the exams.

For those that have an existing welding supervision qualification through TAFE, another RTO's or the WTIA we are offering you the opportunity to convert your qualifications into the AWI™ qualification. by sitting the examination at 50% cost.

It is easy to do, if you have evidence of the qualification, satisfy the requirements of AWI™ and are willing to sit the exam all you do is apply to the AWI™ and sit the exam/s.

So if you would like to take this opportunity and prove to the industry your worth as a Welding Supervisor, here is your chance.



For more information, email:

admin@austwelding.com.au

Watch this space for the roll out of Welding inspection qualifications.



Top marks for new

Kemper Smartmaster

Kemper - the welding fume extraction and filtration experts - has released its new, compact and very affordable SmartMaster mobile fume extraction unit.

The SmartMaster mobile unit has been designed to offer all the features of larger fume extraction systems but in a compact, mobile, easy to use unit that is low priced so that even smaller companies can now afford fume extraction to protect their employees from dangerous welding fumes.

Kemper's latest product release – distributed in Australia by SMENCO - will appeal to businesses that require a mobile welding fume extraction system for smaller work space areas with a quality filtration system at a low price.

The SmartMaster uses a three-stage disposable filter to remove dangerous potentially carcinogenic substances such as nickel oxides or chromium compounds at more than 99 per cent which are emitted during welding of stainless steel or other high-alloy metals. Due to its W3 approval the purified air can be recycled back into the work area.

A 360° rotatable arm, easily positioned exhaust hood and suction capacity of 950 m³/h at the exhaust hood, ensures that weld fumes are effortlessly removed from the work area. The SmartMaster can also be used for confined work areas by connecting a flexible hose from the back of the unit instead of using the exhaust arm. The unit even has an audible alarm to warn you when the filter requires replacement, further protecting the employee.

About Kemper

German based Kemper is the world market leader in extraction and filtration systems for the metalworking industry. Specialist areas include extraction and filter technology as well as storage and automation.

This also includes, among others, highly efficient filter systems which also filter ultra-fine dust particles from

the air, extraction tables for cutting processes and a complete accessory line with regards to work safety and air pollution control for the metal-processing as well as the electrical and automotive industry.



About SMENCO

SMENCO is one of Australia's leading distributors of welding equipment, consumables, and associated welding technology from around the world.

Among other leading international brands, SMENCO is the national distributor for Fronius welding equipment and Castolin Eutectic (both recognised as leaders in Welding Technology and Wear Solutions), Bohler Welding Consumables, Kemper Fume Extraction, Bug-O Automated Welding Systems, and BOA Bore Repair Systems.

Based in Melbourne with offices in Brisbane, Sydney, Perth and representatives in many regional centres, SMENCO personnel have an enviable reputation for knowledge, experience and commitment to their customers and their industries.

SMENCO Company trained and experienced field staff are backed by a comprehensive national Distributor Network to provide customers with service that's never far away.

SMENCO Pty Ltd
1 Longview Court
Thomastown Victoria 3074
1300 731 873

www.smenco.com.au



welding - wear solutions - automation



Ph. 1300 728 422

VICTOR
TECHNOLOGIES™

CIGWELD

CIGWELD Pty Ltd
A Victor Technologies Company
71 Gower Street
Preston VIC 3072 Australia

Tollfree: 1300 654 674
Tel: +61 3 9474 7400
Fax: +61 3 9474 7391

enquiries@cigweld.com.au
www.cigweld.com.au

SPW
SOUTH PACIFIC WELDING GROUP PTY LTD

"Your welding supplies specialists"



1300 WELDER
1300 935 337

sales@spwgroup.com.au
www.spwgroup.com.au



**Outsource Institute
of Technology**

Your Training & Development Specialists

NATIONALLY ACCREDITED TRAINING ORGANISATION

PHONE 1300 136 904 EMAIL INFO@OUTSOURCEINSTITUTE.COM.AU WEBSITE WWW.OUTSOURCEINSTITUTE.COM.AU

GATEWAY OFFICE PARK - GROUND FLOOR, BUILDING TWO
747 LYTTON ROAD, MURARRIE QLD 4172 CNR CREEK & LYTTON RDS
PO BOX 619 CANNON HILL QLD 4170



Inspection
Consultancy

WPS / PQR
Development

admin@technoweld.com.au
www.technoweld.com.au

+61 409 698 968

SOUTHERN CROSS
INDUSTRIAL SUPPLIES PTY LTD

For all your welding needs

Ron Hocking

18b Gumbowie Avenue,
Edwardstown, S.A. 5039
Email: rhocking@scis.com.au
Shop Online at www.scis.com.au

Mobile: 0429 401 991
Warehouse: (08) 8277 6288
Fax: (08) 8277 6244
FreeCall: 1800 645 587



**BUREAU
VERITAS**

Paul HOSKING

Technical Work Co-ordinator

Asset Integrity and Reliability
Services Pty Ltd
35-37 Stirling Street
Thebarton, South Australia, 5031
Australia

Phone: +61 (0) 8 8416 5337
Fax: +61 (0) 8 8416 2760
Mobile: +61 (0) 410 221 484
paul.hosking@au.bureauveritas.com
www.bureauveritas.com.au

HFT **HARDFACE
TECHNOLOGYS**

Hedkote™ Rail Repair Arcbutt™ Rail Welding Rail Grinding

T: (02) 4721 4088
F: (02) 4732 4988
E: shamus@hardface.com.au
PO Box 635
6/28 Coombes Drive
Penrith NSW 2750
www.hardface.com.au

Stephen (Shamus) Walsh
General Manager
M: 0413 640 526

Rail Repair Specialists



**AUSTRALIAN
WELDING
INSTITUTE**

WWW.AUSTWELDING.COM.AU

QLD, NSW, VIC & TAS

ALEC 0408 420 150

SHAMUS 0413 640 526

WA

PHIL 0433 174 575

SA & NT

GRAHAM 0409 698 968

ADMIN@AUSTWELDING.COM.AU