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The President Writes

I recently returned from a business trip to China and Australia. I was impressed with both of these destinations, as I had been on previous visits. Impressed by what I hear you ask, impressed by the energy and vibrancy of both and also the numbers of young engineers working in manufacturing and construction. In China young men and young women were involved in the manufacturing and coating of line pipe and in Australia many young engineers, men and women, were actively involved in project controls and construction, laying a complicated network of gas pipelines to bring energy to their cities and to liquefaction plants for export. With the impending advent of shale gas in the UK, in huge and commercially viable quantities, it is the hope of all that this will kick start our slowly emerging economy and provide the opportunity for education and employment for the young engineer as the North Sea development once did some of our older members.

Shale gas has already attracted large investment in the USA where a $20bn project has started, the output will be exporting 20 million tonnes of liquefied natural gas a year, produced by hydraulic fracturing. These exports will go worldwide from an export terminal in Louisiana and will be exported to many destinations including Britain. These imports from the USA are a precursor to developing our own shale gas which it appears we have in abundance around the country. Reports I have read indicate we are looking at self-sufficiency for the next 100 years and this is a very positive thing when one considers we are looking at an ever-increasing energy demand, we’re going to need all available sources of energy and shale gas will I hope play a big part of that.

My thoughts on the subject of future energy delivery were crystalised at the Science Council AGM last month where the guest speaker, Lord Oxburgh KBE presented his paper ‘Energy for all: But from Where?’ Lord Oxburgh is an eminent geologist and geophysicist with an impressive CV, he has taught at the Universities of Oxford and Cambridge and has been a visiting professor at Stanford University, the California Institute of Technology and Cornell University. He has also been the Chief Scientific Adviser to the Ministry of Defence and Rector of Imperial College. His message was clear, if we keep expanding our population the demand on energy will increase along with it and not necessary in proportion, i.e. we all now consume energy at a rate that would have made our parents dizzy and with increasing requirements for computer technology, heating, air conditioning and other power hungry needs we are likely to need all the cheap energy we can muster, most of which will not come from renewables, as far as I can see.

It is this impending change in the energy market that I see as an opportunity for greater involvement by engineers, we will need to train more and quickly, we in corrosion control are not alone in this, and ICorr is well placed to assist in this training and education with its courses and certification schemes.

The future in corrosion looks brighter if the UK exploits its reserves of shale gas, for the corrosion engineer it will not be the same mix of problems as we experienced in the North Sea days but a new set of problems which will be equally challenging.

Trevor Osborne, President of the Institute of Corrosion

LONDON BRANCH REFRESHED

Each year on the 2nd Thursday of every month from October to April, the London Branch hosts a series of evening Technical Presentations at the Naval Club which is in Hill Street, just of Berkeley Square in London’s Mayfair. These meetings are well attended, cover a range of topics given by acknowledged experts in their fields and provide an enjoyable, but informative occasions for excellent networking. There is no charge and in keeping with the Charitable Aims of the Institute to educate the general public on corrosion matters, non-members are equally welcomed, especially if accompanied by a member of the Institute. Anyone interested in joining, will find this a good and informal way of being introduced to the Institute. Details of each event are set out more fully on the back cover Diary Page of this Journal and on the website. The
London Branch Golf Day was held again at Silvermere Golf Club, Surrey on 6th June with 10 teams taking part, and once more the weather was kind. The morning competition of a 9 hole Texas Scramble was won by Winn and Coales, their team of John Burton, Graham Woodfine, Brian Dunsterville and Terry Capps being presented with the Denso Trophy by ICorr President Trevor Osborne; runner up team was Doornbos Equipment. The afternoon round was an 18 hole team and individual Stableford, the team winners being PPG comprising Dave Heal, Mike Taylor, Brian Reid and Paul Cottam, and they were presented with the Len Townsend Memorial Rose Bowl Trophy. Runners up were Shane Downie, Stephen Hamilton, George Penny and Thomas Etobleau of Wood Group who received the ICorr Shield. The group has been divided into four teams, with two teams presenting on each evening. These will be judged and the winning team will be invited to the Christmas Luncheon as guests of the Institute. All this has been done at no cost to students or their employers. The Institute would like to thank Akzo-Nobel for providing free accommodation at Portland House and to all of the speakers and mentors for giving up their personal time to help these young engineers more fully understand the many aspects of corrosion.

By the time this article is published, the successful London Branch Golf Day and the 2 Day CP Conference would have taken place. The next social event is the Christmas Luncheon at the Royal Overseas League Club, just behind the Ritz on 12th December. Last year the event was sold out and some people were left disappointed. This year our professional Speaker is a retired Prison Governor and early bookings to Mike Allen are strongly recommended. Mike’s contact details are also on the Diary page.

John T O’Shea, Branch Chairman

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This year, London Branch has pioneered a scheme New Entrant Engineers Orientation in Material and Corrosion. Six comprehensive bi-monthly evening programmes are delivered in a friendly atmosphere by experts in a number of related topics. The class size has been restricted to 20 and has a waiting list already for 2014. All feedback has been excellent and the institute is investigating how this could be rolled out nationally. A highlight will be the presentation of case studies at the October and November London Branch evening meetings. The group has been divided into four teams, with two teams presenting on each evening. These will be judged and the winning team will be invited to the Christmas Luncheon as guests of the Institute. All this has been done at no cost to students or their employers. The Institute would like to thank Akzo-Nobel for providing free accommodation at Portland House and to all of the speakers and mentors for giving up their personal time to help these young engineers more fully understand the many aspects of corrosion.

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John T O’Shea, Branch Chairman
ABERDEEN BRANCH JOINT MEETING WITH NACE, MAY 2013
HSE’S AGEING AND LIFE EXTENSION KEY PROGRAMME (KP4) UPDATE

The last meeting of the 2012/2013 session was held on the 28th of May 2013 at the Palm Court Hotel. It was a joint meeting with the National Association of Corrosion Engineers (NACE) and an Annual General Meeting (AGM). Frances Chalmers (the outgoing Chair) reviewed the events of the year and summarised finances expressing the Institute’s appreciation for its sponsors. At the AGM, Eugene Ogosi was elected as the next Chair for the 2013-2014 session and a call for new committee members was made.

The guest speaker was Andrew Duncan from the Energy Division of the HSE and he updated members on the progress of the KP4 programme. He reminded the audience that this year was the 25th year of the Piper Alpha disaster (one of the worst disasters in the history of the oil and gas industry) and reiterated the lasting effect the tragedy had on the industry. He stated that the UKCS operates a Safety Case Regime noting the importance of maintaining high standards of safety over the life of the asset. He also emphasized the importance of the duty holder knowing the condition of their asset and having awareness of how the condition has changed over the course of time.

Andrew referenced statistics from the Norwegian sector noting that while the age of the asset can be relevant, there was no evidence of linear relationship between the ‘Age’ and ‘Asset Condition’. He noted that at least two assets were doing a life extension up to 70 years (originally 25 years design life) in the UK sector and that in Norway up to 100 years life extension were being performed.

Andrew used examples to illustrate and discuss the characteristics of a good Ageing & Life Extension management. Support from senior management, good process safety, performance trending, up-to-date analyses techniques (for various disciplines) and good risk management were some of the factors Andrew covered.

He also used the RAF Nimrod plane disaster review findings to emphasise the importance of the Safety Case. He stated the immediate causes of the disaster and reviewed the contributory factors. He concluded his talk by recognizing that there was evidence of more investment in Ageing and Life Extension management, better sharing of information and noted that forward planning will reap rewards. The link between the age of an asset and Life Extension, difference in maintenance practices for fixed and floating platforms, use of prescriptive models, downhole asset management and work done on the integrity umbilicals were some of the areas of discussion at the end of the session.

Frances Chalmers thanked Andrew Duncan for his presentation and also thanked members for attending. For information about the Aberdeen branch activities please contact the branch secretary via icorrabz@gmail.com. Alternatively a calendar of local events of interests to corrosion professionals in the Aberdeen area and the opportunity to sign up to the branch mailing list is available at https://sites.google.com/site/icorrabz/home.
Technical Topics No.42: BIMETALLIC CORROSION (AGAIN!), CP AND VARYING ACADEMIC CUSTOMS

By Douglas J Mills, Technical Secretary

To modify somewhat L P. Hartley’s opening line of “The Go-Between”, Foreign Countries are like the past, they do things differently there. This relates to my having just come back from Poland.

Wearing my academic hat I go over to Technical University of Gdansk quite frequently and this time I attended the PhD viva of my old student Kasia (she did a Masters Project with me).

It was a very interesting experience, the only difficulty being that it was in Polish, a language which despite my intermittent efforts to learn it, has so far defeated me. But luckily I had another of my former students Michal Narozy who recently attended the London CP conference with Lidia and Ewa – (many thanks to Trevor for inviting them and I) sitting beside me to translate the key parts. The topic was about Zinc Rich paints and the possibility of extending the period during which they protect steel galvanically by adding nanoparticles of zinc. This was a public defence.

There were about thirty five people there. This relates to my having just come back from the London CP conference with Lidia and Ewa – (many thanks to Trevor for inviting them and I) sitting beside me to translate the key parts. The topic was about Zinc Rich paints and the possibility of extending the period during which they protect steel galvanically by adding nanoparticles of zinc. This was a public defence.

Anyway to the main topic of this TT viz bimetallic corrosion. Although covered by me before, a large number (20-25%) of my technical enquiries relate to this. A recent interesting one catalysed me into covering this again here particularly as I have found a couple of useful sources to help.

This enquiry related to nickel aluminium bronze (NAB) coupled to superduplex in a sea water environment with possible flow past one or both metals. My reply (edited) was as follows. Both these materials have highish potentials. This can be seen in the table in the useful Galvanic Corrosion Guide published by NPL (www.npl.co.uk/upload/pdf/bimetallic_20071105114556.pdf). In normal circumstances the NAB would be anodic to the superduplex. But only by about 0.1-0.2 V. Looking at area first you have a large area of NAB (anode) and a smaller area of superduplex (cathode) would be preferred. However stainless steels are generally poor cathodes (due to the relatively low electronic conductivity of the chromium/nickel oxide film). So even if the ratio was unfavourable the galvanic effect would be less serious than might be expected.

Now looking at flow effects, my expectation would be that increasing flow would make the potential difference a little greater (NAB gets more base and the duplex gets if anything more noble). But the extra attack would be small assuming the flow rate was not so high as to cause impingement attack on either or both alloys.

Regarding temperature (0-30°C) this will probably not change things too much other than any enhanced corrosion rate the NAB undergoes will be slower at the lower temperature.

I finished my reply by suggesting that with bimetallic corrosion one can never be too certain and some laboratory testing with the two alloys measuring potential and galvanic current with and without flow and at a range of temperatures would be recommended. I also mentioned that my old colleague Roger Francis <rfrancis@rfmaterials.com> has written a guide “Galvanic Corrosion - a Practical Guide for Engineers” published by NACE and this is useful.

Looking now at other examples of Bimetallic corrosion, aluminium commonly suffers this as shown in the picture. Also about ten months ago my faithful correspondent Eric Martin sent me pictures of the new Broughty Ferry cycle racks. There seem to be three alloys involved here: austenitic stainless steel, the weld metal which is more ferritic and unprotected mild steel bolts. Perhaps the people putting the bike racks up thought that connecting to a nice noble metal will help the mild steel and no protection was needed! Well the reverse is true as shown in the picture. Thanks to Eric for this.

Back to the CP conference which I am sure will be covered elsewhere. This was a very good event and the students which I brought along all enjoyed it. One could say that Kasia’s PhD topic has a CP “ring” to it as zinc is of course commonly used as an anode material. Whether her results have ramifications affecting general CP – well we will have to see! Finally there is still a need for UK delegates for the following EFC working parties: High temperature, electrochemical methods, marine, microbial, refinery, automotive, trib and polymers. As before if you are interested let me know by contacting: Douglas@harrbridge.freeserve.co.uk

P.S. Thanks to Flowserve GB Ltd for allowing my response to their query to be included in this article.
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AW Corrosion Solutions Limited provide professional consultancy and inspection services to the Rail Industry, the company specialise in Rail Bridge refurbishment of existing structures throughout the country, the services provided include intrusive surveys, development of workable remits and a full comprehensive inspection of works at all stages, experience in the refurbishment of Rail Bridge structures extends goes back 26 years.

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For further information contact:  AW Corrosion Solutions Limited , 5 Brookfield, Four Elms, Kent TN8 6NJ  Email: info@awcorrosionsolutions.co.uk  Mobile: 07808 026250  Office: 01732 700924

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The Institution of Corrosion launches the new ICorr Job Board in May. The Job Board enables you to find all of the best corrosion industry jobs in one place. At the time of writing we have 85 jobs being advertised for positions in the corrosion industry. The majority of these are based in the UK however there are also some overseas positions. Since its launch we have had 46 jobseekers register with the site. In addition 1,742 people have looked at jobs with 22 applications being sent.

Visit www.icorr.org and click on the Job Board tab to:

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In order to keep members informed of all the latest jobs we will be publishing a monthly ‘Jobs of the Month’ email. If you would like to subscribe to this email you can send your email address to jonathan@squareone.co.uk or register for the ICorr website member’s area. We will also be publishing the jobs of the month on the Linked in Group.

Our hope is that this new resource will make a significant difference for our members as they navigate their career paths. Thank you for your ongoing support.
THE OPTIMISATION OF PROCESSING CYCLE PARAMETERS TO ALLEVIATE PITTING CORROSION ON ANODISED ALUMINIUM ALLOY SURFACES

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ABSTRACT

This study examined an alternative method to alleviate possible pitting corrosion on the anodised aluminium surfaces. The corrosion test specimens were prepared for chromic acid anodising, sulphuric acid anodising, hard anodising, phosphoric acid anodising, and tartaric sulphuric acid anodising. Some aluminium alloys, such as Al 7175, and Al 2618, indicated poor resistance of pitting corrosion. The specimens were tested by salt spray test and the coating quality was characterized by a ‘Galvo test’ and optical microscopy. By optimizing the anodising cycle, the pitting corrosion resistance could be improved significantly.

Keywords: Anodising, Voltage ramp up, Aluminium alloy, Pitting corrosion.

INTRODUCTION

Aluminium alloys are frequently used in aircraft structures because of their high specific strength and light weight. These aluminium alloys consist of a number of elements, such as copper, magnesium and zinc, to improve their properties. It was found that the formation of microscopic galvanic couples reduces their corrosion resistance. The corrosion resistance can be increased by surface treatments such as anodising followed by sealing either in boiling water or in aqueous potassium dichromate solution. A pre treatment in tartaric sulphuric anodising and sealing with sol-gel presented the best response of corrosion resistance behaviour.[1]

Anodising usually leads to a decrease of the fatigue limit of aluminium alloys. The chromic acid anodising (CAA) and phosphoric acid anodising (PAA) provide significant advantage of a much lower decrease of the endurance limit than that of other anodising treatments. It was found that the fatigue behaviour is not dependent on the thickness of the aluminium oxide film, but depends on chemical composition of the anodising bath and applied voltage.[6]

A previous study of the pitting corrosion on Al 7075 and Al 2618 plates indicated that surface corrosion occurred during chromic acid anodising and sulphuric acid anodising processes. In contrast Al 2024 and Al 7075 sheets showed excellent resistance to corrosion attack during salt spray test in 500 hours.[3] In another study it was reported that the applied voltage during anodising correlated with the coating homogeneity and morphology. The thickness of the oxide layer reflected the corrosion resistance, whereas a thicker oxide layer, gave a higher pitting potential.[4]

The current technology on tartaric sulphuric acid anodising (TSAA) still showed inconsistencies indicating of pitting corrosion possibilities. Salt spray tests were carried out for aluminium alloy 20124 T3 specimens after TSAA treatment. The corrosion test results exhibited that within 96 hours of TSAA process and a 60 minutes hot-water sealed at a temperature higher than 96°C, it was observed that there was no pitting marks. In contrast, approx 2 pitts per dm² were observed on the samples within 336 hours of TSAA process Alodine 1200 sealed.[5]

EXPERIMENTAL METHOD

The current study examined the corrosion resistance of four types of as-received aluminium alloy samples. The samples are Al 2024 T3 (Al-Cu) sheet, Al 7075 T6 (Al-Zn) sheet, Al 7175 (Al-Zn) plate, and Al 2618 (Al-Cu) plate. Samples were designated into two groups, namely sheet and plate specimens. The specimens were prepared with dimensions of 125 mm x 80 mm x 6 mm and were originated from ASNA-3050, ASNA-3355 and KAISER products.

The Al 2618 plates contain of 1.3 to 1.8 wt % of magnesium and 1.9 to 2.7 wt% of copper. The Al 7075 sheets contain 2.1 to 2.9 wt% magnesium and 1.2 to 2.0 % wt% copper. The magnesium content in Al 2024 sheets is 1.2 to 1.8 wt% and this is lower than that in Al 7075, Al 7175 and Al 2618.[6]

The samples were initially wiped using acetone before being immersed for 10 minutes in a commercial alkaline degreasing Turco 4215 NCLT solution bath at a temperature of 50°C, followed by rinsing in deionised-water. Prior to the anodising process, the specimens
were dipped in an deoxidizing solution containing a mixture of nitric acid solution (100 g/L) and chromic acid solution (40 g/L), at a temperature of 21 to 38°C for 1 to 10 minutes (average 5 minutes) followed by deionised-water rinsing at room temperature for 5 to 15 minutes. The anodising process was performed under six conditions, namely chromic acid anodising (CAA) type I, CAA type II, sulphuric acid anodising (SAA), hard anodising (HA), phosphoric acid anodising (PAA) and tartaric sulphuric acid anodising (TSAA).

Firstly, in the type I and type II CAA processes, specimens were anodised in 75 g/L chromic acid solution for 40 minutes. The solution temperature was maintained at around 40°C. Type I experiments were conducted at a higher voltage, between 40 to 50 Volts whereas type II experiments were performed at 20 Volt, for approximately 50 minutes at a temperature of 40°C.

Secondly, in the SAA process, the specimens were anodised in 200 g/L sulphuric acid solution, which was agitated to maintain solution circulation. The solution temperature was recorded in a range of 10 to 20°C. SAA process was performed for 60 minutes at a voltage between 12 - 20 Volts, typically 16 Volts.

For the HA process, specimens were anodised in a mixture of 400 g/L sulphuric acid and oxalic acid 10 g/L solution, agitated to maintain solution circulation. The solution temperature was maintained in the range of -2 to 2°C. The Anodising process was performed for 55 minutes at a voltage of 45 Volt.

In the PAA process, specimens were anodised in a 100 g/L phosphoric acid solution, again agitated to maintain solution circulation. The solution temperature was maintained in the range of 23 to 28°C. The anodising process was performed for 20 to 25 minutes at a voltage of 45 Volt.

Finally, in the TSAA process, the specimens were anodised in an 80 g/L C,H,O, and 40 g/L HSO4 mixture at a voltage of 13 to 15 Volts or at current density between 0.6 and 0.8 A/ dm², in 20 minutes at a temperature of 36 to 39°C. Dissolved aluminium contaminants should be controlled between 0.5 and 5 g/L, and chloride ion contaminants should be limited to less than 0.1 g/L.

After the anodising treatment, all samples were rinsed with deionised water and then sealed; either in diluted chromic solution for CAA and SAA specimens for 40 minutes at a temperature of 90 to 95°C, or in boiling deionised water for 40 minutes at a temperature of 97 to 100°C for TSAA specimens. All specimens were processed under different voltage ramp-up parameters, notably (1) a conventional ramp up rate of 4 volt/minute, and (2) a lower ramp up rate at 1.5 to 2.5 volt/minute as an alternate process. Experiments were prepared using the alternative anodising cycle, which consisted of conventional chromic acid anodising but with ramp rate of about 2 +/- 0.5 volt/minute. This meant that the ramp time for conventional chromic acid anodising Type I increased, being longer at around 20 minutes; while the ramp time for conventional chromic acid anodising Type IB was also longer, being about 10 minutes. All other operating parameters were applied as previously stated.

All specimens were then exposed in a salt spray chamber and tested under standard ASTM B-117 conditions; samples were mounted at an incline angle at 15°. The morphology of the samples was observed using an optical microscope. Coverage of the coating was evaluated by an ohmmeter, ‘Galvo Test’, to assess the insulating properties of the film.
RESULTS AND DISCUSSION

Both Al 2024 T3 and Al 7075 T6 sheets subject to CAA, SAA, and PAA anodising processes did not show any signs of pitting when subject to salt spray testing. However, the milled Al 2618 and Al 7175 plates frequently showed local corrosion breakdown, as exampled in Figure 1.a, 1.b and 1.c, which presents pitting corrosion on the SAA treated Al 2618 plate surface. It was observed that 5 pits were formed in 500 hours salt spray test. The size of the pit increased from zero to 640 microns during the test. Table 1 shows the experiment results, related to the application of current and improved voltage ramp rate. Figure 2 shows incidental pitting on a TSAA treated bare Al 2024 sheet.

CONCLUSION

It was observed from these initial experimental results that the Al 2618 and Al 7175 plates have lower corrosion resistance compared to the other aluminium alloy samples. The corrosion resistance of Al 2024 and Al 7075 sheets did not depend on the chloride content in the anodising process. The improved method applied at a lower voltage ramp rate about 2 ±/− 0.5 Volt/minute appeared to reduce the susceptibility to pitting corrosion.

REFERENCES


ACKNOWLEDGEMENTS

I would like to thank Dr. Ariadne L Juwono - University of Indonesia, and Dr. Hendri Syamsudin - Bandung Institute of Technology, for advice and contribution to grammatical aspects of the paper.
It is well known, that corrosion damages at technical production plants belong to the biggest safety risks and most cost intensive problems in our modern industrial production. Consequential costs of corrosion damages move worldwide approximately in a scale from 4.0 to 5.0% of the respective gross domestic product.

An especially precarious problem is, in this context, the corrosion under insulation (CUI) at technical production plants. Besides, the appearance of CUI applies about nearly all known corrosion forms, from surface corrosion through pitting corrosion up to the especially treacherous stress crack corrosion. Corrosive processes under insulations are particularly dangerous; because they are proceeding unnoticed, covered by insulating materials and claddings and therefore they are avoiding any visual control.

Huge commercial damages as well as environmental damages and last but not least dangers of life and health of the people in the damage sphere are very often the result of this covered proceeding corrosion processes. Constantly the biggest efforts are made worldwide to control the problem corrosion under insulations and to prevent its often dramatic results.

Corrosion under insulation occurs in spite of the mostly applied anticorrosive coatings in the main by enrichment of moisture and corrosive substances within the insulating material. The enrichment of humidity by air exchange, condensation and therefore also from corrosive substances, available in the surroundings air, in insulations is not avoidable on a continuing basis, even with the best implementation quality of insulation and cladding. Additionally there comes the fact, that due to the continually running circular flow process of cooking, vaporization and condensation of the trapped water within the insulating material, by chemical reactions, other corrosive substances can form as a function of the used insulating materials.

According to the degree of the moisture penetration and concentration of corrosive substances in the insulating material and the direct contact between this insulating material and the surfaces of pipes and equipment, unnoticed corrosion under insulation can occur. For the solution of these problems and avoidance of corrosion under insulations and its secondary damages, NTI has developed the new special insulating system, CPI (Corrosion-Preventing-Insulation-System), with which the problem of corrosion under insulation can be ruled substantially better.

CPI is a so called “non-contact-system” and it is very easy and quick to install. CPI is the only complete and integrated insulation system for the prevention of CUI worldwide. Due to the fact that CPI is a complete and integrated system, specialists will not be needed for the installation of this System.

If we follow the statements of some CUI-experts, “non-contact-systems” are the only measurements against CUI which are working really efficient and sustainable.

As mentioned before, CPI was developed to avoid or minimize CUI and its mostly costly and dangerous results.

But CPI can perform even more than only prevent CUI.

CPI is applicable for the insulation of all sizes of pipes as well as for equipment.

With CPI nearly all worldwide available insulating materials can be used.

CPI offers additional functions which reduce costs and periods for shutdowns and increase the plant operating time, the plant profitability and the plant safety.

With CPI it is also possible, to carry out regular inspections at the outside of pipes, vessels and tanks etc. within the air space between insulation material and the equipment by using robotics and suitable designed NDT-inspection-equipment, without wasting time and money for dismantling and renewal of the insulation.

Due to its special but however simple design, CPI drastically diminishes the danger of corrosion under insulations, reduces maintenance costs and in a special way increases the operational safety, availability and life span of insulated production plants.

Please find details about construction, installation and impact of our CPI-System on our homepage www.nti-gmbh.com.

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DENSO OVERBANDING TAPE FOR HOPE STATION PLATFORM

Gary Fletcher (Surfacing) Ltd of Dronfield, Derbyshire, has recently completed a refurbishment contract at the rural Hope Railway Station. Following trenching work on the raised platforms it included repairs to tarmac surfacing.

Following application of Denso Primer, 250 metres of Winn & Coales (Denso) Ltd’s Denso Overbanding Tape was applied in order to bond new asphalt areas to old. The Overbanding Tape was also applied where new asphalt areas meet the concrete platform edge sections.

Denso Overbanding Tape is a cold applied polymer modified bituminous tape for surface sealing of open seams or cracks up to 5mm width in road pavements.

DENSOCLAD 70 PROTECTS 1KM OF PIPEWORK IN BRINEFIELDS

Cofely Fabricom GDF SUEZ are near completion of a contract to install 1 km of protected multi technical underground gas systems for gas storage in the Cheshire brine fields.

The coating selected was Winn & Coales Densoclad 70, this having been applied to ‘in situ’ field joint locations by the Cofely Fabricom GDF SUEZ organisation on erected pipework sections ranging from 2” to 30” Diameter.

Winn & Coales Densoclad 70 medium to heavy-duty tape is designed for anti-corrosion protection of medium and large diameter pipes, welded joints, bends and fittings, and is applied over Denso primer. The extremely tough PVC backing combined with polymer bitumen adhesive ensures complete protection and exceptional resistance to damage by impact, poor backfill or aggressive ground conditions.

For further information contact: Winn & Coales (Denso) Ltd., Chapel Road, London SE27 0TR
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Bagnalls, the national painting contractor, with its headquarters in Shipley, were recipients of the Industrial Prize at the 25th Anniversary of the Painting & Decorating Association (PDA) Annual Trophy awards, held at the Plaisterers Hall in London.

The top industrial prize was awarded for an outstanding project undertaken by our ICATS (industrial coating applicator training scheme) painters using Jotun paints. The contract was for the complete redecoration of the Docks Light Railway Bridge which spans the Canary Wharf complex in London. The design was a realisation of the artist Sinta Tantra’s vision, titled “A Beautiful Sunset Mistaken for a Dawn”. The judges commended not only the finished painting works but also the way in which Bagnalls managed the project which required a fully encapsulated scaffold and complex safe systems of work.

Stephen Bagnall, the Group Managing Director commented “This is a very proud day for Bagnalls. The project win demonstrates the extent of our painting expertise and years of experience in the industry.”

Bagnalls were also highly commended for the Platform and Building Redecorations and Repairs to Windsor & Eton Riverside Station, using PPG Johnstone’s paints. Opened in 1849 as a Royal station, Windsor and Eton is one of South West Trains “Heritage” stations. This not only meant that some of the station buildings are Grade II listed but that the colour scheme for the station is not the typical South West Trains livery but in fact “Royal” approved colours.

The work was undertaken in the Spring of 2012 and completion was achieved in time for the Olympics opening ceremony and the influx of passengers for the rowing events held at nearby Eton Dorney.

Bagnalls has had its approach to occupational safety and health recognised in an awards scheme run by the safety charity, the Royal Society for the Prevention of Accidents (RoSPA), for the fifth year running. The Gold award in the RoSPA Occupational Health and Safety Awards 2013 was presented in a ceremony at the Hilton Birmingham Metropole Hotel, at the National Exhibition Centre by Errol Taylor, RoSPA Deputy Chief Executive.

Dating back 57 years, the RoSPA Awards scheme is the largest and longest-running programme of its kind in the UK. It recognises commitment to accident and ill health prevention and is open to businesses and organisations of all types and sizes from across the UK and overseas. The scheme not only looks at accident records, but also entrants’ overarching health and safety management systems, including practices such as leadership and workforce involvement.

David Rawlins, RoSPA's awards manager, said: “RoSPA firmly believes that organisations that demonstrate commitment to continuous improvement in accident and ill health prevention deserve recognition. Bagnalls has shown that it is committed to striving for such continuous improvement and we are delighted to honour it through the presentation of an award.”

Andrew Naylor, Bagnalls Manager said: “We are extremely pleased with our ongoing success at the RoSPA Annual Awards. We continuously develop our safe systems of work to ensure the occupational health of our employees.”

For further information contact: Joanne Gualda or Carey Inman-Harrison, joanne_gualda@bagnalls.co.uk, carey_inman-harrison@bagnalls.co.uk
Alfred Bagnall & Sons Limited, 6 Manor Lane, Shipley, West Yorkshire, BD18 3RD Tel: (01274) 714800 Fax: (01274) 530171 www.bagnalls.co.uk
A new design of booster which eliminates the time-consuming trial and error procedures associated with the fine tuning of control valves is available from valve specialists SAMSON CONTROLS. As a result of its precisely manufactured bypass restriction, the booster can be adjusted exactly and lead-sealed in this set-up ensuring valuable time saved, whilst also minimising potential start-up problems.

As the booster is completely pressure balanced it provides a stable output, even under fluctuating pressure conditions. The signal pressure is transmitted with a defined hysteresis, without loss (gain 1:1) and emits minimal noise. Another important benefit is that only the booster’s functional parts come into contact with instrument air, alternatively the booster’s exhaust air port can be protected from the weather or other environmental factors.

When used in combination with a positioner the booster allows control valves with large pneumatic actuators to be controlled quickly and precisely, even in applications with high flow rates or significant pressure drops.

For further information contact:
John Middleton, Samson Controls Ltd, Redhill, Surrey, RH1 5JQ, UK  www.samsoncontrols.co.uk  Email: Sales@samsoncontrols.co.uk  Tel: 01737 766391  Fax: 01737 765472

UK—Victron, the world’s leading manufacturer of PEEK polymer solutions, announced today that it has successfully secured the qualification of its VICTREX® PEEK 90HMF40 polymer with Airbus. The cooperation along the entire supply chain, from the material supplier to the OEM, is a crucial factor, especially as the aerospace industry continues to focus on replacing metals with plastics to reduce aircraft weight.

The thermoplastic qualified by Airbus is a high flow, easy processing material that results in parts with a high modulus. This provides an advantage helping engineers to design components that can deliver an equivalent strength and stiffness at up to 70% lighter weights when compared to traditional aerospace metals such as stainless steel, titanium, and aluminium. “Victron strives to work with our customers at all levels to develop and deliver solutions for the toughest challenges,” said Harald Hederich, Aerospace Strategic Marketing Manager for Victron Polymer Solutions. “Removing as little as 100 pounds (45 kilograms) can result in up to US$10,000 in annual fuel cost savings per long-range plane. We are excited for the opportunities that the VICTREX PEEK 90HMF40 qualification can bring given airline demands to improve fuel efficiency,” explained Hederich.

While standard unfilled, carbon fibre, and glass fibre filled VICTREX PEEK polymers have been qualified for more than 25 years in some instances, VICTREX PEEK 90HMF40 delivers several key benefits those grades cannot. The high-modulus polymer provides up to 100 times longer fatigue life and up to 20% higher specific strength and stiffness when compared to aluminium 7075-T6 under the same conditions. These high mechanical properties, its ability to perform across a broad temperature range and its durability in chemically aggressive environments allows VICTREX PEEK polymers to continue to be a material of choice for the aerospace industry.

To learn more about VICTREX PEEK HMF polymers, please visit the Victron Library to download a brochure or datasheet: http://www.victron.com/en/victron-library/victron-library.php.
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E-mail: enquiries@ruanetpo.com  
Website: www.argyllruanne.com
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<tr>
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<th>Address</th>
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<tbody>
<tr>
<td>Alfred Bagnall &amp; Sons</td>
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<td>T: 01302 853259</td>
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<td>AlpAccess s.r.l.</td>
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</tr>
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<td>APB Construction (UK)</td>
<td>First Floor Offices, Grange Business Centre, River Works, Grange Lane, Sheffield, S5 0DP</td>
<td>T: 01709 541000</td>
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<tr>
<td>APB Group Limited</td>
<td>Ryandra House, Ryandra Business Park, Brookhouse Way, Cheadle, Staffs, ST10 1SR</td>
<td>T: 01538 755377</td>
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<tr>
<td>Armourcote Surface Technology Plc</td>
<td>15/17 Colvilles Place, Kelvin Industrial Estate, East Kilbride, Scotland, G75 0PZ</td>
<td>T: 01355 248223</td>
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<td>Austin Hayes Ltd</td>
<td>Carlton Works, Cemetary Road, Yeadon, Leeds, LS19 7BD, UK</td>
<td>T: 0113 250 2255</td>
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<td>B&amp;A Contracts Ltd</td>
<td>Dale Road, Hubberston, Milford Haven, Pembrokeshire SA73 3PP</td>
<td>T: 01646 693489</td>
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<tr>
<td>BAE Systems Surface Ships Support Ltd</td>
<td>Room 213, Naval Base Headquarters, Building 1/100, PP127, Portsmouth, PO1 3LS</td>
<td>T: 023 92857279</td>
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<td>Barrier Ltd</td>
<td>Stephenson Street, Wallsend, Tyne &amp; Wear, NE28 6UE, UK</td>
<td>T: 0191 262 0510</td>
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<td>Beever Limited</td>
<td>Little Coldharbour farm, Tong Lane, Lamberhurst, Kent, TN3 8AD, UK</td>
<td>T: 01892 890045</td>
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<td>Ben Fallows Painting &amp; Decorating Ltd</td>
<td>72 Broadgate Lane, Deeping St James, Peterborough, PE6 8NN</td>
<td>T: 01778 343391</td>
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<td>Border Coatings (Scotland) Ltd</td>
<td>Unit 7, Station Road Industrial estate, Earlston, Berwickshire TD4 6BZ</td>
<td>T: 01896 823106</td>
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<td>Briton Fabricators Ltd</td>
<td>Watnall Road, Hucknall, Notts, NG15 6EP</td>
<td>T: 0115 963 2901</td>
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<td>Cape Industrial Services</td>
<td>Cape House, 3 Red Hall Avenue, Paragon Business Village, Wakefield, WF1 2UL</td>
<td>T: 01224 215800</td>
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<td>Cleveland Bridge UK Ltd</td>
<td>Cleveland House, Yarm Road, Darlington, DL1 4DE</td>
<td>T: 01325 902345</td>
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<td>Coating Services Ltd</td>
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<td>T: 0161 665 1998</td>
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<td>Collins Engineering Railway Contracts</td>
<td>Salcombe Road, Meadow Lane Industrial Estate, Alfreton, Derbyshire, DE55 7RG</td>
<td>T: 01773 833255</td>
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<td>Community Clean</td>
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<td>D&amp;D Rail Ltd</td>
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<td>T: 01268 520000</td>
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<td>Denholm Industrial</td>
<td>21 Boden Street, Glasgow, G40 3PU</td>
<td>T: 0141 445 3939</td>
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<td>Donyal Engineering Ltd</td>
<td>Hobson Industrial Estate, Burnopfield, Newcastle Upon Tyne NE16 6EA</td>
<td>T: 01207 270909</td>
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<td>DRH Coatings Ltd</td>
<td>Suite 5, 3 Shawcross Industrial Estate, Ackworth Road, Pontefract PO3 5JP</td>
<td>T: 023 9266 6165</td>
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<td>ENC (Yorkshire) Ltd</td>
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<td>T: 0151 355 8141</td>
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<td>Excel Contractors Ltd</td>
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<td>T: 02380 444420</td>
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<td>Ferrous Protection Ltd</td>
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<td>T: 01457 873419</td>
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<td>Forth Estuary Transport Authority</td>
<td>Forth Road Bridge, Administration Office South Queensferry, EH30 9SF</td>
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<td>T: 07837 382619</td>
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<td>Harso Infrastructure Services Ltd</td>
<td>Unit 3 Manby Road, South Killingholme, Immingham, North Lincolnshire, DN40 3DX</td>
<td>T: 01469 553800</td>
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<td>Judge Wilmey Mill, Longworth Road Billington, Clitheroe, Lancashire, BB7 9TP</td>
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<td>T: 0845 474 0007</td>
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<td>Industrial Painting</td>
<td>48-49 RCM Business Centres, Sandbeds Trading Estate, Dewsbury Road, Ossett, WF5 9ND</td>
<td>T: 01924 272606</td>
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<td>Address</td>
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<td>Jack Tighe Ltd</td>
<td>Redbourne Mere, Kirton Lindsey, Gainsborough, Lincs, DN21 4NW, UK</td>
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<td>Northern Protective</td>
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<td>T: 01642 223141</td>
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<td>T I Protective Coatings</td>
<td>Unit 6, Lodge Bank, Crown Lane, Horwich, Bolton, Lancs, BL6 5HU</td>
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<td>TEMA Engineering Ltd</td>
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<td>Vale Protective Coatings Ltd</td>
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<td>Walker Construction (UK) Ltd</td>
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<td>Wardle Painters Ltd</td>
<td>Unit 5, Wimborne Building, Atlantic Way, Barry Docks, CF63 3RA, UK</td>
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<td>William Hare Ltd</td>
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<td>Corroless Eastern Ltd</td>
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<td>E G Lewis &amp; Company Ltd</td>
<td>Suite 5, 3 Shawcross Industrial Estate, Ackworth Road, Portsmouth PO3 5JP</td>
<td>T: 01792 323288</td>
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<td>Over Rail Services Ltd</td>
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<td>T: 07976372866</td>
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<td>Specialist Blasting Services Ltd</td>
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<td>Stamford Construction Limited</td>
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<td>Story Contracting Ltd</td>
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<td>Unit 13, Clapton Commercial Park, Clapton, Woodbridge, Suffolk, IP12 3TP</td>
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<td>Advanced Construction and Eng Resources Ltd (ACER)</td>
<td>5th Floor, Horton House, Exchange Flags, Liverpool L2 3PF</td>
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<td>A McKay Building &amp; Engineering Ltd</td>
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<td>T: 01294 279586</td>
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<td>BSM Consulting</td>
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<td>Centregreat Engineering Ltd</td>
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<td>T: 01633 874024</td>
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<tr>
<td>IDL Fabrications Limited</td>
<td>Crabtree Lane, Clayton, Manchester, M11 4GU</td>
<td>T: 0161 2306666</td>
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<tr>
<td>JB Specialist Refurbishments Ltd</td>
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<td>T: 01536 266007</td>
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<td>Kaefer C&amp;D Ltd</td>
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<td>T: 0191 428700</td>
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<td>Leighs Paints</td>
<td>Tower Works, Kestor Street, Bolton, Lancs. BL2 4AL</td>
<td>T: 0161 2306666</td>
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<td>Livis Ltd</td>
<td>Livis House, 50 Victoria Park, Dartford, Kent, DA1 5AJ</td>
<td>T: 01322 220058</td>
</tr>
<tr>
<td>Malakoff Limited</td>
<td>North Ness, Lerwick, Shetland, ZE1 0LZ, UK</td>
<td>T: 01595 695544</td>
</tr>
<tr>
<td>Matthew James Services</td>
<td>Unit 4, Shibdon Business, Cowen Road Blaydon, Newcastle-Upon-Tyne, NE21 5T</td>
<td>T: 0191 414 5700</td>
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<tr>
<td>Moore Steel Developments Ltd</td>
<td>Station Road, Thorney, Peterborough PE6 0QE</td>
<td>T: 01733 270729</td>
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<tr>
<td>Paint Inspection Ltd</td>
<td>Trafalgar House, 223 Southampton Road, Portchester, PO6 4PV</td>
<td>T: 0845 4638680</td>
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<tr>
<td>Parks Fabrication Ltd</td>
<td>Park Farm, Holme-upon-Spalding-Moor, York, YO43 4AG</td>
<td>T: 01430 861628</td>
</tr>
<tr>
<td>PPC Ltd</td>
<td>Unit 2, Oyster Industrial Estate Jackson Close, Drayton, Portsmouth PO6 1QN</td>
<td>T: 023 9221 5957</td>
</tr>
<tr>
<td>Possilpark Shotblasting Co Ltd</td>
<td>Dalmarnock Works, 73 Dunn Street, Glasgow, G40 3PE</td>
<td>T: 0141 556 6221</td>
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<tr>
<td>Radiledge Metal Coatings Ltd</td>
<td>Unit 30 Central Trading Estate, Cable Street, Wolverhampton, WV2 2HX</td>
<td>T: 01902 870606</td>
</tr>
<tr>
<td>R.L.P. Painting</td>
<td>Heathfield House, Old Bawtry Road, Finningley, Doncaster, DN9 3D, UK</td>
<td>T: 01302 772222</td>
</tr>
<tr>
<td>Shirley Industrial Painters &amp; Decorators Ltd</td>
<td>Grand Union House, Bridge Walk, Acoc’s Green, Birmingham, B27 6SN</td>
<td>T: 0121 706 4000</td>
</tr>
<tr>
<td>Taylor Engineering (UK) Ltd</td>
<td>Unit 7 &amp; 8 Curran Buildings, Curran Road, Cardiff CF10 5NE</td>
<td>T: 02920 371959</td>
</tr>
<tr>
<td>Tinsley Special Products</td>
<td>Enterprise House, Durham Lane, Eaglescliffe, Stockton-on-Tees TS16 DPS</td>
<td>T: 01642 784279</td>
</tr>
</tbody>
</table>

For all the latest news, events & debates join us on LinkedIn.
DIARY DATES 2013/2014

Tuesday 24th September 2013
Stress Corrosion Cracking of Welds
Venue: Palm Court Hotel, 6pm for 6.30pm
Presenter: Dr. Chris Fowler. Details can be obtained from ICorr Aberdeen Branch.
T: 01224 243360
E: ICorrABZ@gmail.com

30th September-2nd October 2013
Short Course: Corrosion Control in the Oil & Gas Industry
Venue: Amsterdam
Details can be obtained from Colin Britton
T: +44 (0)1480 860943
E: cbrit79727@aol.com

Thursday 10th October 2013
London Branch joint meeting with LMS
Speaker to be announced – details to follow on website.
Venue: Naval Club, 38 Hill Street, Mayfair, London17.30 for 18.00 start.

Tuesday 29th October 2013
ICorr Meeting & Presentation
Venue: Palm Court Hotel, 6pm for 6.30pm
Details can be obtained from ICorr Aberdeen Branch.
T: 01224 243360
E: ICorrABZ@gmail.com

Thursday 12th December 2013
London Branch 25th Annual Christmas Luncheon
Venue: Royal Over-Seas League, Park Place, St James’s Street, London SW1A
Contact:
Mike Allen mike.allen9@btinternet.com

Tuesday 28th January 2014
Plant Integrity
Venue: Palm Court Hotel, 6pm for 6.30pm
Presenter: Steve Plant. Details can be obtained from ICorr Aberdeen Branch.
T: 01224 243360
E: ICorrABZ@gmail.com

Tuesday 15th April 2014
Corrosion Related Failures for Downhole Chemical Injection Lines
Venue: Palm Court Hotel, 5.30pm for 6pm
Presenter: Dr. Eugenia Marinou. Details can be obtained from ICorr Aberdeen Branch.
T: 01224 243360
E: ICorrABZ@gmail.com

Tuesday 25th February 2014
Development of a Corrosion Micelle Detection Method - A Review including Case Studies
Venue: Palm Court Hotel, 6pm for 6.30pm
Presenter: Emma Perfect. Details can be obtained from ICorr Aberdeen Branch.
T: 01224 243360
E: ICorrABZ@gmail.com

London Branch publish a monthly Newsletter Details of all Branch activities, dates and venues can be found at www.icorr.org