Fusion

Newsletter of the Southern African Institute of Welding

September 2015

SAIW
Southern African Institute of Welding

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IIW Annual Assembly 2015 Deals with Vital Issues

The 68th International Institute of Welding (IIW) Annual Assembly and International Conference held from June 28 to July 3, 2015 in Helsinki, Finland was, according to Southern African Institute of Welding (SAIW) executive director, Sean Blake, not only of a high standard, but it also dealt with vital issues in terms of the welding and related industries' role in future environmental sustainability. "The main outcome of the conference was that design solutions incorporating high strength steels, stainless steels, aluminium and other advanced materials provide considerable potential for energy savings, improved performance and lower costs," Blake says.

S.A. contingency (l-r) Herman Potgieter, Morris Maroga, Jim Guild, Pieter Pistorius (UP), Sean Blake, Riaan Loots (UP).

Representing South Africa in Helsinki were SAIW President Morris Maroga; executive director, Sean Blake; recently retired executive director Jim Guild, who is the current Chairman of the IIW's International Authorisation Board (IAB), a body created to develop and implement the IIW's international qualification, certification and authorisation systems; Herman Potgieter who represented SAIW Certification; Pieter Pistorius and Riaan Loots from the University of Pretoria.

Blake says that changes were discussed to the operation of IAB to meet the demands of a changing global environment. Also, the IIW Welding Inspection programme was discussed which is currently under review and these changes should be implemented during 2016. The conference also emphasised that the importance of raw materials and energy efficiency is constantly growing, which has motivated many industries to perform total lifecycle cost assessment and environmental footprint computations, both of which now integrally influence design and purchasing decisions.

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IIW Annual Assembly 2015 Deals with Vital Issues

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Blake represented South Africa on both the International Authorisations Board (IAB) as well as several of the technical committees and returned with renewed determination to encourage local fabricators to raise their game with respect to the use of modern communication technology for on-line monitoring of quality systems.

"We are falling behind when it comes to skills," says Blake. "For South Africa to become a preferred destination for fabrication, we need to adopt technology for better quality systems management and we must renew our efforts to implement internationally approved welder training programmes such as the IIW International Welder programme in training schools across the country," he says.

He adds that advanced technologies, including virtual training methodologies, are advancing at a rapid rate. "In a country where we have a critical skills shortage, we need to adopt all the tools available to address this issue," Blake says.

SAIW President, Morris Maroga, represented South Africa in commission XIV which concerned itself with "quality management in welding and applied processes." He also attended IAB group A & B and members meetings as an observer. "Education and Training as well as welding quality management and maintaining the plants with local skills remain a major challenge in completing the current infrastructure development projects in South Africa," Maroga says.

He adds that he is confident that the SAIW's renewed focus will enable it to reach its target with regard to ensuring a generation of a reliable welding skills base for our benefit and for the benefit of generations to come. "Only when South Africa is able to successfully execute a major fabrication or construction project including plant maintenance with local skills, will we be able to say that we have achieved our goals," Maroga concluded.

Fusion's Focus on Standards

Introduction

In line with our endeavour to bring new and relevant information to the readers of FUSION and to the welding industry in general, we have decided to start a new feature which will focus on the ever-important aspect of our industry – quality standards.

The first one is **ISO 6947** and this article is written by SAIW's new technical manager, Alan Reid.

ISO 6947 : 2011 [1] defines welding positions used in production welding. Further reference is made to these positions in ISO 15614-1 (Specification and qualification of welding procedures for metallic materials – welding procedure test) and ISO 9606-1 (Qualification testing of welders – fusion welding).

Consideration is given in this standard to welding positions used in production welding, such that all possible positions used in production welding fall under one of the main defined welding positions. Ranges are used on the slope of the weld axis and the rotation of the weld face for both fillet and butt welds to cover all possible weld positions used during production welding. However, a stricter tolerance is given to weld positions when qualifying a weld test piece (± 5° in slope and ± 10° in rotation from the main weld position), such as when performing a welding procedure qualification (ISO 15614) or welder qualification (ISO 9606).

A comparison of the main test position, as defined in ISO and the American standards (AWS / ASME), is as follows:

Weld position	In relation to AWS A3.0 / ASME IX		In relation to ISO 6947
	Test Position	Production weld position	
Flat	1	F	PA
Horizontal	2	H	PC
Vertical	3	V	PF, PG
Overhead	4	OH / O	PE

Table 1: Main test positions

A comparison of the ISO welding positions and the American designations (AWS / ASME) is tabled below:

Butt Welds			Fillet Welds		
General description of weld position	Welding position according to AWS A3.0 / ASME IX	Welding position according to ISO 6947	General description of position	Welding position according to AWS A3.0 / ASME IX	Welding position according to ISO 6947
Flat	1G	PA	Flat	1F	PA
			Flat – pipe rotating	1FR	PA
Horizontal	2G	PC	Horizontal vertical	2F	PB
			Horizontal vertical – pipe rotated	2FR	PB
Vertical up	3G uphill	PF	Vertical up	3F uphill	PF

Butt Welds			Fillet Welds		
General description of weld position	Welding position according to AWS A3.0 / ASME IX	Welding position according to ISO 6947	General description of position	Welding position according to AWS A3.0 / ASME IX	Welding position according to ISO 6947
Vertical down	3G downhill	PG	Vertical down	3F downhill	PG
Overhead	4G	PE	Horizontal overhead	4F	PD
Vertical up – pipe fixed	5G uphill	PH	Vertical up – pipe fixed	5F uphill	PH
Vertical down – pipe fixed	5G downhill	PJ	Vertical down – pipe fixed	5F downhill	PJ
Inclined – pipe fixed, welding upwards	6G uphill	H-L045			
Inclined – pipe fixed, welding downwards	6G downhill	J-L045			

Table 2: welding positions – AWS A3.0 / ASME IX compared to ISO 6947 [1]

In addition to table 2 above, ISO 6947 gives the designation PK to the position used in orbital welding (pipe is fixed, weld progresses around the pipe in a single weld progression, starting and ending at the top of the pipe).

The following figure further details the designation of the welding positions:

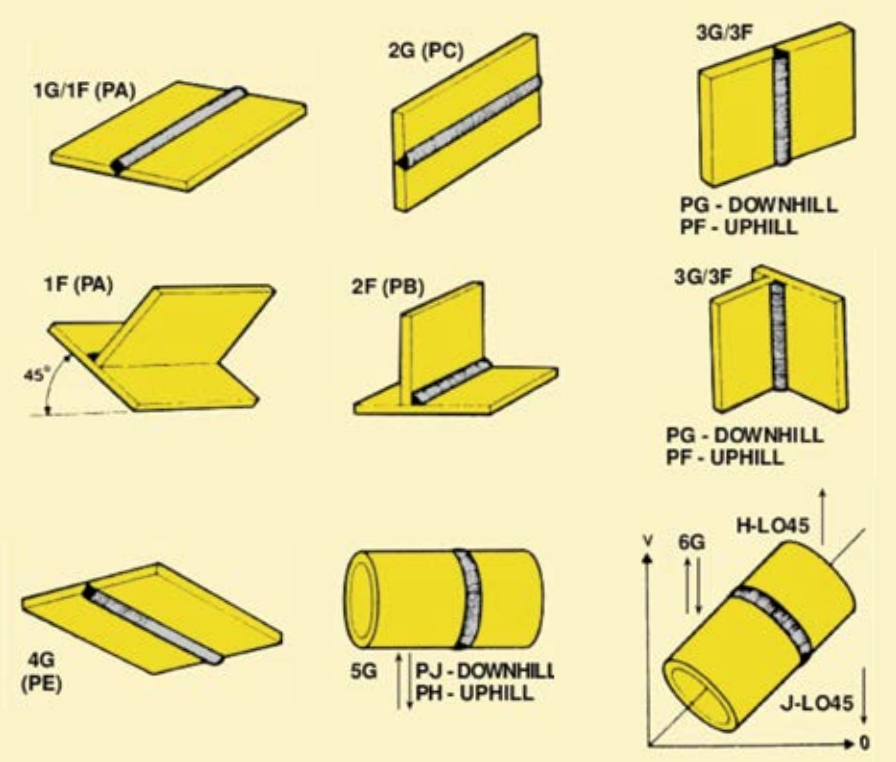

Figure 1: Welding positions according to ISO 6947 & AWS / ASME [2]

Further sets of 3 digits may be used to supplement the main position description, such that the angle of the weld slope and rotation of the weld face can be described for a production weld. An example of this nomenclature used in ISO 6947 is given below:

EXAMPLE 1:

The main welding position of a fillet weld is 'horizontal vertical' (PB), with a slope of 15° and a rotation of 10°, is designated as PB 015-010.

EXAMPLE 2:

The welding position on pipes with inclined axes (angle 30°), with welding direction 'welding up' (H), is designated as H-L030.

The same setup as above, welded in the 'welding down' direction, would be designated as J-L030.

It is noted that ISO 6947 does not use symbols that are derived from any particular language – they were chosen to be independent of possible meaningful abbreviations, starting with A.

Hence the nomenclature of PA, PB, …. PK, H-L and J-L. This is in contrast to AWS and ASME, where the G in 1G is for Groove, while the F is for Fillet.

References:

[1] ISO 6947:2011(E) Welding and allied processes – Welding positions. Third Edition, 2011-05-15.

[2] ESAB AB, Goteborg, Sweden. http://www.slideshare.net/EbrahimKhayer/esab-pipeline-welding-handbook

This is what it's all about!

The raison d'être of the Southern African Institute of Welding is to train people so that they can begin a career in welding or further their current welding careers. When we all gather together and witness men and women of varying ages having successfully completed their courses it makes the work that this institute does all worthwhile.

Congratulations to each and every one of you. You are an inspiration to all those thinking about a career in this amazing industry.

Below and opposite please see some of the successful graduates at the 2015 Certification ceremony.

Inspector Level One – Distinctions

Alexander Naude

Emanuel Masilela

Matlou Komane

Inspector Level One and Two

Julian Fourie

Inspector Level Two with IIW (S) - Distinctions

Darlington Muchengumbo

Nicolaas Terblanche

Robin Nankomar

International Welding Specialist

Tiaan Liebenberg

Inspector Level Two with IIW (S)

Inspector Level Two Passes

Inspector Level One Passes

ISO 3834 Certification

Transnet Engineering certified by SAIW Certification...

Transnet Engineering, a division of Transnet, has been ISO 3834 certified at its Durban and Koedoespoort facilities. This is an important step as ISO 3834 is the basis for EN 15085 certification, which is a railway specific quality standard.

Transnet Engineering's EN 15085 certification will be facilitated by SAIW Certification's German partners GSI SLV (German Society for Welding Technology), who will manage the certification process with the assistance of the SAIW Certification team.

Transnet Engineering's certification process is part of its preparation for the work it will do for the main contractors in Transnet's impending R50-billion locomotive upgrade. CSR Zhuzhou Electric Locomotive (CSR) of China, and Bombardier Transportation S.A. (BTSA) will supply a total of 599 electric locomotives, while GE South Africa and China North Rail (CNR) will deliver 465 diesel locomotives. Certain of these contractors have stipulated that their sub-contractors must be EN 15085 compliant.

SAIW Certification CEO Herman Potgieter says that the perception with many South African ISO 3834 certified fabricators is that because there are similarities between ISO 3834 and EN 15085, there is no need for specific EN 15085 certification. "This is not the case and our fabricators, if they want to make the most out of this once-in-a-lifetime opportunity, must not make this mistake," he says.

While it is true that EN 15085 has ISO 3834 - which defines quality requirements for fusion welding of metallic materials both in workshops and in the field - as its base requirement, it must be understood that EN 15085 is a product-specific standard for the construction, manufacturing and testing of welded rail vehicles. As such there are specific requirements in the EN 15085 standard to ensure the quality and safety of railway equipment. The Original Equipment Manufacturers (ie Bombardier, CSR and CNR) therefore require that their subcontractors are EN 15085 certified in order to guarantee the quality and safety of the product they are manufacturing.

SAIW executive director, Sean Blake says that for the Chinese this has a special significance. "Transnet initially came under fire for ignoring rumours of dubious quality with respect to the Chinese tender winners who will surely go to great lengths to ensure that their quality is nothing short of world class," he says.

One of the main quality control measures will be EN15085, which is an important standard in both Europe and China with a total of 931 manufacturers having been certified in Germany and 360 in China. "These are indeed significant numbers in this limited fabrication sector and South African fabricators should take heed of them," Blake says.

Potgieter says that the Transnet Engineering's ISO 3834 certification process went smoothly. "Bomardier Transportation has assisted Transnet in ensuring that the skill levels are in accordance with the relevant standards and we were very impressed with what we saw at Transnet Engineering. The attention to detail was outstanding and the equipment upgrade, which includes state-of-the-art manipulators and robotic welding equipment, was equally impressive," he says.

Potgieter adds that the locomotive project is certainly the catalyst for Transnet engineering uplifting their skill levels to world class standards. "This will have an important positive spin-off effect on the entire fabrication industry in South Africa," he concludes.

Rodwell Baloyi (front left) Transnet Engineering Responsible Welding Coordinator with Sean Blake (front right) executive director SAIW at certification ceremony.

...and other recently certified companies

Wetback Contracts

Mzansi Fabrication and Welding


West Coast Projects


Howden Power


Transnet


Krupp Engineering

A&R Engineering

Metal Protection Engineering

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A comparison of ISO 15614 Part 1 and ASME IX

The question is sometimes asked 'Can I use our existing welding procedure qualifications?' where the qualification specification required by the contract is one that has not previously been used by the organisation. This is particularly relevant when substantial costs and/or delays will be incurred if re-qualification of the welding procedures is necessary.

The two most frequently encountered specifications are ISO 15614 Part 1 and ASME IX and whilst these are written with the same purpose (that of giving assurance that a welding procedure will provide the desired joint properties) there are major differences between the two specifications that mean that they are not equivalent. It will not be possible in this short article to cover every welding variable and its range of approval in the two specifications. Where compliance is required then reference MUST be made to the appropriate specification.

> **'ASME INTENT IS USED WHERE THE ITEM IS NOT TO BE CODE STAMPED BUT IS PERHAPS ONLY DESIGNED TO THE RELEVANT ASME CODE AND SOME FLEXIBILITY IS POSSIBLE WITH RESPECT TO THE MANUFACTURING ASPECTS OF SPECIFICATION COMPLIANCE.'**

With respect to ASME IX the specification requirements can be applied in two ways; ASME intent and ASME stamp. If the welded item is to be ASME stamped this can only be done by a manufacturer who has a quality system accredited by ASME and who holds an appropriate stamp, N stamp for nuclear components, U for unfired pressure vessels, S for power boilers etc. All the requirements of the ASME specifications MUST be complied with, even to the extent of dimensions of the mechanical test pieces and the calibration of testing equipment.

ASME intent is used where the item is not to be code stamped but is perhaps only designed to the relevant ASME code and some flexibility is possible with respect to the manufacturing aspects of specification compliance. Such flexibility may allow the manufacturer to submit to the client or inspecting authority procedure qualification records (PQR) to ISO 15614 Part 1 for approval that can be shown to be technically equivalent to an ASME PQR.

ASME IX covers the qualification of welders and welding operators, welding procedures, brazing operatives and brazing procedures for the complete range of ferrous and non-ferrous engineering metals (steels, copper, nickel, aluminium, titanium and zirconium alloys) and oxy-gas, arc, power beam, resistance and solid phase welding processes. ISO 15614 Pt1 covers the welding procedure qualification of arc and gas welds in steel and nickel alloys only. Other alloys and joining processes are covered by additional specifications within the ISO 15614 series.

Both specifications identify essential variable (although ISO 15614 Pt1 does not describe them as such) to each of which is assigned a range of approval. A change to an essential variable outside of its range of approval requires the welding procedure to be re-qualified.

ASME IX in addition identifies supplementary and non-essential variables. Supplementary variables are only invoked when toughness requirements are specified by the application code, eg ASME VIII or ASME B31.3. Non-essential variables, as the name suggests, are those variables that are not regarded as affecting the quality or mechanical properties of the welded joint and comprise such variables as the weld preparation, shield gas flow rate, method of back gouging, shield gas nozzle size etc. Although these variables are non-essential it is a requirement that they should be referenced on the welding procedure. It is therefore NOT acceptable to use a butt welding procedure to specify how a fillet weld should be made.

ISO 15614 Pt1 does not identify any variables as non-essential; where a variable is not regarded as significant it is simply not referenced in the specification. There are several variables in both specifications where there is no range of approval; the manufacturer, the welding process and the application or deletion of post weld heat treatment (PWHT) for example.

In order to reduce the amount of qualification testing, both specifications group alloys of similar characteristics together. Qualifying the welding of one alloy within the group allows the other alloys within the group to be welded. ASME IX assigns the groups numbers with steels being numbered P1 to P15F. Any alloy that does not have a P number is regarded as unassigned; a procedure qualification carried out using an unassigned alloy qualifies only that specific designation of alloy. Until recently only alloys that complied with the ASME and/or ASTM material specifications and/or had a UNS number were assigned P numbers. However, a limited number of EN, Canadian, Chinese and Japanese alloys have now been introduced into the list of assigned alloys.

> **'ANY ALLOY THAT DOES NOT HAVE A P NUMBER IS REGARDED AS UNASSIGNED; A PROCEDURE QUALIFICATION CARRIED OUT USING AN UNASSIGNED ALLOY QUALIFIES ONLY THAT SPECIFIC DESIGNATION OF ALLOY.'**

ISO 15614 Pt. 1 also groups steel and nickel alloys into families with similar properties but is somewhat less prescriptive than the ASME code in that, provided alloys have similar chemical compositions and mechanical properties, the material specification is not relevant – for example a plain carbon steel with less than 0.25%C and a minimum specified yield strength less than 460MPa falls into Group 1 irrespective of whether or not it is a pressure vessel or structural steel or supplied in accordance with EN or ASTM material specifications. To determine into which group the alloy falls reference should be made to ISO/TR 15608, the specification that lists both ferrous and non-ferrous alloys and assigns them a group number.

Other significant differences between the two specifications with respect to the arc welding processes are :-

- ASME IX requires only tensile and bend tests to qualify a butt weld. ISO 15614 Pt1 requires a far more extensive test programme of visual inspection, radiography or ultrasonic examination, surface crack detection, tensile and bend tests and macro-examination. In certain circumstances Charpy-V impact tests and hardness surveys are also required.
- ASME IX specifies that the tensile strength of the cross joint tensile specimen shall be at least that of the minimum specified for the parent metal and that bend test coupons should have no discontinuity greater than 3mm. ISO 15614 Pt1 has identical requirements for these mechanical tests but in addition specifies an acceptance standard for the non-destructive testing; impact test results, when required, that match the parent material toughness and hardness limits when hardness testing is required.
- ISO 15614 Pt 1 requires Charpy-V impact testing for steels over 12mm thick when the material specification requires it. ASME requires impact testing only when specified in the application standard. This requirement makes heat input a supplementary essential variable in ASME IX but an essential variable in ISO 15614 Pt1.
- Hardness testing is required by ISO 15614 Pt1 for all ferritic steels with a specified minimum yield strength greater than 275MPa. A maximum hardness for joints in either the as-welded of PWHT'd condition is specified. ASME IX does not require hardness testing.
- ASME IX allows a reduction in preheat of 55°C before requalification is required. ISO 15614 Pt1 does not permit any reduction in preheat from that used in the qualification test.
- ASME allows the maximum interpass temperature to be 55°C above that measured in the qualification test. ISO 15614 Pt 1 permits no such increase.
- ASME IX requires pressure containing fillet welds to be qualified by a butt weld procedure qualification test. Non-pressure retaining fillet welds may be qualified by a fillet weld test only. ISO 15614 Pt1 requires a fillet weld to be qualified by a butt weld when mechanical properties "…. are relevant to the application…" i.e when it is a load carrying fillet weld. In addition, whilst a butt weld will qualify a fillet weld "….fillet weld tests shall be required where this is the predominant form of production welding…" i.e. an ISO compliant welding procedure where the majority of the welding is of load carrying fillet welds must reference both a butt weld and a fillet weld procedure qualification.
- Weld metal transfer mode, where relevant, is an essential variable in both ISO 15614 Pt1 and ASME IX but the current type is an essential variable in ISO 15614 Pt1 and a supplementary essential variable in ASME IX.
- A change from manual to automatic welding is an essential variable in ISO 15614 Pt1 but a non-essential variable in ASME IX.

Whilst there are several other variables in the two specifications that have substantially different ranges of approval there are many that have ranges that are very similar – material thickness being but one example.

This article has highlighted some of the significant differences but to ensure that the welding procedure and its supporting procedure qualification record are compliant the specifications must be referred to. The answer to the question posed at the start of this article is therefore – it depends upon what you can persuade the client and inspecting authority to accept!

SAIW & SAINT: Joint call for improved and harmonized NDT Skilled Personnel

The Southern African Institute of Welding (SAIW) and the South African Institute of Non Destructive Testing (SAINT) have called for a harmonized South African NDT Qualification and Certification scheme, which will not only improve the quality of non-destructive testing (NDT) technicians in South Africa, but also the practicality of cross – sector networking. Harold Jansen, SAIW NDT manager, SAINT Council Member and Chairman of the SAINT Professional Body for NDT, says that this process will embrace and advance governmental localization efforts within NDT, specifically when considering the extensive nuclear and railway projects that the South African government has embarked on.

Jansen says the Occupational Health and Safety Act aims to protect members of the public as well as employees at their place of work and this can only be achieved through regular and mandated inspections during manufacturing, construction and operation. "Structural integrity, as well as safe and productive operation of safety-critical components such as pressure vessels or steam generators, depends on a highly skilled NDT workforce, comprehensive quality systems and well managed and maintained resources. It is up to industry to comply with the three participant steps of a comprehensive professional designation system, designed to improve, maintain and support the highly skilled South African NDT workforce ," Jansen says.

These three steps are as follows:

1. Basic Qualification and Personnel Certification – Independent Third Party Qualification & Assessment

The first step, which refers to the individual's basic qualification, is performed in compliance with the internationally recognized standard for qualification and certification of NDT personnel - ISO 9712. Approved Training Bodies (ATB) are corporate entities that provide approved and recognized training in accordance with documented syllabi and training material. Specific applications are based on international codes, standards and specifications such as ASME, ISO and EN and covers industrial / product defined sectors.

SAINT and SAIW have called for a harmonized South African NDT Qualification and Certification scheme, which will help improve the quality of non-destructive testing (NDT) technicians in South Africa.

Independent qualification examinations are performed at approved Examination Centres (ExC) under the control of the Authorized Qualification Body (AQB) and Personnel Certification Body (PCB). The International Committee for Non Destructive Testing - Examination Question Bank (ICNDT-EQB) forms the foundation of the internationally harmonized general and specific examinations (at all qualification levels) with additional questions created by the South African Qualification and Certification Committee for NDT (SAQCC – NDT) examination panel and submitted to the ICNDT - EQB Administrator for international approval and inclusion in the databank.

Certification of personnel is based on successful completion of the qualification examination (70% for each examination component), submission of valid vision acuity test, industrial experience logbook and company authorization.

“APPROVED TRAINING BODIES (ATB) ARE CORPORATE ENTITIES THAT PROVIDE APPROVED AND RECOGNIZED TRAINING IN ACCORDANCE WITH DOCUMENTED SYLLABI AND TRAINING MATERIAL.”

Personnel certificates are issued by the PCB in accordance with ISO 9712 and shall be valid for a period of 5 years.

SAINT (a full member of ICNDT) has acknowledged that the SAQCC-NDT Scheme be adopted as the national qualification and certification scheme for NDT personnel in South Africa.

SAIW Certification is the SANAS ISO 17024 accredited PCB. Both SAQCC and SAIW Certification are recognized internationally. Both SAINT and SAIW Certification are signatories to the ICNDT Mutual Recognition Agreement (MRA) Schedule 1 and to this extent support the global harmonization of NDT Qualification and Certification under ISO 9712. Therefore, personnel certificates issued by internationally accredited ISO 9712 PCB’s and signatories to the ICNDT MRA Schedule 2 are also in compliance with the first step towards professional designation.

2. Company Specific Mentoring and Authorization – First or Second Party Qualification and Assessment

The second step refers to company specific mentoring based on the “company specific written practice and quality document” which is controlled by the “Company Responsible Level 3”. This industrial learnership program is clearly defined by the SAINT Professional Body (PB) and requires that the responsible Level 3 be registered as a professionally designated technologist with the PB, based on his / her qualifications; as well as an industrial mentoring facilitator, based on the relevant written practice and related documentation & records audited and approved by the PB.

While the classroom mentoring aspects may be subcontracted, it is pertinent that training shall be based on company specific documents or requirements and shall be authorized by the Company Responsible Level 3.

Following the completion of the learnership program, the ‘apprentice / trainee’ (applicable for qualification levels 1, 2 or 3) will be assessed by the responsible Level 3, based on the general and specific theory obtained during the in-house mentoring program as well as the technique specific practical skills mastered under the supervision of the responsible Level 3.

Since Company Responsible Level 3’s will not be able to assess themselves, in order to be company authorized, alternative ASNT qualifications can be utilized to replace the requirement for in-house authorization assessment of Level 3’s (or even Level 2 personnel involved in the company mentoring process and defined in the written practice)

Successful completion of the company assessment (70% or greater for each component and an average of 80% or above of combined components) results in the company’s responsible Level 3 issuing a Company Authorization, which is a pre-requisite for personnel certification.

Company authorization is valid for a period as stipulated within the written practice and must not exceed 5 years.

3. End User Performance Assessment and Approval

The third and last step towards professional designation is based on a practical skill assessment on components typically found at the various end-user sites. While the practical training / mentoring and examination / assessment described in Steps 1 and 2 can be based on general testing samples, practical assessment during the third step is based on geometrical configurations, material properties and fabricated orientation as found on the various end-user sites. To this extent samples to be tested must be sourced from identified end-users and controlled and maintained by an entity approved by the PB.

End-user requirements are stipulated and compliance assessed by PB and end-user approved service providers.. If candidates are found to be non-compliant, then end-user approval will not be granted and the student will be required to attend a skills enhancement course prior to being re-assessed.

End-user approval is valid for a period of two years or based on the minimum time interval of the combined end-user requirements.

Personnel will be able to do NDT in various sectors and on all SAINT registered end-user plants once the end-user approval has been obtained. Thus separate approval assessments are no longer required for different end-users such as SASOL or Eskom.

Conclusion

The three steps mentioned above, as well as annual Continuous Professional Development (CPD) are managed by the SAINT Professional Body for NDT, which is registered with the South African Qualification Authority (SAQA).

While professional designation is currently voluntary, it is anticipated that national statutory regulations will be adopted to mandate professional designation for all NDT personnel, whether national or international, wanting to perform NDT within the borders of South Africa. Thus, while international NDT personnel might comply with step 1, steps 2 and 3 will have to be complied with prior to the commencement of any NDT activities by foreign personnel.

“This harmonized approach complies with first, second and third party conformity assessment schemes as mandated in the relevant manufacturing codes such as ASME, API, AWS, ISO, EN etc. and personnel obtaining and maintaining a professional designation will thus be suitably qualified and certified for performing NDT for statutory, insurance or contractual purposes,” concludes Jansen.

Young Welder successful in Brazil

The 2015 Young Welder of the Year (YWOY), Jaco van Deventer, acquitted himself admirably at the WorldSkills competition falling a mere 7 points short of the required 500 for a Medallion of Excellence. Van Deventer represented South Africa in the welding section of the WorldSkills competition, which was held in Sao Paulo, Brazil, from 11-16 August 2015.

The WorldSkills competition originated in Spain in 1946 when, just after World War II, there was a dearth of skills in that country and José Antonio Elola Olaso, who was General Director of OJE (Spanish Youth Organization), had an insight: it was necessary to convince youth, as well as their parents, teachers and prospective employers, that their future depended on an effective vocational training system. The idea was to have a competition so that "young people's competing spirit would be aroused, adults would discuss the competition results and visitors would be able to see a great variety of trades being demonstrated."

> **"ALTHOUGH STARTED BY THE SAIW, THE YWOY COMPETITION HAS BECOME AN INDUSTRY INITIATIVE INCREASINGLY IMPORTANT IN ATTRACTING YOUNG SOUTH AFRICANS TO THE WELDING INDUSTRY"**

Today WorldSkills represents more than 45 skills in 72 Member countries and regions, all working together with youth, educators and industries to help prepare the workforce and talent of today for the jobs of the future.

The winner of South Africa's biennial YWOY competition, which has become the foremost skills test for young welders in the country, represents South Africa at the WorldSkills competition.

Jaco van Deventer acquitted himself well representing South Africa at the WorldSkills competition in Sao Paolo, Brazil

Etienne Nell, convenor of YWOY, who accompanied van Deventer to Brazil, says that he was pleased with van Deventer's overall performance. "He is a particularly industrious and conscientious young man who showed discipline and application during the local competition earlier this year and during his training for the competition through to the main event itself. If it weren't for a relatively small mistake he would have been the best South African in the history of the competition and I have no doubt that he has an outstanding future ahead of him in the welding industry," says Nell.

He adds that van Deventer's employers, Steinmüller Africa, deserve unmitigated praise for their attitude towards his participation in both the local and the international competition. "They supported him fully including giving him months off work to prepare," Nell says.

Sean Blake, Executive Director of the Southern African Institute of Welding (SAIW), says that, although started by the SAIW, the YWOY competition has become an industry initiative increasingly important in attracting young South Africans to the welding industry. "The initial raison d'être for the competition was to get the youth to be more conscious of the great opportunities offered by the welding industry for employment and a successful career and I believe that it has, in this regard, been a great success. In the 10 years that we have run the competition, entries have increased by more than fivefold and our publicity, when measured by advertising value equivalency (AVE), by more than a hundredfold," Blake says.

> **"IF IT WEREN'T FOR A RELATIVELY SMALL MISTAKE JACO WOULD HAVE BEEN THE BEST SOUTH AFRICAN IN THE HISTORY OF THE COMPETITION AND I HAVE NO DOUBT THAT HE HAS AN OUTSTANDING FUTURE AHEAD OF HIM IN THE WELDING INDUSTRY."**

He adds that the increased involvement of those who are teaching the youth welding skills is the most encouraging and with their support the SAIW will be extending the footprint of the competition quite considerably in future years. "We are particularly pleased that Steinmüller has opted to be on the organising committee and we look forward to working with them again in the future."

In terms of the extended footprint Blake says that there are plans for regional competitions in the future in the Western Cape, KZN and Mpumalanga. "This will give a lot more youngsters the chance to get into the finals in Johannesburg and will, of course, substantially increase awareness of the Young Welder competition," Blake says.

There will also be an increased focus on marketing and promotion for the 2017 competition. "We plan to get even wider coverage of the competition in the classical media like radio, print and television. But we also plan to increasingly use the social media like Facebook, Twitter and others, which are appropriate for the age-group of the participants in the Young Welder competition. A specialist agency has already been employed to oversee this activity," Blake concludes.

In the SPOTLIGHT

Pieter Venter

IN OUR SERIES OF PROFILES ON PEOPLE WHO ARE MAKING A DIFFERENCE TO THE WELDING INDUSTRY AND THE SAIW, WE TALK TO ARCELOR MITTAL'S MANAGER MATERIALS ENGINEERING, PIETER VENTER. BORN IN 1959 IN ZASTRON IN THE FREE STATE, PIETER WAS BROUGHT UP AND SCHOOLED IN PRETORIA WHERE HE ALSO ATTENDED THE UNVERSITY OF PRETORIA. PIETER IS MARRIED TO VERONICA AND THEY HAVE THREE CHILDREN – NADINE, ANDRÉ AND HEINO. APART FROM HIS MANY DUTIES AT WORK PIETER IS CHAIRPERSON OF THE SAIW TECHNOLOGY AND TRAINING BOARD, A MEMBER OF THE WELDING FABRICATOR CERTIFICATION BOARD AND A MEMBER OF THE SAIW FOUNDATION.

Fusion: ***What did you do after school?***

PV: Directly after school I enrolled at the University of Pretoria where I studied Metallurgical Engineering on an Iscor bursary. Then I went to the army for two years and after that I did my honours in Metallurgical Engineering.

In order to improve my technical knowledge in the field of welding engineering and materials, I enrolled for the Master of Engineering (Metallurgy & Materials) degree at Wits where I was a top 15% academic achiever in 2010. Also, I achieved the International Welding Engineer (IIW) Diploma through the Southern African Institute of Welding, in 2011.

In terms of general management I have done management and leadership development programs at the Unisa School of Business Leadership and Duke Corporate University.

Fusion: ***What first got you interested in the steel industry?***

PV: I would say the steel industry is in my DNA. My late father worked for Iscor for many years when the Pretoria Works was still in operation and there was never a doubt that I would follow him in the industry. I must say that I have never regretted the decision to study Metallurgical Engineering as it offers many challenging career and specialisation opportunities.

Fusion: ***Tell us a bit about your career***

PV: After completion of my officer's course at the School of Artillery in Potchefstroom, I worked for the Defence Force at Lyttelton Engineering Works (now Denel Land Systems) on various mechanical engineering projects involving the G5 155mm Howitzer development and the Rooikat armoured car. Thereafter it was back to ArcelorMittal South Africa (then Iscor) Vanderbijlpark Works where, since then, I have worked in various operational plant management positions, including the finance department where I managed the re-engineering of the capital management process for the company. I also managed the internal fabrication and machining workshops at the Vanderbijlpark Works. Subsequently I decided to specialize in materials and welding engineering and I am now the manager of materials engineering and Authorized Welding Coordinator (AWC).

Fusion: ***What do you think of the standard of welding education in South Africa and could you comment on the role that the SAIW is playing?***

PV: Although there is always room for improvement, the standard of welding education in this country is excellent. The SAIW is certainly the benchmark for welding education in South Africa through its wide range of IIW accredited courses on offer. The bi-ennual Young Welder of the Year competition also demonstrates the commitment of the SAIW to welding skills development. The available consulting service and mechanical testing facility also provides a cost effective one stop service to the fabrication industry.

Fusion: ***Any comments on the macro economic situation in South Africa and how this affects the local welding industry***

PV: The economic situation currently is tough! Future economic growth in South Arica will only be realised through significant infrastructure development in the areas of electricity, water, oil and gas distribution, ship building, rail transport and housing. This is fundamentally the objective of the National Development Plan (NDP) and a sustainable local steel industry, providing job opportunities for South Africans through the entire manufacturing supply chain is essential in order to support these objectives.

Fusion: ***Are you optimistic about the future?***

PV: The current collaboration between government, business and labour to bolster the local steel and fabrication industry - and thousands of jobs - is encouraging. In the process a better understanding of the rules of doing business in South Africa and the operational requirements is also achieved. One of the important elements of this process is the localisation strategy and quality and cost effective welding services, provided by South African fabricators, will remain important in the implementation of this strategy. I also believe that welding and related support services will benefit in the future from the ever-increasing need for skills development and growth through Enterprise and Supplier Development programs.

Fusion: Thank you

Qualification and Certification

CONGRATULATIONS TO THE PEOPLE BELOW WHO RECENTLY ACHIEVED QUALIFICATION AND CERTIFICATION.

SAQCC-NDT CERTIFICATES

Liquid Penetrant Testing Level One

Dodana T
Goender AS
Mahungela G
Malakoane DJ
Manyuha J
Maseko NB
Mnguni SJ
Moalasi RD
Salima DN
Sebetha SS
Sifunda WS
Skosana OF
Trollip JW
van Hansen PJT

Liquid Penetrant Testing Level Two

Dhlamini SZ
Digby J
Goender AS
Goosen CA
Haarhoff JC
Hlazo Z
Mahungela G
Ramasia DS
Roos R
Sibiya NN
Simelane SP
van Schalkwyk T

Liquid Penetrant Testing Level Three

None

Magnetic Particle Testing Level One

Dodana T
Haarhoff JC
Mahungela G
Maloka BV
Mashale GK
Ndhlovu M

Magnetic Particle Testing Level Two

Beselaar Q
Clarke KG
Goender AS
Goosen CA
Hlazo Z
Jacobs C
Mahungela C
Matthews CF
Moalasi RD
Ndlovu FM
Ramasia DS
Sibiya NN
Sifunda WS
Stenger C
van Schalkwyk T

Magnetic Particle Testing Level Three

None

Ultrasonic Testing Level One

Badenhorst GP
De Jager E
de Souza M
Hall MJ
Herselman M
Jacob A
Jiyane KD
Mahlangu MM
Moahloli KK
Nel HA
Patrick Thulani S
Pretorius JH
Selepe MS
Thabede SS

Ultrasonic Testing Level Two

Du Toit HL
Kumalo TK
Mofokeng MG
Van Der Westhuizen G

Ultrasonic Testing Level Three

None

Ultrasonic Testing Wall Thickness

Afrika KL
Bezuidenhout PF
Dube D
Esterhuizen W
Green RK
Khan SI
Luthuli NC
Mile TE
Molete ME
Moretsele KS
Motsa MM
Mpepo G
Musi KC
Ngwenya MK
Nkabinde LA
Rezant D
Thebe KG
Zimba DT

Radiographic Testing Level One

Loots JGL
Smit H

Radiographic Testing Level Two

Ndala ZL
Nkosi JT

Radiographic Testing Level Three

None

Radiographic Interpreters

Cupido V
Kitchenbrand RD
Masina ME
Swart JB

Students that passed the Welding Inspectors Level One & Two

Inspectors Level One

Abdool Kadir A
Abrahams AF
Ahmed Y
August CA
Ayres QR
Bakie B
Banda S
Becker RA
Bennett DCA
Beselaar F
Bezuidenhout D
Bhelebana DL
Blignaut KP
Bosman S
Botha D
Botha E
Botha Z
Bruwer JWVZ
Buchshwenter FO
Buthelezi SG
Campbell IR
Carlinsky A
Cawe VF
Cayzer PA
Chatikobo T
Chhipa MZ
Chibememe W
Claassen L
Cloete M
Coetzee S
Colbeck WM
Coleman LA
Coutts AJC
Crawford AJ
Dalzell RJ
Daniel D
de Beer J
de Beer JS
de Bruin AJ
de Carvalho TAL
de Jesus JA
de Klerk A
Dednam D
Delport CJ
Deyzel L
DippenaarJ
Dlamini ER
du Plessis FJ
du Plooy R
Dudumushe NP
Dugen AT
Elms LE
Eloff LS
Engels J
Esbend I
Fortuin AL
Fortune VP
Fourie J
Francis KW
Fynn RR
Gounden D
Govender P
Govender R
Gravette W
Grobbelaar D
Gtosa A
Gun U
Hamann Z
Hlongwane SC
Horton ZE
Hunter LJ
Izaakse JP
Janse van Rensburg R
Jansen M
Jean-Pierre NM
Jele TE
Jooste LM
Kazke JR
Kell QA
Kgokong PT
Kgomo TL
Kgomo TW
Kgwete KE
Khan MZ
Khanyile MB
Khoza D
Khoza TH
Khumalo SR
Koekemoer J
Komane LB
Komane LB
Kotze LH
Kriel DJ
Kriel J
Kriel R
Lawrence DH
Lekwana MA
Letlhaka PM
Letsae TJ
Mabaso AS
Madide TLS
Madonsela D
Madonsela NL
Madupela JM
Maelane MK
Mafale MD
Magugwana N
Mahlalela MR
Mahlangu BS
Mahosi KD
Maiwashe RS
Makayiya WB
Makgolane EM
Makhoba SA
Makhura FP
Malatjie TP
Malgas ALG
Mamba MP
Mambane E
Mani A
Manique B
Mapetla MG
Marcus AW
Marineau TM
Maseko BG
Maseko MAM
Maseko MP
Maseko SG
Maseko SJ
Mashabela MA
Mashele LY
Masilela EM
Masina JM
Masithela TS
Masuku SJ
Mathobela MP
Matlou MJ
Matsi MKS
Mavuso S
Mbata Z
Mbokane CS
Mbonane TLP
Mbuyazi NB
Mchunu MP
Meth ADC
Mfomadi RT
Mhlanga TS
Miller RB
Mkhwanbi NF
Mlisane MN
Moalogi T
Mogofe MP
Mohale L
Mohlampe A
Mokabane MS
Mokau MP
Mokobana MA
Mokoni JK
Mokwena AT
Mokwena L
Mokwena TR
Molotsi LW
Motha SS
Motloung TG
Motshwene JS
Moyo B
Mphahlele DT
Mphuti SK
Mtshali BR
Mudzanani MA
Mulaudzi M
Naidoo LM
Naidoo N
Nakin KJ
Naude AM
Ncgobo MA
Ndaba FV
Ndidishi M
Ndlovu B
Ndlovu NM
Ndoweni TR
Neves MSDS
Ngandana V
Ngcamu NE
Ngidi GSG
Ngwazi PN
Ngwenya SH
Niemand S
Nkabinde TEM
Nkabindi SC
Nkale HS
Nkhwazi EC
Nkosi LJ
Nkosi SB
Nkosi SG
Nkosi SMC
Ntsaube E
Okuhle G
Padayachee T
Parker CP
Phakathi N
Phora MS
Pienaar HP
Pillay T
Potgieter EJ
Potgieter JHL
Pretorius IJ
Pretorius MW
Preuyt JD
Radebe SS
Radzilani MC
Ramburran B
Ramushu EM
Rankapole RM
Rasepai TP
Redman E
Rennie CM
Rens AJ
Roberts CL
Roos AD
Roos OJ
Rossouw PS
Sabao J
Sadan A
San Roman GPA
Sawoni MP
Scharneck MP
Segalabutla PT
Sejwane KP
Sekgobela MT
Sekobane KV
Sethunya DB
Shah MJ
Shixwandu F
Shongwe GBC
Shongwe S
Shongwe VM
Sibeko CN
Sibitane MS
Silinda PPww
Singh K
Sithole BN
Sithole FJ
Skhosana SJ
Smith JJ
Snyman AH
Solomons DW
Stephanus NM
Steuer KA
Stols AA
Sullivan KRN
Takoorparsad K
Talliard DB
Tan K
Taylor MD
Thole AJ
Thompson WC
Thwala LS
Tlou J
Tshabalala MJ
Tsouete MM
Tswai BR
van As JF
van Blerk D
van der Beyl HC
van der Merwe RD
van der Walt D
van der Walt L
van Rensburg VA
van Staden Q
van Wyk JC
van Zyl C
Vermaak CJ
Vermeulen I
Vilakazi LBF
Vilakazi NL
Vilakazi TH
Warraich SRK
Wepener BBK
Williams CL
Williams LE
Wilson LCM
Wohler RR

Wyngard RK
Zondo ZT

Inspectors Level Two

Alufayi W
Basson MJ
Binniwell JM
Botha CA
Bougaard C
Bvuma A
Calitz PW
Campbell Q
Can E
Chettiar LE
Chetty DC
Christophers NW
Cindi MC
Coetsee J
Coetzee R
Crocker CC
de la Guerre CJ
du Plooy D
Firmin AE
Fouche HJ
Goosen J-J
Green I
Gregory RP
Grobler D
Haasbroek TH
Hadebe Z
Hanekom R
Hendriks V
Hennings C
Hickman R
Hughes O
Jansen AA
Jansen M
Johnson L
Jooste M
KGradidge KE
King KF
Lawson RR
le Hanie P
Lopez SW
Lubbe B
Mabaso SZC
Maligana T
Maluleke SD
Manuel M
Maseko NP
Mazibuko ZJ
Mbele J
Mc Millan W
Mentz HM
Minnaar PP
Mkhize MW
Mokoena MK
Moleleki IS
Moloi TD
Moodley ES
Moodley L
Mphuti MJ
Mzinyane FS
Naidoo N
Nankomar RD
Ndhlovu N
Ndhlovu NV
Nell DJ
Ngomane TJ
Nkopane MP
Nkosi ML
Nkosi SF
Palmer RKK
Parker EA
Pelser WJ
Phoswa SR
Pofadder HC
Potgieter EJ
Pretorius AH
Prinsloo M
Resola RL
Roskruge J
Schoeman MA
Simelane SG
Steyn DC
Tariq S
Terblanche NP
Thorpe DB
Tshivhombela IA
van Boom A
van Deventer V
van Jaarsveldt A
van Tonder GR
van Zyl M
Venkatasami T
Viljoen E
Visser R
Vorster AG
Weerepas IR
Zungu SM

ASME Codes of Manufacture

van Blerk D

Painting Inspectors

Adonis RA
Botha KW
Cronje H
Gonouya B
Hattingh Q
Kotze DJ
Limper S
Linderboom R
Madondo HP
Marshall SM
Maswime R
Matthews CN
Pretorius GJ
Ramohong GL
Sibanyoni BJ
Tamanyane KP

Heat Treatment

Rothquel RC

Certified Students

Boilers

de la Guerre PL

Pressure Vessels

Cooper B
Francis C
Whitby K

IPE

Diop A
Jacobs J
Pienaar D
Pietersen J
Ryklief A
Sithole V
Viviers A

Welding Inspector Programme – the Flagship Course


Sean Blake

SAIW executive director Sean Blake, says that the institute's Welding Inspector programme has been a success locally and internationally and is one of SAIW's most significant achievements to date.

The Welding Inspector suite of courses trains on average 1 000 students a year.

"The success of this programme is testament to the strategy of analysing the needs of the industry and basing the contents on those needs, ," says Sean. "The Welding Inspector courses are our flagship training programme, tailored to meet industry requirements for welding inspection personnel involved in the fabrication, petrochemical, refinery, process plant, power generation, construction and other industries. Qualification as a welding inspector is an ideal platform to build a career as a third party inspector or to progress further as a technical expert or manager of an inspection function," he says.

Since 2010, the Welding Inspector courses and examinations have been fully aligned with the International Institute of Welding's (IIW) IWIP standard level inspection level diploma, but the combined SAIW Welding Inspector courses are more comprehensive than the IIW syllabus as they incorporate material identified as essential by national industry experts.

"This SAIW qualification has become world renowned and there is quite a demand for our welding inspectors globally, including a high demand from companies in the Middle East," Blake says.

He adds that many in the global industry regard the SAIW inspectors programme as equal to anything in the world. "It is certainly a unique programme in Africa and it is an important reason among many for the SAIW having become the foremost welding training institute on the continent in a relatively short period," says Blake.


Morris Maroga

SAIW President Morris Maroga says one of the biggest challenges facing the local welding industry is to counter the importing of skilled welders from Asia and other countries for major projects. "We need to urgently raise the skill levels locally to obviate the need for skills importation," he says.

"We are not training as many young people as we should in the basic welding disciplines and, at the higher levels, the country is lacking in trained personnel, especially engineers," he says.

Maroga says the SAIW aims to mitigate these challenges by stepping up the promotion of its training services while also encouraging university graduates to pursue careers in welding at the highest levels.

Maroga notes that importing low-skilled welders from abroad could be substituted with local skilled welders, mainly from urban areas, who could be trained in large numbers. He explains that South Africa's rural areas also represent an opportunity to train potential welders, but people living in rural areas are unfortunately not as aware as their urban counterparts of the opportunities to pursue a career in welding.

The SAIW continues to make a concerted effort to reach these people in the rural areas and, going forward, the institute hopes to deepen its partnership with the local welding industry to spread training programmes across the entire country.

"To continue with our quest to assist in the alleviation of the skills shortage in South Africa we want to work closely with our industry and related industries to market and promote the range of opportunities for a career in welding to the young people of South Africa," Maroga says.

Maroga notes that for young locals achieving certification in a welding discipline guarantees them a job in the industry in this country. "Even at these low levels of economic activity, there are always job opportunities in the welding industry as the need for skills is massive and ubiquitous," Maroga concludes

SAIW NOTICE BOARD

KwaZulu-Natal Branch – a reality!

The new SAIW KwaZulu-Natal branch will be housed in these premises

40 Essex Terrace, Westville Durban, is a special address! Why? Because this is the new home of SAIW's KwaZulu-Natal branch! "We are extremely pleased to have found the right premises for our new, fully-fledged KwaZulu-Natal branch," says SAIW executive director Sean Blake. "There is so much potential in this region and having a branch there will help an ever-increasing number of people to benefit from welding training," he says.

Sean says the interest and enthusiasm of the newly formed KwaZulu-Natal committee (pictured below) is most encouraging. "The first chairman, SAPREF's Donovan Govender, is extremely keen for the committee to make a difference in the local industry and I have no doubt that they will do just that," he says.

At the committee meeting on the 18th August, a number of initiatives were discussed in order to meet the objectives of SAIW. The attendees were as follows: David van de Merwe – Elgin Engineering, Rene Nkhwashu – Intertek, TZ Joubert – SAPREF, Raymond Molepo – Engen, Cameron Toolsee – Intertek, Reg Groves – RBI Tech, Nazeer Sheik – Sappi, Zaid Abbas – TUV, Kimber-Leigh van der Merwe – Weis, Sean Blake – SAIW, Anne Meyer – SAIW, Elwin Stanley – Group 5, Selwyn Boyles – Oceaneering.

The SAIW KwaZulu-Natal committee

SAIW Foundation Board

The SAIW Foundation Board (below) is delighted at the progress of the first four students who are currently being put through their paces at the Institute. "The enthusiasm and application of these four young men and women augurs well for the future of the SAIW Foundation, which is dedicated to helping those who are less fortunate financially to start a career in welding," says Sean Blake, SAIW executive director.

(l-r) Pieter Pistorius – University of Pretoria; Sean Blake – SAIW; Sonet Jordan – Steinmuller; Johan Pieterse – Afrox; Pieter Venter – Arcelor Mittal; Morris Maroga (Chairman) – Eskom

ALAN REID: SAIW's New Technical Services Manager

Reporting directly to executive director, Sean Blake, Alan Reid joined the SAIW in July this year as technical services manager.

He graduated with a degree in Physical Metallurgy from Wits University in 1998 and, in 1999, started work at DCD Heavy Engineering as a welding technician and was there for over 16 years.

Alan completed an MBA in 2011 through the North West University's Potchefstroom Business School.

Alan will oversee the SAIW's suite of technical services offerings, and says that one of his priorities is to have the SAIW lab accredited to ISO 17025.

Welcome to our universe Alan and good luck!

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