Fusion

Newsletter of the Southern African Institute of Welding

December 2017

SAIW
Southern African Institute of Welding

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SAIW acquires Cape Town-based NASA

The Southern African Institute of Welding (SAIW) has acquired the assets of Cape Town-based NDT Academy of South Africa (NASA) with effect from 1 January 2018. According to SAIW executive director, Sean Blake, the acquisition is in the interests of both parties and the industry as a whole.

"SAIW has traditionally not offered Non-Destructive Testing (NDT) training services in the Western Cape and, with this acquisition, it will now be able to offer in Cape Town its ISO 9712-accredited NDT training courses which complement its Welding Inspection and Welding Technology courses already offered through SAIW Cape Town," he says.

In line with the agreement, NASA Cape Town will cease to trade and its clients will be serviced from expanded SAIW premises at the current location in the Milpark Centre on Koeberg Road.

Utilising the combined course material, infrastructure, systems and procedures from SAIW and NASA Cape Town will result in synergies and cost-efficiencies for all concerned in and around the region. "For our members and other industry players their NDT, weld inspection and welding needs will be better and more cost-effectively met with this arrangement," Blake says.

NASA Cape Town CEO, Ben Buys, who will continue as a SAIW lecturer, is delighted with this development. He concurs that the acquisition is to the benefit of both organisations and the industry as a whole. "In line with our ongoing drive to expand NDT services in the Western Cape the acquisition of NASA Cape Town by SAIW, which has a solid reputation, excellent skills and infrastructure, will be a significant boost to us realizing this goal," he says.

SAIW
Southern African Institute of Welding

Sean Blake and Ben Buys shaking hands on the acquisition.

Message from Sean Blake

We find ourselves at the end of a year characterised by political and economic uncertainty. The steel manufacturing and fabrication industries are in difficult territory and many jobs are being lost in those sectors.

But we must remain positive and our activities this year clearly indicate that we are.

During October at the 69th SAIW Annual Dinner we recognised achievements in the industry and we congratulate SAIW gold Medal winner Willie Rankin and the other award winners (see inside). Thanks to Afrox for their contribution over the years and congratulations on their 90th Anniversary.

We introduced the IIW International Welding Inspector programme at the Basic level which replaced the SAIW Welding Inspector Level 1 programme. The programme has been well received and continues to make a positive impact.

Six SAIW Foundation students completed the 40-week International Welder programme in partnership with ArcelorMittal where they are now going to enter an apprenticeship programme.

Welding skills development is key in South Africa and SAIW continues to play a pivotal role in this regard. This year we assisted WorldSkills SA to organise its welding competition in Durban which Phillipus Terblanche won. We also sent a group to participate in the Arc Cup in Shanghai and Samukelo Mbabani won Gold in the student category. Certainly efforts to be positive about!

We continue to work with the Department of Higher Education in implementing the QCTO Welder curriculum in TVET colleges and we believe that this will make a positive impact on industry in the long term.

The SAIW Certification ISO 3834 Manufacturer Certification Scheme continues to grow from strength to strength. There are now more than 150 companies certified on the scheme! Well done to the team and all the certified companies.

SAIW has acquired the assets of NASA Cape Town, which will assist us to offer additional courses and services at our Cape Town facility next year. We also welcome Ben Buys to the staff of SAIW. He will be facilitating the NDT courses in Cape Town.

I would like to thank everyone who made a contribution to SAIW this year. To our board members and industry supporters, without your support SAIW would not be the strong organisation that it is.

A special word of thanks to SAIW staff who have worked so hard to make a success of 2017.

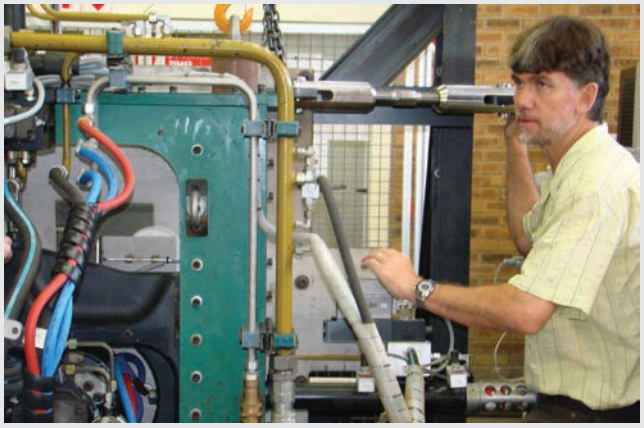
In 2018, the SAIW will celebrate its 70th anniversary and I look forward to celebrating this milestone with all of you and the industry at large.

I wish you all a peaceful and happy festive season and look forward to an even better 2018!

Sean Blake

Farewell Philip Doubell …

… a welding industry legend



It is with deep regret that we announce the passing of Philip Doubell on the 27th of October 2017. Philip was an integral part of the welding community and his contribution to the welding industry was enormous.

Philip began his career at Eskom in 1987 where he worked for over 30 years. While at Eskom, he obtained a Metallurgical Engineering degree from the University of Pretoria and then a Masters degree in Welding Engineering from WITS. In 2003 he completed the IIW's IWE diploma – then only the fourth person in South Africa to obtain this highly coveted international qualification.

Philip was well known in the industry for his innovative and 'out of the box' thinking and developed a reputation not only in the South African industry but all around the world for this ability.

Philip developed many new ideas and technologies and holds a number of patents for these novel technologies that he developed including the innovative WeldCore® which he developed together with Professor Danie Hattingh and the eNtsa team from Nelson Mandela University.

Philip was the recipient of SAIW's Harvey Shacklock Gold Medal Award in 2006 and made many technical presentations at SAIW and other welding conferences.

One could always rely on Philip to help where there was a need. He was a key contributor to the Technical Committee for Welding at the SABS and travelled a number of times to ISO meetings to represent South Africa's interests at these international forums.

Philip was an inspiration to many but especially to young engineers who crossed his path whom he helped develop into competent engineers.

Philip is survived by his wife Grietjie and two children Michélle and Müller.

Rest in Peace Philip. You have left a huge void and you will be sorely missed by all who knew you and the welding industry at large.

Sean Blake

WorldSkills in Abu Dhabi …

… the good and the not so good

Earlier this year, the winner of the 2016 SAIW Youth Challenge, Phillipus Terblanche, brushed aside fellow competitors at the WorldSkills SA competition to earn the opportunity to represent South Africa at the WorldSkills International Competition, which was held in Abu Dhabi from 14-19 October 2017.

According to WorldSkills S.A.'s National Expert and convenor of the SAIW Youth Challenge, Etienne Nell, the SAIW, together with its main sponsors, Lincoln Electric and the Chemical Industries Education & Training Authority (Chieta) embarked on an extensive training program for Phillipus using the projects and applicable mark sheets that were to be used at the Abu Dhabi event.

Phillipus Terblanche

"Lincoln Electric, our international sponsor, made available their Demonstration Centre for training, and provided us the exact same welding machine and consumables that were going to be used," Etienne says.

He added that the Chieta helped with funding for welding expert, Eduan Terblanche, who has extensive experience in the welding of stainless steel and aluminium, to spend 16 weeks at the Lincoln Demonstration centre coaching Phillipus on the skill-specific aspects of these two difficult-to-weld materials.

Lincoln Electric invited Phillipus to undergo further training at their academy at Lincoln's headquarters in Cleveland, Ohio for a further three weeks which was funded by both Chieta and SAIW. In Cleveland, Phillipus underwent intense training by Lincoln's lead trainer Andrew Cardin. "This was of enormous value and we had high hopes for success in Abu Dhabi after witnessing some of the quality welds made by Phillipus in America," Etienne says.

To boost his chances both Etienne and Phillipus were active on the WorldSkills International Competition forum, which gave them access to all the required information about the competition. "This was most helpful in preparing Phillipus for the event since there would be no surprises awaiting him regarding changes in the rules," Etienne says.

While Lincoln and the Chieta did so much to help Phillipus during training, his response was equally outstanding. "Phillipus was 100% committed and went the extra mile to do as much welding practice as possible and to take maximum advantage of what was offered to him in support. He worked long hours and spent most of the 20 weeks prior to the competition away from home. He excelled at every new task that was given to him and never failed to acknowledge the input from his mentors and my constructive criticism," Etienne says.

He adds that, in essence, there were no limiting factors. "We had access to everything as was stipulated on the infrastructure list including tools, accessories and more".

So all was good leading up to the competition. Unfortunately Phillipus only achieved 25th place, which was a disappointing result especially since in the USA he was rated to be equivalent in skill to the Russian competitor who trained with Phillipus in Cleveland. The Russian competitor ended in a very creditable 9th position overall.

"These things happen," Etienne says. "How many times do highly trained and favoured teams or people lose their composure in major competitions (take SA Cricket for example)? Our competitors still need much more exposure to international events, and we need more funding all-round to be able to train for even longer periods. In addition, I feel that WorldSkillsSA need to look at their overall performance and to analyse how they could do more to take note of the National Experts' understanding and experience in the disciplines in which they have worked for so long."

But Etienne concludes on a most positive note: "I must commend Phillipus on his wonderful, positive attitude throughout. He tried his very best and perhaps choked a bit when it counted. This happens to the best competitors in every sphere. The great ones get up from the disappointment, overcome the bad experience - and their fears - and push on! Well done Phillipus!

Certification 2018...

The certification ceremonies in the last part of 2018 held in Johannesburg and Secunda were inspirational. To all the young men and women who made the effort to further their careers and who worked so hard to achieve good results, we congratulate you and wish you all the very best for your future careers. Some of the recipients are pictured on the following pages.

Secunda

SAIW WELDING INSPECTOR LEVEL 1

SAIW SENIOR WELDING INSPECTOR LEVEL 2

IIW INTERNATIONAL WELDER

IWIP BASIC

Barend Pieterse

Philip Hlatshawayo

INSPECTOR LEVEL 2 & IIW(S)

Anton Maree

IIW SPECIALIST

Otto Nicholas Kitchenbrand, Julian Franco Shirley, Michelle Fourie and Richard Martin Van der Merwe

Certification 2018...

Johannesburg

IIW SPECIALIST

George Makaya

Mlungisi Makhaya

Segoadi Chuene

Willard Chiweshe

IIW TECHNOLOGIST

Confidence Lekoane

Hermanus Vermaak

IWIP BASIC

Dirk Johan Blignaut

Frans Johannes Petrus Grabe

Lebone Kutlwano Boitumelo

Leonard Sanyika

Mojalefa Caswell Malakoane

Liam Cameron

Nontokozo Candice Simelane

Pfarelo Precilla Nelufule

SAIW WELDING INSPECTOR LEVEL 2 & IIW(S)

Bafithile Moyo

Phumlani Ngwezi

SCHOOL OF APPLIED NDT EXAMINATION CERTIFICATION

SAIW WELDING INSPECTOR LEVEL 1

SAIW SENIOR WELDING INSPECTOR LEVEL 2

Phillipson Mbofana – Distinction

Annual Dinner Awards

The 2017 Annual Dinner was a glittering, entertaining and often moving affair. It was, as usual, well organised and it was obvious that all were having fun celebrating the SAIW and its people, who make this such a successful organisation.

Of course it is always moving when the Institute's highest accolades are announced and this year we certainly had deserving winners

THE GOLD MEDAL AWARD

Willie Rankin

The 2017 SAIW Gold Medal Award went to industry stalwart, Willie Rankin, in recognition of his dedicated service to the Institute and, in particular, his exceptional leadership contribution through a period of difficult and challenging circumstances in the years 1998 to 2002 when he served as the Institute's President.

The SAIW Gold Medal Award was introduced in 1966. It is the Institute's highest award and can be made to a company or an individual in recognition of outstanding contributions to welding technology or to the Institute.

SAIW PRESIDENTS' AWARD FOR NDT

Learn Mogane

The Presidents' Award recognises the top NDT student on Institute courses, which, for 2017, goes to Learn Mogane for achieving distinctions in Ultrasonic Testing Wall Thickness Level 1 & Level 2, Radiographic Testing Level 2, Magnetic Particle Testing Level 1 & Level 2, Liquid Penetrant Testing Level 1 & Level 2 methods.

The Presidents' Award is made in the name of the past Presidents of SAIW who have helped guide the Institute to become a prominent part of the local welding industry and South Africa's reference point for high quality training in welding and NDT training.

PHIL SANTILHANO MEMORIAL AWARD

Manare Kola

The 2017 Phil Santilhano Award, which is presented to the best student on the Institute's courses in Welding Supervision and Inspection, was won by Manare Kola who achieved a distinction in Welding Inspectors Level 2.

This award is made in the name of Phil Santilhano who was one of South Africa's leading welding technologists and was the Institute's first full time employee when he was appointed Technical Director in 1977.

HARVEY SHACKLOCK GOLD MEDAL AWARD

Angel Krustev

The Harvey Shacklock Gold Medal, which is given to the author of the best technical paper presented at an Institute event. The 2017 award went to Angel Krustev for his presentation "Modified GTAW Orbital Tube to Tubesheet Welding Technique and the Effect of a Copper Weld Retainer during Welding of Alloy 825". The paper was presented at a SAIW Technical evening meeting in Johannesburg on the 6th of September 2017.

Harvey Shacklock was the Managing Director of BOC (British Oxygen Company) now African Oxygen Limited. He was instrumental in founding the South African Institute of Welding and was the President when it was founded on 1st March 1948.

The Award was presented by SAIW President Morris Maroga and Schalk Venter, Afrox Managing Director.

Enjoying the SAIW Annual Dinner

SAIW supports the LIV Welding Academy…

… all in the name of community upliftment

The SAIW is right behind the LIV Welding Academy (LWA) initiative says SAIW executive director, Sean Blake. "We are excited about the possibilities of providing skills to young people who may otherwise never have had a chance to get employment. We know that qualified welders have an excellent chance of getting a job and we'll do whatever we can to help Afrox and the LWA to ensure they are able to give the learners world-class levels of training," Sean says.

SAIW's first task is to certify the LWA as an Authorised Training Body (ATB) for the relevant International Institute of Welding (IIW) training programme. "This process is underway," Sean says.

The new LWA's state-of-the-art welder training centre will accommodate twelve students at a time and has begun training students on the QCTO national welder programme which is funded through bursaries from industry. The academy is in the process of obtaining the necessary accreditations.

Afrox-sponsored learners at the LIV Welding Academy

Anne Meyer who is managing the LWA says that the centre is equipped with state-of-the-art equipment to help ensure the best possible standards of training. "Not only will qualified students have the opportunity to get jobs, but also the revenue generated by the LWA will feed back into the LIV Village."

The LIV Village model is a long term cluster foster care arrangement, where the children gain a sense of belonging in a homely environment, which models an African village lifestyle. The houses are built in clusters, each with eight homes surrounding a communal play area. Each home has a fully trained House Mother, who may bring two biological children, and will be given up to six children through the Department of Social Welfare.

Welder training at the LWA will start with pupils from both the LIV School as well as youth from the surrounding communities who are of school-going age but who are not attending school and who are unemployed. Students will leave the programme after three years as qualified Artisan Welders ready to contribute to South African industry. "There is a shortage of skilled welding personnel in South Africa making this a powerful and sought after qualification in this country," Meyer says.

She adds that there is a wide range of careers in welding making it one of the most advantageous skills in industry. "You can be a welder, a welding inspector, welding supervisor or coordinator, welding specialist or engineer. You can get involved in non-destructive testing and get involved in sales and marketing and a whole lot of other business functions in the welding and related industries. And all this across so many sectors: construction, mining, automotive, oil and gas, aerospace, shipping and more. It's no wonder many regard it as the 'miracle' career."

Afrox has been a great supporter of the LWA but more support from others in industry is required so that the LWA can continue with its very important work.

Please contact Anne on 083 787 5624 or on annemeyer@liv-village.com

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Radiography Part 2

The previous article dealt mostly with the basic principles of radiography – this part will cover the methods of ensuring that a radiograph is of an acceptable quality and capable of showing relevant imperfections. As mentioned in the previous article the quality of a radiograph is assessed using three factors: density, contrast and definition or sharpness of the image. Density and contrast have already been covered but there also has to be some method by which the sensitivity (the ability to reveal imperfections) can be measured. To do this devices known as image quality indicators (IQI's) are used. These can be of several forms as illustrated in Fig.1

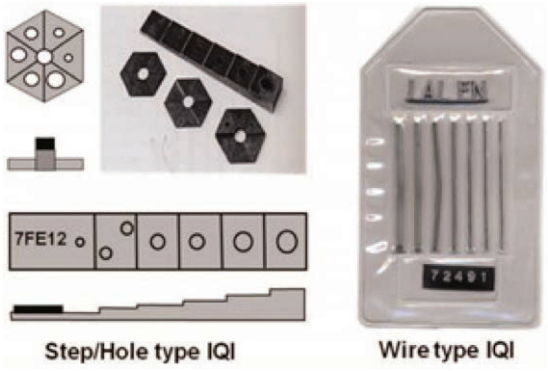

Fig. 1. Image Quality Indicators

The wire type is the most frequently used IQI in radiography-by-film. The design of the IQI is given in EN ISO 19232 Part 1 or ASTM E747. Both specifications list a series of IQIs containing six or seven wires of increasing diameter, from 1-8mm, from 10-50mm in length and in a range of metals – iron, nickel, aluminium, magnesium, copper and titanium. The wires are mounted side by side in a flexible plastic sheath which also carries appropriate identification, generally lead letters that will be clearly seen on the radiograph. The IQI is selected with respect to the metal type and the component thickness; the thicker the component the thicker the IQI's wires. The IQI carries an identification and serial number so that it can be confirmed at a later stage that the correct IQI has been used.

Ideally the IQI is placed on the source side of the component and, in the case of a weld, transversely across the joint although this is not always possible when radiographing pipe and tube butt welds. The sensitivity is taken as the smallest diameter wire that can be seen divided by the component thickness, expressed as a percentage. Most application codes specify a sensitivity of between 2-4%; this is a maximum, the smaller the figure the greater the sensitivity of the radiograph. Alternatively an actual wire diameter that must be visible is specified.

The step hole IQI is used less frequently. It is a stepped wedge with a hole drilled in each step, the hole diameter matching the thickness of the step. As with the wire IQI, the material and dimensions of the step wedge are selected to match the application. The diameter of the smallest hole visible on the radiograph determines the sensitivity, this being calculated as hole diameter divided by component thickness expressed as a percentage. The sensitivity measured by the use of a wire IQI is not the same as the sensitivity using a step wedge IQI.

As with any film, the method of processing will affect the quality of the image. Care must be taken to ensure that there is no light contamination, the processing chemicals are at the correct concentrations and temperatures and that drying the film does not leave marks and stains that would leave spurious indications and would make accurate interpretation difficult.

Interpretation of the radiographs must be undertaken by trained and experienced radiographers. In addition to being fully conversant with radiographic techniques such individuals should also have a comprehensive knowledge of welding processes, joint design and the various imperfections that may occur. Many application specifications require such individuals to be independently certified to a suitable certification scheme such as PCN, administered by the British Institute for NDT or CSWIP, administered by TWI Certification Ltd. Viewing should be carried out in a darkened room, allowing a period of time for the viewer's eyes to be accustomed to the conditions. The luminance of the viewing screen will need to vary with the density of the radiograph – there is generally a rheostat control (a dimmer switch) on the viewer to enable the luminance to be varied. The light itself should be white and diffuse and there should be as little light as possible leaking around the edges of the radiograph.

Radiography of flat plates and cylinders large enough to permit entry for placement of the film is a relatively simple operation, as shown in Fig. 1 of the previous article. Lead numbers are placed at fixed intervals along the plate adjacent to the weld or around the circumference of a pipe to enable the position of any imperfections to be accurately located. The weld also carries a unique identification number reproduced on the radiograph by the use of lead figures placed adjacent to the weld.

Radiography of pipes, however, where access to the bore to place the film is not possible presents some problems and terms such as SWSI and DWSI are used as shorthand to identify the various techniques that may be used.

Single wall, single image (SWSI) is a technique whereby the radiographic source is placed inside the pipe by some suitable method, the film wrapped around the outside of the pipe and the exposure made as shown in Fig. 2. This may also be known as a panoramic exposure. The IQI is placed on the outside of the pipe immediately beneath the film. Both X- and gamma-radiography can be used, the source being placed in position by the use of a pre-placed spider or by means of a crawler unit. This method is most commonly used for the inspection of pipelines where the weld can be radiographed in one exposure, making the technique rapid and cost effective.

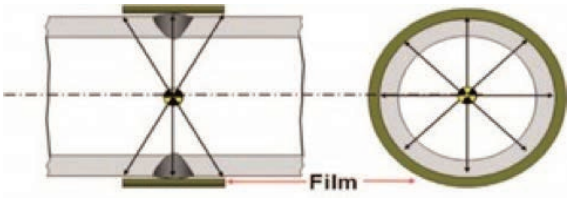

Fig. 2 Single wall, single image (SWSI) or panoramic radiographic technique

Where access to the bore is not possible or the pipe diameter is too small to permit the use of an internal source then the double wall, single image (DWSI) technique is used. Here the film is placed on the outside of the pipe on the farthest side from the radiographic source, as shown in Fig. 3. The source may be offset slightly to avoid an image of the upper part of the weld to be projected onto the film or directly in line. The source may be close to or a substantial distance from the pipe, the location being a compromise between a less sharp image but short exposure time for a small stand-off and sharper image but longer exposure time for a large stand-off. The need to penetrate two wall thicknesses means that the sensitivity will be poorer than with the single wall single image technique. The technique also requires multiple exposures to enable the complete circumference of the pipe to be examined – specification or contract requirements frequently specify the minimum numbers of exposures to ensure complete coverage and images of an acceptable quality. The technique is generally used on pipes over 80mm in diameter.

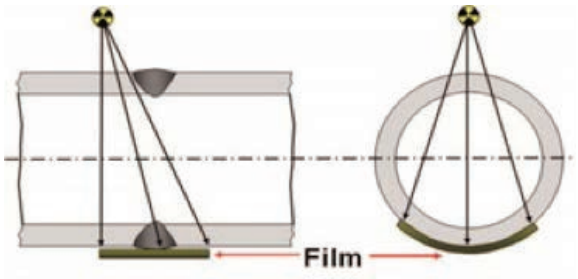

Fig. 3 Double wall, single image

The last technique is double wall, double image (DWDI), generally used only on pipes less than 75-80mm in diameter. By offsetting the source from the weld centre line and using a long source to film distance it is possible to project an image onto the film of both the upper and the lower parts of the weld as shown in Fig. 4. As with the DWSI technique multiple exposures are required to achieve complete coverage.

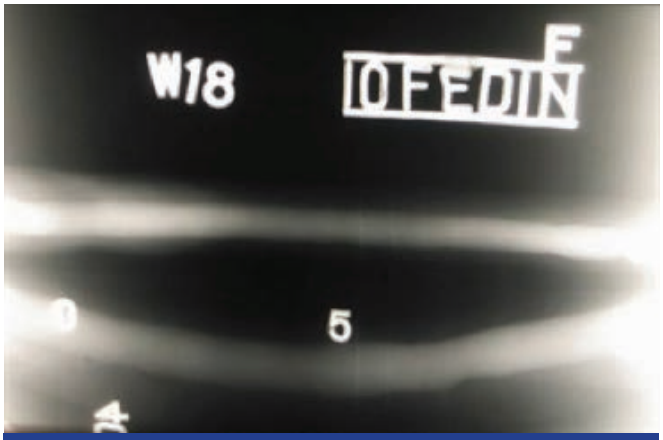

Fig. 4. Double wall double image radiograph of a pipe butt weld. Note the IQI, identification numbers and position markers.

Part 3 will look at some of the more sophisticated radiographic techniques and the advantages and disadvantages of radiography.

This article was written by Gene Mathers.

Focus on Courses

(A) WELDER QUALIFICATION and WELDING PROCEDURE QUALIFICATION

Background

In the Welding Inspector Courses the subject matter of these two new courses is touched on only briefly and it became evident that more in-depth attention needed to be paid to their content. So, in order for Inspector students to be better able to understand these important elements, stand-alone courses are now offered.

The Welder Qualification course focuses on ISO 9606 /AWS1.1 and ASME IX and the Welder Procedure Qualification focuses on ISO15614/ AWS1.1 and ASME IX. These stand-alone courses mean focused training on these codes and their application.

Welder Qualification

In this course the student is taken through each standard in great detail so that he/she will be able to qualify and manage welders appropriately. Welders are tested to ensure they possess the skills to produce defect-free welds, which, in turn, ensures that mechanically sound welds are produced when a qualified welding procedure specification is followed.

This course is ideal for candidates wishing to learn how to qualify welders and those wishing to refresh their knowledge on welder qualifications.

This 4-day course costs R 9 200 for Corporate Members and R 10 000 for Non-members.

It will be held four times in 2018 – Johannesburg on: 29 Jan-01 Feb and 25-28 Sep; Cape Town on: 06 -10 Aug and Durban on: 21-24 May.

Welding Procedure Qualification

This course is designed to teach the student how to qualify a weld procedure such that welds are produced which are mechanically sound, conform to constructions codes and standards as well as the design requirements. The weld procedure qualification standards mentioned above will be taught in detail in order to correctly produce Procedure Qualification Record (PQR) and Welding Procedure Specification (WPS) in line with code requirements.

The course is aimed at personnel wishing to learn how to qualify welding procedures as well as those wishing to refresh their knowledge on WPS and PQR qualification.

This 4-day course costs R 9 200 for Corporate Members and R 10 000 for Non-members

It will be held four times in 2018 – Johannesburg on: 03-06 April and 03-06 December; Cape Town on: 02-05 Jul and Durban on: 12-15 Feb.

For more information please contact the course administrator on weld.tech@saiw.co.za or 011 298 2130

Focus on Courses continued on next page

Focus on Courses continued from previous page

Focus on Courses

(B) NDT LEVEL 3 WORKSHOP

For the last several years, since the last NDT Level 3 workshop and exams were held more than 10 years ago, the SAIW has been working towards holding them again. The opportunity came about when, in 2016, a group of Sudanese and Cameroonians under the auspices of the International Atomic Energy Agency (IAEA) came to the Institute to do the Level 1 and Level 2 modules.

"It seemed like a wonderful opportunity to give these students the chance to 'go the whole way' and complete the Level 3 module as well," says the SAIW's Mark Digby. "So, in September last year, after Harold Jansen and I did an audit of premises in Sudan with the aim of collaborating in a training institute there, our end-of-mission report to the IAEA, inter alia, included a suggestion that the four Sudanese students come to the SAIW to do the Level 3 workshop and then train others in Sudan," says SAIW's Mark Digby.

The IAEA saw the upside, sponsored the four Sudanese students, and this opened the door for the SAIW to hold the Level 3 workshop in 2018. "It was the impetus for us to get it going. It tipped the scales in terms of the demand for the workshop that existed independently of the Sudanese," says Mark.

The NDT Level 3 Workshop

The basis of Level 3, which is also SAQCC certified, is ISO 9712, which is the qualification and certification standard of NDT personnel. An individual certified to Level 3 has demonstrated competence to perform and direct NDT operations for which he/she is certified.

More specifically, Level 3 personnel have demonstrated:

- The competence to evaluate and interpret results in terms of existing standards, codes and specifications.
- Sufficient practical knowledge of applicable materials, fabrication, process and product technology to select NDT methods, establish NDT techniques and assist in establishing acceptance criteria where none are otherwise available.
- A general familiarity with other NDT methods.

In addition, within the scope of the competence defined on the certificate, Level 3 personnel may be authorised to:

- Assume full responsibility for a test facility or examination centre and staff.
- Establish, review for editorial and technical correctness, and validate NDT instructions and procedures.
- Interpret NDT standards, codes, specifications and procedures.
- Designate the particular test methods, procedures and NDT instructions to be used.
- Carry out and supervise all tasks at all levels.
- Provide guidance for NDT personnel at all levels.

The minimum training requirements for Level 3 are as follows:

NDT Method	Level 3 (Hrs)
AT	48
ET	48
LT B - Pressure	32
LT C - Tracer Gas	40
MT	32
PT	24
ST	20
TT	40
RT	40
UT	40
VT	24
For RT, training hours do not include radiation safety training	

To give some idea of the total minimum industrial experience required to have attained Level 3 the table below also includes Levels 1 and 2

NDT Method	Experience (months*)		
	Level 1	Level 2	Level 3
AT, ET, LT, RT, UT, TT	3	9	18
MT, PT, ST, VT	1	3	12
*work experience is based on a nominal 40 h/week or the legal week of work. When an individual works for more than 40 h/week, he/she may be credited with experienced based on the total hours, but he/she shall be required to produce evidence of this experience.			

It is important to note that Level 3 requires knowledge beyond the technical scope of any specific NDT method. This broad knowledge may be acquired through combinations of education, training and experience. The above table details the minimum experience for candidates who have successfully completed a technical school or at least two years of engineering or science at an accredited college or university. If this is not the case the duration has to be multiplied by a factor of 2.

Also, if the individual is being qualified directly from Level 1 to Level 3, with no time at Level 2, the experience shall still consist of the times for both Levels 2 and 3. No reduction in the time of experience is allowed.

Examinations

There are two exams - Basic and Main Method. The former is a written examination which assesses the candidate's knowledge of the basic subjects using at least 60 multiple choice questions.

The Main Method exam assesses the candidate's knowledge of the main method subjects using a minimum of 50 multiple choice questions.

The grading of the Basic and Main Method exams is done separately and to be eligible for certification a candidate has to have passed both exams.

SAIW's Level 3 Programme for 2018

For greater detail regarding the above information, please see page 63 of the 2018 SAIW Course Prospectus.

For prices, places and dates please refer to page 64 of the Course Prospectus.

The Course Prospectus can be accessed on www.saiw.co.za

For more information about the NDT Level 3 Programme, please contact SAIW NDT admin on ndt@saiw.co.za or call 011 298 2106

The SAIW Welding Fabricator Certification Scheme (ISO 3834)

The ISO 3834 certification of fabricators in South Africa has become one of the most successful initiatives of the SAIW, SAIW Certification and the welding industry as a whole in South Africa.

We are taking this opportunity to remind fabricators and construction companies what this is all about.

SAIW Certification, the certification division of SAIW, is authorised by the International Institute of Welding (IIW) to operate its Manufacturer Certification Scheme in South Africa. SAIW Certification was the first organisation outside Europe to receive such authorisation.

Locally the scheme, which is suitable for both manufacturing workshop and construction site activities, is known as the SAIW Welding Fabricator Certification Scheme. It is based on the ISO 3834 standard – quality requirements for fusion welding of metallic materials – and certified compliance means global recognition of a company's capabilities.

SAIW Certification CEO, Herman Potgieter says it clearly: "ISO 3834 is the basic quality benchmark in our industry and ISO 3834 accreditation officially confirms for all who achieve it that that they provide a world class service," he says.

Potgieter adds that ISO 3834 certification is not only an affirmation for the 'outside world' that a certified company is a thoroughly professional organisation, but it is also an internal affirmation. "It is important for every company to get an objective statement about its quality. No matter how big or small one's company is, one can fall into bad habits without realising it. So independent verification of one's standards is vital," he says.

For Big and Small alike

There was a time when the industry felt that ISO 3834 accreditation was for the biggest companies only. Of course this is not true and the number of companies, both big and small, applying for accreditation continues to grow exponentially in South Africa. "This is an excellent thing as compliance with ISO 3834 ensures that the end-users know who they are dealing with," Potgieter says.

Some Stats

37 companies certified in 2017. 158 companies and 26 sites certified since commencement of scheme in 2007.

Below are some of the companies that have been 3834 certified according to the SAIW Welding Fabricator Certification Scheme during the latter stages of 2017.

All Weld Marine & Industrial; Boiler & Industrial Plant; CFK Inspections; Federal & Mogul Friction Products; Inkwali Fabrication and Maintenance; IHE Industrial Supplies; Mekano Steel; Pipeline Erectors; Pressure Tank Fabrication; ProProcess Fabrication; Penbro Kelnick; Seal Tight; WATAC Engineering; Vanderingsol Construction cc.

Boiler and Industrial

IHE Industrial Supplies

Inkwali

In the SPOTLIGHT

PRINCE DLAMINI

IN OUR SERIES OF PROFILES ON PEOPLE WHO HAVE MADE A DIFFERENCE TO THE WELDING/NDT INDUSTRY AND THE SAIW, WE TALK TO PRINCE DLAMINI, A CHIEF ENGINEER (METALLURGY) AT ESKOM. BORN IN 1983 NEAR PIET RETIEF IN MPUMULANGA, PRINCE ATTAINED HIS SENIOR CERTIFICATE IN 2000 AT NDLELA HIGH SCHOOL AND COMPLETED A BACHELOR OF SCIENCE IN METALLURGY AND MATERIALS ENGINEERING (BSC (ENG.) METALLURGY & MATERIALS) AT THE UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG, IN 2004. HE JOINED ESKOM IN 2010 AS A JUNIOR ENGINEER AND WORKED HIS WAY UP TO HIS CURRENT POSITION IN WHICH HE HAS BEEN SINCE 2015. PRINCE IS MARRIED TO "WONDERFUL AND GORGEOUS" ELIZA DLAMINI, AND THEY HAVE THREE SONS WILL, MASON AND ENZO.

F: Tell us about your career at Eskom

PD: In my early days at Eskom, I was a metallurgical site representative for some of Eskom's power plants. My duties involved supporting power station initiatives on reducing and preventing boiler tube failures, conducting life assessment studies on safety-critical components and conducting metallurgical failure investigations on various power plant components. Towards the end of 2012, my focus shifted to providing full-time materials and welding metallurgy support to Eskom's new-build power plants, at a time when serious challenges and problems were just coming to light. Since then, I have contributed to the resolution of some of the most challenging and vexing problems arising mostly during fabrication and erection of power plant components. Today, I continue providing the necessary technical oversight relating to materials, welding and non-destructive testing. I am also a member of technical committees within Eskom that are responsible for the development of standards and technology management.

F: When did you get involved with the SAIW

PD: I became involved with the SAIW in 2015 when I was nominated to serve on the ANBCC and the Welding Fabrication and Technology Boards.

F: What do you think of the standard of welding and NDT in S.A.

PD: Great strides have been made in recent years in improving the quality of welding and NDT, but there is still ample room for improvement. Eskom recently hosted its second annual Welding Seminar, and one of the highlights of these seminars was the recognition of welders who have completed high-quality welds for pressure-part components with the lowest weld repair rates. The achievements by some of the young welders who have gone through the SAIW International Institute of Welding (IIW) welder training programs have been impressive and show what can be achieved with bold investment in welder training. The SAIW is well-placed (as the IIW Approved Training Body) to continue playing the leading role in this area well into the future.

F: What are the prospects for the welding and related industries in this country

PD: The joining of materials by welding is and will continue to be an indispensable technology for many industrial sectors in South Africa. Welding is essential, not just during the fabrication of new equipment and structures, but also for the repair and rehabilitation of existing ones. For this reason alone, the future of welding and related industries is on firm foundations. The key lies in the continued development of skills at all levels, from welders to welding inspectors, welding technologists and engineers, in order to have a critical skills mass that will continue to innovate and improve on existing technologies.

F: What is the effect of SA's economy on welding in general

PD: The South African economy remains in dire straits. This has put a lot of pressure on the manufacturing sector, which continues to suffer contractions in production, and business in general. The macroeconomic challenges will, to some extent, have a negative impact on the welding and related industries, especially in relation to cut backs by companies on investment in new projects. However, even under the prevailing unfavorable climate, there are still opportunities (such as repairs and refurbishments that often become necessary during the maintenance of existing equipment and structures) that enable the welding and allied industries to weather these difficult times.

Thank You

Qualification and Certification

CONGRATULATIONS TO THE PEOPLE BELOW WHO RECENTLY ACHIEVED QUALIFICATION AND CERTIFICATION

Competent Person Pressure Vessel

Khumalo ZM
Leshabane MD
Snyman J

Competent Person Boilers

Blackburn A
Cawood T
Engelbrecht CdW
Fourie PH

Inspector of Pressure Equipment

Beeslaar AD
Mbele MP
Mbele TP
Mokoena P
Oosthuizen P

MT 1

Baloyi R
Butelezi CF
Govender D
Janse Van Rensburg NJ
Khumalo E
Magagula M
Mahlangu SNJ
Makuwa DKK
Mngomezulu PM
Mokhabane RM
Mokoena WP
Mothiba HL
Nagel R
Ngoako TH
Nkuna T
Selemela JR
Steenkamp H
Tshabalala SS

MT 2

Baloyi R
Cockman MM
Dambakupetwa C
De Lange GM
De Villiers X
Fondling S
Fynn EM
Hlatshwayo NS
Kell RC
Maleka LD
Mdhlovu TE
Metsana MC
Mzolisa M
Netshandama MO
Petersen B
Radebe NP
Roux JJ
Sebetha SS
Weinberg DR
Wilson RC

PT 1

Beselaar Q
Hlatswayo NS
Janse Van Rensburg NJ
JMatsimane JN
Makhaba BL
Nagel R
Simelane M
Van Wyk HLL

PT 2

Appel MJ
Botha AML
Cockman MM
Fynn EM
Kannemeyer BI
Kell RC
Maleka LD
Mzolisa M
Petersen B
Radebe NP
Samuriwo T
van Zyl ML
Vaughan TL
Vos S
Wilson RC

UT 1

Mthembu S

UT 2

Louw JDB
Mthembu SS

UT WALL THICKNESS

Bush TB
Bush TB
Chibvongodze NT
De Louw D
Delouw D
Hitchcock HF
Hitchcock HF
Jordaan JDBL
Kannemeyer BI
Kanoyangwa SL
Nare MB
Nkosi ZT
Schuter SS
Skosana JJ
Sogoni ZP
Talliard DB

PAINTING INSPECTORS

Bernon DA
Chadya L
Denysschen HJ
Franken BH
Joseph MK
Mahlangu MM
Marx R
Moller CJS
Scott HR
Sloan LL
Van Niekerk JR
Wepener GC

ASME

Anderson EA
Dlamini C
Moeiti TW
Qebengu TJ
Venkatasami T

BASICS

Barnard I
Basson M
Bidounga N
Biyela NN
Botes R
Castello LGP
Chikari AN
Chunderpersadh DR
Coleman MA
Dladla ZID
Dlamini J
Dyasi S
Fortein L
Frolick AM
Gordon T
Grundmann W
James BLQ
Janse Van Rensburg JJ
Jonker K
Klasen DD
Koom AXP
Marx T
Mbusi MT
Mlangeni SE
Moloantoa MC
Moola JY

MT

Muller HF
Ngobeni PZ
Nkosi SR
Nyoni KR
Pillay DP
Pillay RP
Ribeiro EC
Rogers R
Sibiya BS
Sigidi L
Sindane SJ
Sithole MP
Smit H
Traill RJ
Van Deventer M
Wilters N
Zungu NN

RT 1

Fourie DJ
Mkhwanazi NG
Swanepoel S
Tack TK
Van Zyl M

RT 2

Kruger JH

VISUAL TESTING

Govender D
Storbeck R

RT INTERPRETERS

Pierce DM

SAIW NOTICE BOARD

Demand increases for the SAIW Material Testing Lab

Laboratory Technicians Nicolene Kgoedi (l) and Kegomoditswe Letlole

While the SAIW's certification, consultancy and general industry support services have for some time been in high demand, the Institute reports that the external demand for its on-site Material Testing Laboratory is growing rapidly.

SAIW executive director, Sean Blake explains that the Lab is fully equipped to perform mechanical and non-destructive testing on weld samples, either welded in the welding school or during the performance of welding procedure qualifications in industry.

"But the Lab increasingly supports the consulting services offered by the SAIW, which include failure analysis, welding related research and development, welding consumable evaluation, weld procedure qualification, welder qualification, post weld heat treatment and positive material identification," he says.

He adds that it is important that welding and NDT industries know that the SAIW offers this important service, which includes the following tests that are all performed to international standards:

Service	Equipment available
Mechanical testing	
Tensile & Bend testing	MTS Criterion 64.305 (300 kN)
Charpy V notch Impact testing	450 joule SANS Charpy impact test machine
Vickers hardness testing	emcoTEST Durascan 70 (10 grams to 10 Kg load)
Rockwell hardness testing	Wilson Rockwell hardness tester
Chemical Testing	
Spectrographic analysis	Bruker Q2 Ion spectrometer
X-Ray Fluorescence analysis (XRF) & positive material identification	Bruker S1 Titan XRF analyser
Diffusible hydrogen analysis	Bruker G4 Phoenix diffusible hydrogen analyser
Microstructural evaluation and reporting	Nikon microscope Eclipse MA-200
All equipment needed for test sample preparation is available in house.	

The SAIW material testing laboratory, laboratory number T0693, is accredited by SANAS to comply with ISO 17025.

The SAIW material testing laboratory is managed by a team of qualified and experienced metallurgists.

For more information, please contact the administrator on mat.lab@saiw.co.za or on 011 298 2104.

sanas
South African National Accreditation System

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