Fusion

Newsletter of the Southern African Institute of Welding

December 2013

SAIW
Southern African Institute of Welding

Contents

Message from The Executive Director

Ethics is an increasingly important issue in the activities of the Institute. We regularly have to deal with questions of unethical behaviour, especially in the context of inspectors. The problems start with false claims of qualifications made by people working on the basis of SAIW qualifications which they don't hold. We have adopted a strict policy about this and make public on our website any false claims or falsified documentation. It is a name and shame policy as we have an obligation to make known any false claims related to our qualifications.

The most common area of poor ethical behaviour, however, is in the area of OHSA statutory pressure vessel inspections and the issues causing most concern are:-

a) Inspectors performing work when they do not hold appropriate certification (SAQCC CP).

b) Certified inspectors continuing to perform inspections in their individual capacity rather than as an employee of an Approved Inspection Authority for In-Service work.

c) Certified inspectors signing inspection and test reports when they have not personally performed the inspections and/or have not witnessed the associated pressure tests.

In the first instance the certification body has some difficulty dealing with these transgressions because the inspectors are not certified so SAQCC CP has no recourse with which it can easily deal with the matter. In every case of this type brought to the attention of the certification body, it reports the matter to the inspectorate at the Department of Labour which is in a position to make criminal charges.

The second and third categories are easier for the certification body to deal with and they are managed through the certification body's complaints and appeals procedures. It is difficult to understand how any inspector can still claim ignorance of the change of pressure equipment regulations which came into effect in October 2009 and the final deadline for competent persons to be working for an AIA I-S which became effective in April 2011. Some lower risk equipment (Category SEP and Category 1) can still be inspected and tested by an individual inspector appointed by the User but for Category 2 and higher the AIA I-S is the body which has to be appointed to do the work and it has to use the SAQCC CP inspector to perform the work. If the claim of ignorance is true what does it tell you about the inspector keeping abreast of current regulations?

It is the last issue of concern which amazes and frustrates me. Why would an inspector sign reports for work that he or she has not performed personally? It is your livelihood and reputation which is on the line, so why put these at risk? Both of these latter transgressions may result in a suspension of certification, probably for two years, if a complaint is found valid and the sentence could be worse.

Ethics and the importance of ethical behaviour are being included as specific syllabus items in all of our courses and we hope this will go a long way to improving matters in the future.

There are some people you work with who immediately impress you – it might be their work ethic, the competence, their professionalism or perhaps their humanity. Sometimes it is all of these traits and more. One of the people that impressed me in this way has been Dr Hennie De Clerq at the Institute of Steel Construction. Hennie is retiring and moving down to Cape Town. We wish him a long, happy and healthy retirement. Paulo Trinchero has taken over the role of CEO at SAISC and we are sure the Institute is in good hands. We wish him success.

We wish all our members and colleagues well over the festive period.

Jim Guild

Executive Director
Southern African Institute of Welding

Changes to the Welding Inspector Programmes

By Jim Guild

The welding inspector courses are at the heart of SAIW activities and have been developed over a period of more than 30 years. From the very beginning, industry experts have directed the content of the courses and the supporting examinations and the qualifications have become standard industry requirements. In 30 years there have been a number of periodic reviews of the programmes which have led to changes and sometimes these have been substantial. Over the last few months a further review has been carried out with the help of our industry colleagues and it is time again to update and refresh the programmes.

Generally, the future direction being targeted is as follows:-

1. The content of the first level course is being adapted in recognition that many of the students do not have a general engineering background.
2. The courses are being modified to include a greater practical component.
3. The supporting examinations are also being revised to include a more comprehensive assessment of practical skills.
4. The course structures are being adapted to make use of the full range of IIW inspector qualification levels (Basic, Standard and Comprehensive)
5. Certification of inspectors will be introduced and will be based on IIW qualifications.

Some of the changes needed to meet the targets will be introduced from the beginning of 2014.

Training Course Content and Examinations

At the behest of industry, the Institute has been investigating how it can improve the background knowledge of newly qualified inspectors. It has been decided to introduce a module 0 course which addresses basic fundamentals in preparation for the main course content. The module is one week in duration and is taken from the IIW programmes for inspectors and specialists. It has the course content shown in Table 1 below. It should be understood that the content is only covered at a basic and simple level. There was discussion within the SAIW committee structure about whether or not the module should be mandatory for all candidates. It was decided that in certain cases exemption from module 0 may granted upon application.

The introduction of module 0 means that from January 2014 the level 1 course will be extended to five weeks from the current four weeks.

Table 1: Module 0 Course Content

Subject	Objective	Duration
Basic Metrology applicable to welding	To ensure a basic knowledge of metrology to control quality of welding	4
Technical Calculation	To demonstrate how to make calculations related to welding	8
Technical Drawings	To be able to read and understand basic technical drawings	8
Basics of Electro-technology	To acquire a basic knowledge of industrial electricity related to welding	2
Basics of Chemistry	To acquire a basic knowledge of chemistry in relation to the welding process	2
Basics of Materials	To be informed about the main metallic materials used in welding	2
Metal Products	To know different product forms and understand their methods of production	2
Machining of Materials	To be informed about the methods of machining ferrous and non-ferrous alloys	2
Technical Mechanics	To be able to make simple calculations of forces in welding	4
Joining Elements	To be informed of non-welding joining methods	2
Calculation of Strength	To appreciate tensile test diagrams, moments of inertia, section modulus, simple stress calculations	4
	TOTAL	**40**

The level 1 and 2 courses are being further modified to incorporate more practical training especially for welding processes, mechanical testing, non-destructive testing and metallurgical examinations. More demonstrations (or DVD viewings in remote centres where this is not possible) have been included in the syllabus. An especially important change to the practical classes will be the introduction of plastic weld replicas which will be used to improve training for visual examination of welds.

Examination formats are changing to reflect the revised course structures and Table 2 below shows the new requirements. The main changes are the re-introduction of radiographic interpretation and the evaluation of plastic replica welds.

Table 2: Examination Formats
Level 1 Welding Inspector

Theory Paper (Closed Book Paper)	Practical Application (Open Book Paper)	Practical Examination
Duration 2. 5 Hours	Duration 3 hours	Duration 4 hours
The purpose of this examination is to test the student's knowledge of the fundamentals of welding and inspection. These fundamentals include: • Welding Processes and Consumables • Defects • Materials Technology • Visual Inspection • Distortion and Welding Symbols • Welder Performance Qualification • Inspection and Quality Assurance • Health and Safety	Typical questions can range from the following: • Range of Welder Qualification according to ASME IX, AWS D1.1 and EN 287-1 • Duties of an inspector before, during and after welding • QC measures for electrodes w.r.t. storage, handling, issue and use • Acceptance criteria of the various codes used in welded fabrications	The practical examination paper will cover the following: • Review of Welder Qualification Test Certificates. [ASME1X], [AWS D1,1M], • [EN 287 -1] • Review of Material Test certificates. • Visual Inspection of plastic samples (pipe, butt and fillet samples) and compilation of Visual Inspection Reports in accordance with BS EN ISO 5817. Category "B"

Level 2 Senior Welding Inspector

Theory Paper (Closed Book Paper)	Practical Applicatio (Open Book Paper)	Practical Examination
Duration 2.5 Hours	Duration 3 hours	Duration 4 hours
The purpose of this examination is to test the student's knowledge of the fundamentals of fabrication and inspection. These fundamentals include: • Materials Technology • Construction and Design • Destructive Testing • Non-Destructive Testing • Pre-heat and PWHT requirements • Inspection and Quality Assurance • Developing of welding procedures • Purpose of Quality Control Plans	Practical application for the use of Manufacturing Codes and Standards, e.g.: Range of Welding Procedure qualification according to: • ASME IX • AWS D1.1 • ISO 15614 Pressure Equipment Regulations, Mines and Works Act and Pressure test Calculations from international codes Tolerances for Pressure Vessels	Review and evaluation of the following NDT reports: • RT • MT • PT • UT Viewing of 3 (three) radiographs and identifying the various type of discontinuities Review and evaluation of Welding Procedures, 1 off: • ASME IX • AWS D1.1 • ISO 15614

The respective responsibilities of the various parties in radiographic interpretation have long been the subject of debate – the roles of the welding inspector, the NDT operator and IPEs! The SAIW committee structure has held the view that interpretation is not a responsibility of the welding inspector, this lays with the RT NDT level 2 personnel and the IPE (who is required to hold Radiographic Interpretation certification) since both are appropriately certified. Even so there is a general expectation that a welding inspector should recognise obvious defect situations.

In the case of visual examinations of welds the plastic replica examination requirements will go a long way to ensure that inspectors are prepared for their visual inspection responsibilities.

IIW Welding Inspector Qualifications

The existing formats of the level 1 and 2 welding inspector programmes have been in place for several years. The combined courses are aligned to comply with the IIW Standard Level requirements. Anyone successfully completing both levels 1 and 2 and meeting the IIW access requirements is awarded the IIW diploma.

Many inspectors meeting IIW access conditions obtained their SAIW Level 2 qualification before the full alignment with the IIW Standard Level qualification. These inspectors are able to attend the Construction and Design training module and sit the supplementary examination to obtain the IIW Standard Level qualification diploma.

To encourage welding inspection managers and technical experts to improve their qualifications, the IIW Comprehensive Level diploma programme is being introduced from next year and two courses are being included in the schedule for next year. There are two routes of entry to the Comprehensive Level qualification; either by direct access with higher level educational qualifications or via progression from Standard Level with two years of practical experience. The training course requirements vary for the two routes of entry and in the first instance it has been decided to focus on inspectors wanting to progress from Standard Level. The course will be four weeks in duration and more details will be published early in the New Year in Fusion and on the website.

IIW is currently conducting a major review of its inspector programmes and when this is complete it should be possible to make use of the full range of IIW courses including the IIW Basic Level which has been run on an ad hoc basis in the past.

Please note there may yet be inspectors who are entitled to IIW diplomas under transition arrangements (see Fusion edition of August 2012 – available on website).

Certification of Welding Inspectors

Generally, our industry experts have advised that it is important that inspectors with experience are given recognition and the best way to do this is through a welding inspector certification programme. Details of the certification system are currently being addressed by a scheme committee and the planned launch date is July 2014. More information will be published as details are confirmed over the next few months.

In the SPOTLIGHT

KOBUS DE BEER

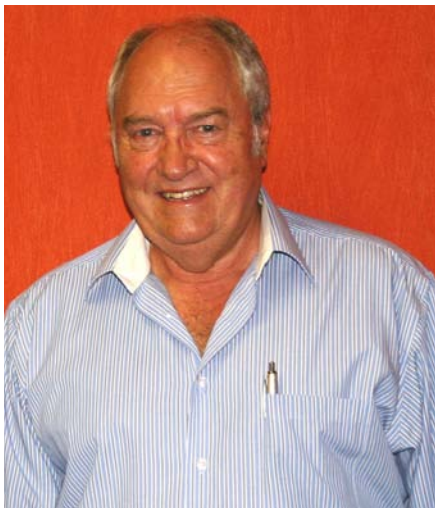
Kobus de Beer was born in 1946 and went to school in Lichtenburg before graduating at Pretoria University with an honours degree in Industrial Engineering, as well as an MBA. He lectured at the University of Pretoria for a few years before joining the Dorbyl Group in 1973 where he was responsible for building railway rolling stock, diesel and electrical locomotives and busses. He later managed the VECOR heavy engineering and foundry facility in Vanderbijlpark before being transferred to England to establish an export promotion and international liaison office for Dorbyl in London in 1991. Upon his return after an eventful and successful period he was appointed as managing director of DSE (Dorbyl Structural Engineering) in January 1995. De Beer joined LTA when the group acquired DSE Structural Engineers & Contractors in 1996 and was part of the formation of Grinaker-LTA in 2002. When DSE became part of Grinaker-LTA (M&E) in 2003, de Beer worked as part of the executive team, fulfilling the role of managing director of DSE until his retirement in April 2007.

During his 12-year period as managing director at DSE, de Beer was involved in the structural steel design, fabrication and construction of the Highveld extensions, Saldanha Steel, Namakwa Sands expansions, the supply of steelwork for the award winning Chicago Beach (Burj al Arab) hotel in Dubai, Hillside Aluminium and Extensions, Mozal Aluminium and Extensions, many liquid storage tank contracts, platinum and other mining projects and working for the petrochemical industry.

Under his leadership DSE was often recognised for excellence by the industry and a special milestone was being awarded the SAISC 2003 Best Project Award for the Nelson Mandela Bridge in Johannesburg – an event that coincided with DSE celebrating 100 years in South Africa. DSE also received the award for the 2006 top Engineering Project in South Africa for the three ship to shore crane contracts done for Portnet in Durban. De Beer was nominated as a life member of the Southern African Institute of Steel Construction on the same occasion. He is a registered Professional Engineer and a member of the South African Engineering Council. He served two stints as chairman and continues to serve on the Board of the Southern African Institute of Steel Construction. He was chairman of the Construction Engineering Association (a SEIFSA association), a position he filled for some ten years, and is still a member of the CEA.

Even though he was officially retired, de Beer took up a position as Industry Development Executive with the Southern African Institute of Steel Construction (SAISC) liaising with government departments, major suppliers and contractors and other stakeholders, such as peer institutions. SAISC is a member-driven organisation, operating with the mission "to promote the health and wealth of the steel construction industry in South Africa". It has some 588 members including all the major structural steel fabricators and constructors, steel suppliers and merchants, suppliers of bolts, nuts, paint, galvanising, design engineers and other services, as well as many professional and individual members. The main activities of the SAISC are in the areas of market development, education, industry technology and development and engineering.

Amongst everything else, de Beer still finds time for his hobbies. He is an enthusiastic nature lover, which includes being a bird watcher with a Southern African life list of just over 500 species. He belongs to the Dendrological Society and is a keen bonsai grower with a number of indigenous trees in his collection. He enjoys travel which includes camping, 4X4 explorations, photography, classical music and reading and is one of the few metagrobologists (puzzle collectors) in South Africa.



Ethiopian Students Return

During the first quarter of 2012 SAIW welcomed students from Ethiopia as part of its African expansion objective. Ethiopia is currently growing its metals industry and has developed a national NDT project, funded by the International Atomic Energy Agency (IAEA). The project was initiated through 12 Ethiopian NDT students studying and completing Level 2 in four NDT methods viz. Liquid Penetrant Testing, Magnetic Particle Testing, Ultrasonic Testing and Radiographic Testing, on fellowship grants from IAEA. Of those 12 students, four returned recently in order to complete the NDT Level 3 courses in the same NDT methods, again sponsored by the IAEA.

The students will be in South Africa for two months and are thoroughly enjoying the country and studying at SAIW, although they are finding the exams difficult. The ultimate goal is to become fully fledged quality control inspectors, but they feel that their studies have opened up career opportunities for them in Ethiopia and that the Level 3 training incorporates much broader training, which will enable them to move into management positions. Not only do they apply the knowledge and skill they acquire, but they also share it with colleagues in Ethiopia. The students report that all eight of the other Level 2 students that studied with them in 2012 are gainfully employed in the metals industry in Ethiopia.

When asked whether they will be back to SAIW they respond with a resounding yes. The first objective is to finish the NDT programme, but they have now been exposed to the other disciplines presented at SAIW which are all relevant to their working environment. They will definitely be back to take more courses that will benefit their country.

Job Creation Through Welding

South Africa has a 28,7% unemployment rate and tertiary education institutions can only provide 30% of school leavers with the opportunity to study further. When school leavers are asked what they want to do post matric, the normal answer is some or other white collar profession. Yet the majority of opportunities in South Africa are created through a trade such as welding. South Africa faces a huge skill shortage in trades and welding can open up a wide variety of career opportunities.

Haley Naldrett from Cape Town was sent on a basic welding course at the age of 36 by her employer and found that she enjoyed every minute, so much so that she changed from the workplace to join John Thompson, a leader in the field of boiler technology, just to be able to continue with welding. Although Naldrett already had her Matric, N2 and N3 National Diploma, ISO 9000:2001, AutoCAD 2D introduction to 3D and PC Business, she continued her studies in welding.

She found the training stage very difficult in the beginning, but it got easier as she got used to it. “Practice makes perfect,” says Naldrett. “Choosing welding as a career was probably one of the best choices I have made. Welding has taught me a lot of patience. I found that welding wasn’t just a skill; it is what I would call art. Sometimes you get it just right and other times your welding is just PERFECT! Every single day you are being tested on different welding that requires different methods and different skills. That is why I love welding for it is a new challenge every single day. One of the best things about being a welder is when you push yourself to the limit, when you lift your helmet and look at the beautiful welding you just did and want to call everybody to come have a look. It is so rewarding!”

Of course it was a challenging career choice as John Thompson has, for many years, operated with male welders only. Naldrett found the engineering environment harsh and after the trade test it was like being thrown into the deep end. “It is important to draw on your inner strengths and experiences and stand firm,” says Naldrett. After her studies to become a qualified welder, Naldrett trained to become a welding inspector and qualified eight months ago. She is now a trainee welding inspector with career choices she never dreamt of before opening up to her.

Another young person who chose welding as a career path is Ntomboxolo Zono who saw somebody fitting burglar bars and instantly knew that welding was a good career choice and applied for a learnership. Zono completed a national certificate in welding engineering and fabrication (NQF Level 2 and 3, Boiler making) before doing the trade test and calls welding as a career exciting, vast and challenging. Zono found that welding is not just about making burglar bars and gates but also about pipe work, boilers, aviation, ship building and many more industries. “There are various career and personal growth opportunities,” states Zono. “If you set goals for yourself and you are determined enough you will achieve them”.

Zono was the first black lady to qualify as an artisan at John Thompson and feels privileged to work amongst the best welders, being trusted to work on big contracts for customers such as Eskom, Engen, Caltex and for the Water Tube Division. “At first it was a challenging career choice, especially in such a male dominated industry and I had to work twice as hard to prove to everyone that this is where I belong, but due to my hard work and determination I got the recognition that I deserved,” says Zono. “I am an opportunist and I would like to grow further in this Industry. I started as an apprentice, became a qualified welder and am currently a trainee welding inspector”.

According to Suben Govender from John Thompson, “John Thompson provides intensive training before entering apprentices and trainees for formal training.” The training starts with theory before the practical training follows. Employees receive training in Arc Welding (MMA), Flux core (Fcaw), Mig (GMAW), Sub Arc (SUB) and Tig (GTA). Between 2009 and 2012, 27 male welders were trained which greatly contributed to the alleviation of the skills shortage in the industry. John Thompson can therefore now compete internationally, especially as the company is working according to the international standards (ISO 3834). “Welding is currently addressing the high level of unemployment,” says Govender. “The courses are short therefore students can find employment quickly. John Thompson currently employs 66 welders”.

There are global welding opportunities in almost every facet of industry. Welders and welding inspectors can go into engineering, construction, automotive, aviation, maritime and many more career paths. Blue collar or white collar, at the end of the day it is about having a fulfilling career with growth opportunities in a vibrant industry while earning a good living. That is what will create a prosperous nation and a growing economy.

State of the Art Testing Laboratory Available to all Industry Members

In July 2013 the new SAIW testing laboratory was officially opened by Professor Madeleine du Toit, president of SAIW, when she cut the ribbon to open the door. Prof du Toit commended SAIW for the foresight in developing the testing laboratory and the support it renders industry, a much needed service. The new metallurgical testing laboratory is based at the SAIW head office in Johannesburg and is open for research and development and material testing services such as mechanical testing and failure analysis. Services will also include welding consumable evaluation, weld procedure qualification, welder qualification, post-weld heat treatment and positive material identification.

Equipment is state of the art and the newest technology is available. The tensile testing machine is a 300KN machine which can also do bend testing. Tensile testing is a fundamental materials science test in which a sample is subjected to a tensile force until failure. The test is commonly used to select a material for an application, for quality control or to predict how a material will react under other types of forces. Properties that are directly measured via a tensile test are ultimate tensile strength, yield strength, maximum elongation and reduction in area. The former two are measures of the strength of the material whilst the latter two measurements are measures of the ductility of the material.

Other equipment includes a 450 Joule Charpy impact machine for impact strength of materials, a spectrometer for chemical analysis, an XRF analyser for material sorting and chemical analysis as well as a micro hardness tester for hardness testing and hardness traverses. There is also a hydrogen analyser for testing diffusible hydrogen in weld metal, a Nikon optical microscope, various sample preparation and machining equipment for preparation of test specimens, an impact specimen preparation machine and now a diffusible hydrogen analyser. The Bruker G4 Phoenix Diffusible hydrogen analyser allows for measurement of the quantity of hydrogen in welds as well as evaluation of the hydrogen content of welding consumables. ISO 3690 compliant testing protocols are being developed and experience is gained on testing techniques of this complex test. Sample preparation is a key factor in obtaining reliable test results which requires welding a test piece on a precise assembly where after the sample is quenched and stored at cryogenic temperatures.

To date the team of qualified metallurgists led by Sean Blake have undertaken 61 jobs in the laboratory. These jobs included procedure and welder qualifications which were previously outsourced to a third party laboratory, evaluation of welds, failure analysis of welds as well as the evaluation of welding consumables. “An interesting job that we undertook was the evaluation of copper welds, most of the jobs we do involve either steel or stainless steel,” says Blake. “The copper samples provided us with a different engineering material, which although well established in industry, does pose some interesting weldability issues”.

Industry members in need of the services offered at the Testing Laboratory can contact Sean Blake at blakes@saiw.co.za.

Certification Ceremony for SAIW

A certification ceremony was held on the 4th of October 2013. Mr Herman Potgieter, qualification and certification manager at SAIW, welcomed the guests, giving special mention to Mr Willie Rankin, a past President of SAIW, standing in for Professor Madeleine du Toit, the current President. Potgieter also welcomes other esteemed guests such as Mr Ben Beetge, the president of SAINT and chairman of SAQCC NDT, Mr Frikkie Buys from Sasol, SAIW council member and chairman of IPE, Mr Gert Joubert, a SAIW councilor, Professor Andy Koursaris, Mr Morris Maroga from Eskom and chairman of SAIW Certification, Mr Jimmy Mbhele, Mr Dawie Olivier, Doctor Tony Paterson, Mr Tom Rice and Mr Robin Williamson. Mr Tom Rice said grace before starters were served and the guests were entertained by Karlien and Donovan.

One hundred and twelve flagship qualifications were presented in two categories. The first category was the IIW International Welding Specialist diplomas which form part of the category of welding coordinators. The welding coordinator diplomas are the modern version of welding supervisor qualifications. The International Welding Specialist is an ideal qualification in a fabrication environment, particularly when playing a key role in a welding quality system. The second group of awardees was the inspection qualifications. These qualifications have been around for more than a quarter of a century. They are part and parcel of industry requirements for personnel in the welding field. These qualifications are in line with industry requirements thanks to help from industry members such as the mentioned guests who assisted in curriculum design, lecturing and examination development. Since the introduction of SAIW in 1980, more than 6500 students have successfully completed SAIW welding courses, gaining employment prospects and a variety of career options.

Mr Gert Joubert, who has been in the welding industry since the early 80s, and is currently quality manager at ArcelorMittal, South Africa's largest steel producer, delivered the key address. Joubert held that the market is difficult and it has become hard to survive in business, but businesses have to hold on and still focus on making positive contributions to industry. He gave an overview of the history of ArcelorMittal, such as the first sale of ArcelorMittal having been 100 tons of steel at R14 per ton. He reminded the audience that the industries have seen ups and downs for many years, but are still standing. Standards have improved and challenges have increased. Joubert also stated that SAIW students are privileged to receive excellent, accredited and internationally recognised training.

The biggest achievement an organisation can reach is the successful transfer of knowledge and the biggest winner of the evening was the industry, because the knowledge imparted by SAIW will be applied. Students were encouraged to remember that knowledge is not enough and that now that they have a qualification they have a responsibility to improve and gain experience. Industry needs the skills imparted, therefore students should develop a passion for what they are doing and enjoy the rewarding career choice that they have made.

Certificates and diplomas were handed out by Mr Morris Moroga where after Potgieter thanked Martie Beetge, Nasreen Mohamed, Kim Stevens and Ted Barwise for their efforts in arranging a wonderful evening.

business will appreciate that offering sites up for independent scrutiny by technical auditors takes a degree of courage and belief in your control of the welding operations.

Thirdly, the introduction of new technology in South Africa was a significant contribution. Steinmuller Africa developed welding procedures for welding of advanced materials for boiler components. It has also introduced automated membrane panel welding and automated welding for nozzle attachments. In addition, it is developing explosion welding in conjunction with TEI from the United Kingdom. Lastly, Steinmuller Africa was nominated for its community involvement, having established a welder training school in Diepsloot to provide people with skills to sustain themselves.

In SAIW's 65th year, it is a pleasure to present the award of the Institute's gold medal to an outstanding company. Mr Moso Bolofo, director of engineering and business proposals for Steinmuller Africa received the gold medal on behalf of Steinmuller Africa.

SAIW is greatly appreciative of the contribution made by the sponsors, as without them this event would not be possible. Thank you to Air Products, ESAB, Group Five, Afrox, Babcock and TUV. We look forward to the 66th Annual Dinner, and thank all that attended, making it a fun evening of networking and socialising over some Douglas Green wines sponsored by Messer Cutting Systems, Castolin Eutectic, Lincoln Electric, Welding Alloys Group and Bureau Veritas.

Botswana Delegation Visits SAIW

Botswana has seen much development in the construction and mining industries. The Construction Industry Trust Fund (CITF), which was established as a speciality fund in order to address the critical shortage of semi-skilled and skilled artisans in the country, sent a delegation to SAIW in order to form a partnership to allow for the sharing of training standards and learning materials, including quality assurance of the programme by SAIW. CITF uses competency based modular training to meet the demands and challenges posed by the building, construction and mining industries.

"Gaborone is expanding," says BJ Moepi, executive director of CITF. "The construction industry is under pressure and in addition we are coping with the De Beers Jwaneng Cut-8 expansion which started in 2010". The Cut-8 project is a major project that will extend the Jwaneng mine's lifespan to at least 2025. The project is expected to yield 100 million carats worth approximately $15 billion and will create 1000 jobs in Botswana. Such jobs have to be filled with skilled employees and resulted in a major influx of workers. The minister of labour is inundated with requests for work permits and called in the help of CITF to assist in local skills development.

CITF is mandated to offer skills training programmes in coded welding, after the successful completion of skills training by Samuel Kehumile, who undertook training at SAIW. The basis for offering coded welding training emanates from the fact that coded welding is not offered by any institution in Botswana, yet has been identified as a scarce key skill in water and mining projects, as well as many other sectors in the Botswana economy.

"SAIW was the obvious choice to benchmark a facility to train coded welders against," says David Chakalisad, from CITF. "We came here to see how SAIW trains people and to form a working relationship. The objective of the visit is to formalise a modus operandi between CITF and SAIW, especially for mining related welding. We have also been in consultation with the Botswana Chamber of Mines, which also need welders".

Moepi concludes that "It has been a great trip. Jim Guild, the executive director of SAIW, and Sean Blake, the technical manager, have been very helpful and ready to assist and we are looking forward to becoming an approved training body of the SAIW".

Thank you to Dr Tony Paterson

The editorial team of Fusion would like to thank and acknowledge Dr Tony Paterson for his contributions, namely the PRASA article in the previous Fusion. Dr Paterson is senior lecturer/associate professor for Welding and Fabrication Science in the School of Chemical and Metallurgical engineering at WITS, yet always finds the time to send in contributions for Fusion. Dr Paterson is a man of ideas, especially around teaching and research and we appreciate his willingness to share his knowledge.

Closure notice

Please be aware that SAIW will be closed from the 13th of December 2013 and will reopen on the 6th of January 2014. Students who want to enrol for 2014 must please contact SAIW on 011 298 2100 before the 13th of December.

SAIW wishes all our students, alumni, members and clients well for the festive season and a prosperous new year. We look forward to seeing you in 2014!

Welding of copper and its alloys

- Part 1

By Gene Mathers

Repair of copper boiler from the Flying Scotsman

Of all metals copper is the most ancient, having been first used to fabricate tools and weapons since about 3500 years BC. Welders and metallurgists can therefore claim to have a very long pedigree! Pure copper is soft, ductile and easily worked but can be strengthened only by cold working. It does not undergo phase changes so cannot be hardened by heat treatment as can steel. This also applies to many of the copper alloys so that any application of heat will soften the cold worked alloy, resulting in a significant loss of strength in the heat affected zones.

Two additional characteristics of copper and some of its alloys are:

1. High thermal conductivity, meaning that preheat is required for many joints, even at quite modest thicknesses; and
2. The high coefficient of thermal expansion, meaning that distortion can be an issue with root gaps rapidly closing during welding.

Alloying with a range of metals can be used to improve the mechanical properties and/or corrosion resistance. These alloys can be conveniently placed into nine separate groups as listed below. In addition to those listed there are several grades of free machining alloys containing lead (Pb) or selenium (Se). These free machining grades are hot-short and very sensitive to hot cracking. They are best avoided by the welder although they can be successfully joined by brazing or soldering.

- Pure copper with less than 0.7% residual elements
- High copper alloys with less than 5% alloying elements
- Copper alloys with up to 40% zinc (Zn) (brasses)
- Copper alloys with less than 10% tin (Sn) (bronzes)
- Copper alloys with less than 10% aluminium (Al) (aluminium bronzes often shortened to ally-bronze)
- Copper alloys with less than 3% silicon (Si) (silicon bronze)
- Copper alloys with less than 30% nickel (Ni) (cupro-nickel alloys)
- Copper alloys with less than 40%Zn and less than 18%Ni (nickel silvers)
- Copper alloys with less than 10%Sn and less than 4%Zn (red brass or gunmetal)
- Special alloys containing
    1. 0.1-1.5% cadmium (Cd)
    2. Less than 2.7% beryllium (Be)
    3. 0.6-1.2% chromium (Cr)
    4. 0.1-0.2% zirconium (Zr)

This group of special alloys are capable of being precipitation hardened.

Copper alloys can be welded with most of the conventional welding processes although, of the arc welding processes, gas shielded arc methods are the most common.

Pure copper alloys

There are three separate grades of pure copper; oxygen-free copper with less than 0.02% oxygen, tough pitch copper that contains <0.1% of oxygen, present as copper oxide, and phosphorous (P) deoxidised copper with 0.05% P up to 0.05% arsenic (As). Oxygen-free copper has the highest electrical conductivity, P-deoxidised copper is the alloy most frequently used for pressure vessel and heat exchangers. Oxygen-free copper is the most readily weldable, although porosity may be a problem if non-deoxidised filler metals are used.

The copper oxides in tough pitch copper can result in embrittlement of the heat affected zones due to oxide films forming on the grain boundaries. Weld metal porosity, even when using fully deoxidised filler metals, is also a major problem caused by the dissociation of the copper oxide, particularly when hydrogen (H) is present.

Phosphorus deoxidised copper presents less of a porosity problem although weld metal porosity is still likely to be formed, particularly in autogenous welds. It is essential therefore that filler metals contain strong deoxidants, the most common being silicon (Si) and manganese (Mn). Hydrogen control is also necessary so correctly baked low hydrogen electrodes are necessary when manual metal arc welding. Clean, grease-free wires and rods and high purity shield gases are required when TIG or MIG welding.

The two filler metals most often selected to weld the pure copper alloys are AWS A5.7 ERCu, the C7 of the now superceded BS 2901 Part 3 and ERCuSi-A, the old C9 of BS 2901. ERCu typically contains 0.4% of Si and Mn with 0.8% of Sn to aid fluidity; ERCuSi-A contains 1%Mn and 3%Si and is the preferred filler metal for tough pitch and P-deoxidised copper. BS 2901 Part 3 has been replaced by BS EN ISO 24373:2009 Welding consumables. Solid wires and rods for fusion welding of copper and copper alloys.

Shielding gases for welding are argon, helium and nitrogen or mixes of two or more of these. Pure argon may be used for TIG welding up to a thickness of some 2mm and for MIG welding up to approximately 5mm - above these thicknesses an argon-helium mixture will give better results with greater heat input and less risk of lack of fusion defects.

Nitrogen and argon-nitrogen gas mixes have been used in the past with some advantages being gained in terms of increased heat input from the high voltage nitrogen arc, but such gases are not commercially available and argon-helium or helium shield gases are now the preferred choice. The high thermal conductivity of copper means that not only are high heat input shielding gases required as thickness increases, but preheat is necessary at section thicknesses exceeding 2mm. A very rough guide to recommended preheat and welding current levels is given in the table for TIG and MIG welding.

Process	Thickness (mm)	Shielding Gas	Preheat °C	Welding Current (amps)
TIG				
	1.0	argon	>10	20 - 60
	1.0 - 2.0	argon	>10	50 - 160
	2.0 - 5.0	argon/75helium	50	120 - 300
	6.0 - 10.0	argon/75helium	100 - 200	250 - 375
	12.5	argon/75helium	350	350 - 420
	15.0	argon/75helium	400 - 450	400 - 470
MIG				
	<5.0	argon	10 - 100	175 - 240
	5.0 - 7.0	argon/75helium	100	250 - 320
	10.0 - 12.5	argon/75helium	200 - 300	300 - 400
	>16.0	argon/75helium	350 - 450	350 - 600

When welding thick copper with preheats of over 250°C and welding currents of more than 350 amps, the health and safety of the welder and personnel working in the vicinity must be considered.

Lagging the item being welded with thermal blankets is essential as is the provision of adequate screening from the very powerful TIG or MIG arc. The welder should select a dense filter glass of at least shade 13 when using welding currents above 300 amps to reduce eye strain.

Typical butt weld preparations are:-

- Up to 1.5mm thickness - square edge, no gap
- 1.5 to 3mm - square edge with 1.5mm gap
- 3 to 12mm single - V, included angle of 60° to 90°, feather edge and up to a 1.5mm gap
- 12mm to 25mm single - V, included angle of 60 to 90°, 1.5 to 3mm root face, 1.5mm maximum gap
- Over 25mm thickness - double V, included angles of 60 to 90°, 1.5 to 3mm root face, 1.5mm maximum gap

Carbon, stainless steel or ceramic tiles or tape can be used as temporary backing strips and are helpful in controlling root bead shape.

The Job Knowledge series is aimed at the welder and therefore tends to concentrate on the conventional arc welding processes. It is worth bearing in mind that electron beam and friction welding, including friction stir, have been used extensively and very successfully to weld thick section copper without the need for filler metals, high preheat temperatures and expensive shielding gases.

Christopher Sovendle appointed to SAIW

Christopher Sovendle joined SAIW on the 1st of October 2013. Christopher was born in the Eastern Cape but grew up in Gauteng on the East Rand. He speaks six languages; IsiXhosa, English, Afrikaans, Zulu, Sotho and Setswana, and refers to himself as a God fearing man, goal-driven and ambitious.

Good news for the single ladies is that Christopher is unmarried and has no children. He enjoys reading, watching TV, listening to music and playing soccer. But it is not all play and no work, Christopher got the Customer Satisfaction Award with BAE Land System (Cusai) and has travelled and worked in Afghanistan, Abu Dhabi and Spain. In Abu Dhabi he won the Exceptional Performance Award from the UAE Commander in Chief and he also received the Quality Improvement Drive Award from BAE Land Systems OMC.

He matriculated at Esibonelwesihle Senior Secondary School in Gauteng before qualifying as an artisan welder. Christopher studied at SAIW, completing the Welding Inspector Level 1 and 2, and Quality Management System courses. Before joining SAIW, he worked at Coastal Structure as a welder and then joined BAE Land Systems Omc where he worked as a team leader, welder's supervisor and welding inspector.

"I believe that SAIW will fully enhance my professional career growth and development," says Christopher. "SAIW is one the best welding institutions, not only in South Africa but in Africa. I am so grateful to be a part of an organisation that changes people's lives through education. I want to transfer my knowledge, skills and contribute to the growth of SAIW and the industry in general".

Christopher's biggest dream is to see himself as a qualified International Welding Technologist (IWT). He would also like to make a contribution towards SAIW producing the best welding personnel that would represent South Africa globally.

Samuel Mnguni

Samuel Mnguni joined SAIW on the 16th of September. He previously worked as an artisan at L&C Stein Müller Africa at Chamdor works and served as a transformer design draughtsman and workshop supervisor at Rotek Engineering. Samuel is a qualified boilermaker and studied at Germiston College in Mechanical engineering. He obtained a draughting qualification at Mecad Systems South Africa as well as completing the Inspectors courses at SAIW, including the AWS.D1.1.

"I developed a passion for transferring the skills learnt as an artisan and supervisor to the welding industries. Working with apprentices in the workshop has given me the desire to be able to provide training to the young welding personnel," says Samuel. "It is therefore a privilege for me to be involved at SAIW". Samuel's aim is to contribute towards the achievement of SAIW's vision and to grow within the welding industry. He would like to be able to help the industry with all the information and experience gained from the SAIW.

In his spare time, Samuel enjoys fishing and mechanics. He is happily married and has a five year old little girl.

USING ADVANCED PROCESSES TO IMPROVE QUALITY AND PRODUCTIVITY

Adapted from paper by James Byrne, presented at the 2012 IIW Regional Conference

Every industry requires systems and processes in order to ensure quality and standardisation of output. These processes will differ from industry to industry. In the pipe fabrication shops only a few welding processes are used to perform root passes on pipes. Gas Tungsten Arc Welding is commonly used for root and hot passes for pipe and produces high quality welds, but productivity is low due to low travel speeds and a more skilled operator is also required.

When processes are developed, mapped and documented, it is possible to find the best option, eliminate problems, reduce cost and increase quality and productivity. New processes have been developed for GMAW which modify the short circuit transfer process and precisely control the welding current during all phases of metal transfer to eliminate excess weld puddle agitation. This results in a calm weld puddle that is easier for the operator to manipulate and eliminates cold lap, which occurs when molten metal splashes against the side wall of the pipe and 'freezes' on top of it.

A modified short circuit gas metal arc welding process can increase travel speed and may also eliminate the need for a hot pass. It is tolerant of differences in work-to-contact tip distances and produces quality welds with minimal training. Possibly the same equipment, wire and gas combination may also be used for the fill and cap passes, using an advanced pulse process that is also very tolerant of differences in work to tip distances and can substantially increase travel speed and deposition rates.

In traditional GMAW, the short circuits occur at irregular intervals and are of varying intensity. This agitates the puddle, causing it to splash onto the sidewall of the pipe, which can lead to cold lap or lack of fusion, as well as spatter. Thus this process requires a high level of skill to produce code-quality welds and many companies shy away from it. With the new modified short circuit GMAW technology, the metal transfer process is precisely regulated, resulting in a uniform droplet deposition which makes the puddle easier to control. It also creates only small ripples in the weld puddle. With a more stable puddle, it is far easier to create consistent tie-ins with the sidewall. This is a clear example of the efficiencies and increase in quality that can be achieved through a process development focus.

With older technology, changing the stick-out would affect the arc parameters and could lead to quality issues, which would necessitate reworking the weld. This modified short circuit process compensates for operator differences by maintaining a consistent arc length regardless of stick-out. The process also produces a faster-freezing, calmer weld puddle and therefore may eliminate the need for a hot pass. The software controls the electrode current during all phases of the droplet transfer. After the ball on the end of the wire wets out in the puddle, the current is increased to a level sufficient to start pinching the electrode. The current is then increased until the short circuit is cleared and a pinch is detected. Because the pinch is detected before the short clears, the inverter quickly sets the current to a low level before the circuit breaks. The current is then increased to form a ball for the next short circuit and then decreased to allow a short circuit to occur. The current is monitored and, if necessary, dropped even further to avoid an arc force that could agitate the puddle.

The process is fairly simple to learn and if the operator can already weld with GMAW, he or she can become productive with the modified short circuit GMAW in just two hours. As minimal control is required over the weld puddle and the arc length, an apprentice welder can be trained in a relatively short period estimated at just two days.

Compared to conventional short circuit GMAW, the modified short circuit GMAW is designed for root pass welding, can replace TIG in some applications, provides good gap filling, is tolerant of joints with high-low sides, reduces spatter and heat input, allows for less-skilled welders to put in x-ray quality welds, is tolerant of changes in tip to work distance and leads to excellent fusion and reduced toe angles with reduced grinding on the side face of the weld.

In order to improve quality, efficiency and productivity continuously it is necessary to evaluate processes and methodologies constantly to find better, newer ways of doing things. New advanced technologies using an advanced pulsed MIG process that controls both current and voltage to stay within the optimum range for a specific wire type and diameter, wire feed speed and gas combination have been developed. The process provides a much cooler weld puddle that is ideal for out-of-position welds.

As a result of faster and tighter control over parameters, advanced pulse control technologies provide shorter arc length and a more focused arc column. Operators will make higher quality welds with lower rejection rates. The benefits of this process over conventional pulsed MIG are; a shorter arc length, better puddle control, more tolerance of contact tip to work distance variation, no arc wandering in tight corners, narrow arc plasma column, welds able to fill in at toes, increasing travel speed and deposition rate, more tolerant of poor fit-ups and gaps and excellent out-of-position puddle control.

Welding is a dynamic industry always developing new processes to the advantage of the welder and the customers. Such processes bring about cost savings, productivity improvements and quality benefits as well as a safer work environment and reducing training requirements. It is all about constant research and development and continuous improvement.

Qualification and Certification

CONGRATULATIONS TO THE PEOPLE BELOW WHO RECENTLY ACHIEVED QUALIFICATION AND CERTIFICATION

SAQCC-NDT CERTIFICATES

Liquid Penetrant Testing Level 1

JJ Mthabela
DC Archibald
Dhlamini
CH Korff
T Mpatlanyane
KK Moahloli
TD Kele
MWA Motejane
TN Nkuna
SM Mokgabudi
JC Thompson
F van der Merwe
JJD Uys
T Nkuna
PS Mthombeni
JP Visagie
AP Mpuru

Liquid Penetrant Testing Level 2

LM Matsapola
LR Epoh
BN Nkosi
EG Mushwana
SS Mthembu
M van Dalen
MC Skosana
HJ Ebongo
H Hefer
L Mboua
JC Winterbach
TK Mahlogele
G Mahlanga
M Mokhatla
FR Reiners
KA Smanga
R Cassiem

Liquid Penetrant Testing Level 3

None

Magnetic Particle Testing Level 1

LM Matsapola
SR Mlangeni
TR Jaca
SJ Mnguni
T Mpatlanyane
KK Moahloli
TD Kele
MWA Motejane
TN Nkuna
SM Mokgabudi
LS Mataloge
EX Mathabeni
RM Moalasi
G Ndlovu
DJ Malakoane
PS Mthombeni
CW Neethling
SK Struwig
FM Ndlovu

Magnetic Particle Testing Level 2

LM Matsapola
GD Naidoo
LR Epoh
BN Nkosi
M van Dalen
R Mabhena
HJ Ebongo
L Mboua
R Pretorius
M Mokhatla
FR Reiners
PM Cupertea
GS Visser
SP Simelane

Magnetic Particle Testing Level 3

None

Ultrasonic Testing Level 1

J Grobler
S Senekal
J van der Merwe
J de Villiers
TN Hoko
NT Makondo
W de Witt
JJ Olivier

Ultrasonic Testing Level 2

J Digby
LR Epoh
ZK Ekezie
M van Dalen
HJ Ebongo
L Mboua
WH Bothma

Ultrasonic Testing Level 3

None

Ultrasonic Testing Wall Thickness

None

Radiographic Testing Level 1

CW Hendricks
A Pienaar
HJ Ebongo

Radiographic Testing Level 2

M van Dalen
A Aspeling
TE Petersen

Radiographic Testing Level 3

None

Radiographic Interpreters

Q Prinsloo
JA Arends
JJ Albrech
J van Beek
JG Jacobs
A Jina
M Laurenson
MP Michael

STUDENTS THAT PASSED THE WELDING INSPECTORS LEVEL ONE & TWO

Welding Inspectors Level 1

D Mahlangu
M Nkoane
NV Ndhlovu
GG Smith
DG van den Berg
NZP Xulu
P Thoabala
V Pieterse
ZL Ntshekazi
J Snyman
M Nsemari
JG Oliver
CF Snyman
M Simelane
BP Nyembe
K Ndhlovu
LGM Pitso
H van Eck
MH Siwela
A van Dommelen
M Mlotshwa
NT Montwed
M Manuel
AM Mampe
RM Mokhabane
RT Ngobeni
SKN Williams
VV Memani
LG Mmekwa
S Graham
SS Ndlangmandla
PP Tsolo
N Swarts
S Ngovene
MS Tleane
M Maebela
CE Oliver
SE Twala
JC Maart
IL Mothibeli
G Prashan
P Mashele
AR Barnard
EE Mkhabela
TE Mncunu
PA Oosthuizen
VW Mfene
XT Sibiya
SGPW Scheepers
B Harmse
ST Moloi
JP Mthimunye
L Storbeck
B Ramdin
JA Nel
JA Fynn
NM Mnyukana
MC Cindi
LB van Zyl
AE Firmin
JJ Breytenbach
DD Phala
SG Mkwanazi
TP Mlambo
BL Nkosi
F Esposito
L Majova
JJ Cameron
BO van den Burg
SR Felix
FR de Kock
A Kameni
E January
VL Gilbert
M Bohardien
E Hoffman
HS Naldrette
C Appollis
R Visser
MJ Green
GJ Glen
J Koen
CV Minnaar
L Gomes
DJ Struyweg
T Pasipanodya
ZR Magudulela
J Botha
VT Khanye
JC Swanepoel
SMH Steyn
T Masiteng
ZD Msibi
LL Ndlovu
MS Mohale
PR van Tonder
WJ van der Westhuizen
W Abbas

Welding Inspectors Level 2

SN Prince
NC de Kock
WA van Niekerk
M van Wyk
MF Motau
DE Ubisi
VM Nascimento Galvao
PAL Wessels
P Swart
N Strydom
EIB Dzulkafli
RL Smale
LG Mmekwa
KD Chhana
W Viljoen
AA Masilela
SS Ndlangmandla
PP Tsolo
N Swarts
S Ngovene
R Erasmus
SE Twala
P Mashele
FM Sichivula
LE Makoeng
PJ Viljoen
CJ Cooper
SF Williams
AL Rautenbach
PP Steyn
MR Samsodien
A Viviers
LC Mtshali
KD Morcke
CD Manuel
HU Okafor
k Ajudhiya
JH Mokoena
D Mthethwa
A Texeira
J van der Merwe
J Carolus
BK Brooks
JA Brand
S Kriel
DR Naidoo
D Barnard
J Braaf
ML Maleka
BN Sihlangu
TS Makhubela
EJ Jensen
BC Shabangu

ASME Codes of Manufacture

M Maebaela
W Hattingh
ZI Vawda
NJ van der Merwe
WF Gomes
MW Mokgotla
PN Mataela
Q Prinsloo
FM Mazibuko
DV Hutchinson
W Velaphi

Painting Inspectors

None

Certified Students

Boilers

W Naidu

Pressure Vessels

GC Manuel
A Singh
N Singh
J van der Merwe
JJ Barnardt

IPE

SV Mbele
KB Nkosi
EM Mabanga

NEW ISO 3834 CERTIFICATIONS

Metal Protection & Engineering (MPE) was recently certified by SAIW Certification. The MPE Group was started in 2003 and found that it increasingly became a requirement with larger clients, such as ArcelorMittal South Africa, to be certified. The group also identified new markets to expand into. Such markets would require certification. The MPE Group was certified for ISO 3834 Part 3 which defines standard quality requirements for fusion welding of metallic materials both in workshops and at field installation sites, and is currently busy with the certification process for Part 2.

Mr Mike Kotze was responsible for the certification as he had previous experience in certification. “It was a challenge to get all the systems and processes documented and up to date,” says Kotze, “but SAIW gave good guidance throughout the process. It was an honour to be able to assist in getting the MPE Group certified”.

The MPE Group consists of three branches situated in Vanderbijlpark, Naledi and Middleburg. Collectively, the group offers a range of services such as manufacturing and reconditioning of continuous-caster rollers and roller crushers, pipe and tank manufacturing and supplying of welding consumables, predominantly to the mining, sugar and steel mill industry.

There were also re-certifications done such as DB Thermal, Nigel, a division of DBT Technologies (Pty) Ltd that was founded in 1970. DB Thermal supports the power generation, petro-chemical and industrial sectors in South Africa with quality systems and components, manufacturing, construction and after-market service and maintenance expertise. Turnmill Proquip Engineering was also re-certified. The Company supplies manufacturing, fabrication, machining, welding and refurbishment services to industrial companies.

In Cape Town Triple S Gas Tanks (Pty) Ltd, trading as Gascon, a manufacturer of pressure vessels, tanks and gas containers was re-certified, as well as GEA Aircooled Systems, part of the German GEA Group Aktiengesellschaft, situated in Germiston. GEA Aircooled provides heat transfer equipment to the power and petrochemical industries.

Branch NEWS

Cape Town

The SANS 347/PER workshop held on the 22nd of August drew a capacity crowd. The recently published requirements for re-certification of CPs and IPEs have sparked further interest and a second session was scheduled for the 13th of November, with refreshments sponsored by SASSDA. This second workshop is also now fully booked, but should you be interested in attending, please contact the Cape Town representative to be put on the waiting list for 2014.

With two Inspectors Level 1 and an Inspectors Level 2 courses held in Cape Town this year, we were honoured to present certificates to the successful candidates at a certification function on the 19th of November at the River Club in Observatory.

Training in Cape Town promises to be just as successful in the new year, with three Welding Inspectors (Level 1), two Senior Inspectors (Level 2) and, for the first time, Competent Persons training. We will also be offering our regular courses (ASME Codes, AWS D1.1, etc.), so please contact Liz Berry (details below) for the full 2014 Training Brochure and any other information you may need.

Although it has been some time since our last evening meeting, we were pleased to offer Shelton Zichawo's (SAIW) presentation entitled "Implementing ISO 3834" on the 21st of November. This meeting was kindly hosted by Actom John Thompson Boilers in Bellville South and attendance was very good. Thank you to everybody involved for their generosity in making the evening a success.

Should there be any suggestions for evening meetings, for further information on forthcoming events or to be added to the Cape Town SAIW mailing list, please contact Liz Berry at berryl@saiw.co.za.

Durban

Etienne Nell presented to 20 Durban members at the branch evening meeting on 'Qualification of welders according to ASME section 9'. The presentation was well received and informative.

The Durban branch is being reinvigorated by Ann Meyer, who took up the position of SAIW KZN representative, working closely with the branch committee, coordinating monthly meetings, handling customer relations and promoting SAIW in KZN.

Ann unfortunately recently had a serious operation, but is back at home and, although she is still recuperating, is getting better. Ann will be back at the office in January 2014. SAIW wishes Ann a speedy recovery and looks forward to working with her for a long time to come.

Johannesburg

On the 30th of October 2013, Shelton Zichawo (quality system assessor of SAIW), presented the evening meeting entitled "Implementing ISO 3834". Zichawo explained the aims of ISO 3834 as well as how to implement the requirements of the standard.

The following was presented:

What is ISO 3834?

- A quality management system specific to welding processes and applicable to fusion welded metallic materials and was independent of the products manufactured; and
- A process control system to ensure weld integrity and the fulfilment of design intent.

To enable all welded products to be covered by the same code, ISO 3834 has been structured into three quality levels:

- Comprehensive quality requirement
- Standard quality requirements
- Elementary quality requirements

Comparing ISO 3834 with ISO 9001

ISO 3834 is also referenced by many European codes; EN 1090, the European structural code (similar to AWS D1.1), EN 13445, the pressure vessel code and EN 15085, the railway code. While the American ASME and AWS codes don't directly make mention of 3834, ISO 3834 allows fabricators to work to any recognised standards, as long as they are fully applied.

In South Africa, the new Pressure Equipment Regulation (PER) references SANS 347, which requires that any pressure equipment manufacturer that is not an ASME certified U-stamp holder is to be certified to ISO 3834 for equipment that has to bear the RSA/CI/OHSA stamp. So, in principle, ISO 3834 certification is a must for anyone who manufactures pressure equipment, and this includes pressure vessel and pressure piping components.

To date, 59 fabricators have been certified by SAIW Certification, but some of these operate at more than one site, so all in all, 85 fabrication sites are now certified to ISO 3834 under the SAIW's Welding Fabricators Certification Scheme.

New Corporate Members

BEP African Consulting
Welding Engineering Inspection Services (Pty) Ltd
BD Ellis Electrical & Engineering (Pty) Ltd

New Members

Charl Johannes Lotz De Beer

HR NEWS

New Staff Members
Samuel Mnguni
Christopher Sovendle

SEND US YOUR NEWS

Fusion is for the members of SAIW. It is your publication. Therefore it has been decided to start a members' page. This will include corporate or individual members. So if you got married, had a baby, got a promotion or have anything to tell industry, please let us know. All news is valid and can include personal, company or industry news. It can be happy or sad, academic or silly, whatever you want to share. Please e-mail submissions to frances@trinitas.co.za. We will publish it in Fusion and if newsworthy also disseminate to other media.

This might be your big breakthrough in becoming famous.

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