In this issue:

Cropico measures up in anti-corrosion testing
New Energy Institute workshop on Corrosion Management
Densopol Protects Outfall Pipeline
Belzona Faith in its Adhesive Strength

See pages 17-20
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Greetings from San Antonio, Texas, where I am attending the NACE conference, my first in 17 years of membership. Like many dedicated ICCorr folk, I am also a member of NACE and one of the purposes of this visit is to meet with their officials and discuss how we can build on the ICCorr/NACE relationship for the benefit of both sides. I have to say I am impressed by how many ICCorr members are here, working away on the numerous committees or presenting at the technical seminars. There’s also a good selection of our Sustaining Members in the exhibition hall. I’m not naming names for fear of missing someone, but I feel I should make a special mention of John Broomfield who is not only one of our Fellows, but following last night’s awards ceremony is also a Fellow of NACE in recognition of all the work he does for the NACE technical committees.

San Antonio is a pleasant enough place but not without its own peculiarities. It’s certainly a city that never sleeps – not because of the crazy night life (it’s dead after about 10.30 pm) but because they insist on waking you up at four in the morning by jet-washing the sidewalks, closely followed by the dawn chorus of freight trains that honk incessantly to each other for no apparent reason. It has at least meant I’ve been getting up early and today I was able to beat the line to get inside the Alamo. I had not realised that a good third of those who died defending the place were English, Scots, Irish or Welsh, standing full square with Travis, Crockett and Bowie. As you can see, I have adopted Texan garb (well, a hat) for my photo in recognition of those brave few.

There’s quite a lot going on here in addition to the conference. We’ve just survived St Patrick’s Day which I have also observed over the years in other American cities. This is a long held US tradition where people with more Klingon than Celtic lineage, dress up in green, eat and drink green things and dye anything else green that they can. In the case of San Antonio, that includes the river that meanders through the centre. I can claim an Irish grandparent but chose to celebrate with half a bottle of red wine (steady now) and some fried shrimps ‘to go’.

It is also ‘Spring Break’, which the films and TV would have us believe involves hundreds of young and attractive college students being lewd, louche and loose to the shame of many and the amusement of all. Around here it appears to consist mainly of harassed parents with young children trying to keep them entertained, or in other words, half term. There does seem to be a dearth of late teen – early twenties types so maybe they are living the spring break dream elsewhere, losing clothes, money, dignity and anything else that was intact when they arrived. I’d love to be able to say I envied them but it sounds like hard work and I’m anything for an easy life. Happy St Patrick’s Day, y’all.

ICCOR TRAINING AND CERTIFICATION SCHEME NOW ONE OF THE PREFERRED OPTIONS FOR NATIONAL TRAINING INITIATIVES IN MALAYSIA

The Scheme Provider, Argyll-Ruane, is accommodating increased training schedules for the training of painting and pipeline coating inspectors within Malaysia. Established through joint ventures with on-going government-supported programmes at Terengganu and Johor, ARL provide ICCorr training and examination services several times each year. The protograph shows Khairulnisyak Binti Mohd Makrup being presented with her ICCorr Painting Inspector Level 1 certificate by the CEO of the Johor Skills Development Centre, Ja’Apar Bin Samat. Looking on is Norman Mohd Zain, manager of ARL’s associates Malaysian Institute of Non-Destructive Testing. Khairulnisyak, who holds an Honours Degree in mechanical engineering gained highest marks in her class of painting inspector candidates said, “I found the course and the examination demanding, but I am very thankful for having been given the opportunity”. For more information visit www.ruanetpo.com
The first presentation on 24th September 2009 was held jointly with the Welding and Joining Society and proved to be very popular with 83 attendees. Stig Wästberg presentation of "HISC- Design Criteria Based on Testing and Experience" considered duplex and superduplex stainless steels in subsea equipment. Although the general experience with these materials is good, significant failures have occurred due to Hydrogen Induced Stress Cracking (HISC). The conditions necessary to cause HISC, failure characteristics and the research effort that has been performed by DNV was presented with an outline of the recently updated (October 2008) DNV-RP-F112 "Design of Duplex Stainless Steel Subsea Equipment Exposed to Cathodic Protection".

"Application of Erosion Modelling was presented by Frances Blackburn to an audience of 36 on 27th October 2009. Her presentation detailed some of the erosion models that are widely available and how they have been applied to ConocoPhillips UK North Sea assets to manage integrity. ConocoPhillips’ approach to erosion modelling in their UK North Sea assets was described highlighting the importance of understanding the limitations of erosion models used, input data available and the interpretation of acoustic monitoring, intrusive ER probes, UT inspection, choke settings and flow rates. A significant discussion of industry wide experiences of the application erosion modelling was held after the presentation by the branch members.

Further interest was generated by "Superduplex Stainless Steel – A Cost Effective Option for Subsea Applications" presented by Roger Francis of RA Materials on 24th November 2009 with 44 people attending. Roger has over 30 years experience as a corrosion engineer and was Chairman of NACE Europe from 2003 – 2007 and is presently serving as a Director of NACE International for a second term (2007- 2010). He sits on the EFC (European Federation of Corrosion) Working Parties on Marine Corrosion and Corrosion in the Oil and Gas Industry. His presentation considered the high strength alloys used for forgings in wellheads, such as superduplex stainless steel and he presented data gathered for Zeron 100 51/8”, 10,000lb forgings produced using a new forging route. His results showed the higher levels of toughness achievable down to -70°C for a range of casts and heats and constant load hydrogen embrittlement tests showed the much higher threshold stress for crack initiation compared with conventionally made forgings. The new route enables the continued use of superduplex stainless steel under the more severe operating conditions of current wells.

"Life Extension of Existing Assets from a Cathodic Protection Perspective" was presented to 57 attendees at the ICorr Aberdeen branch meeting on 26th January by Jim Britton of Deepwater. His talk described the design rationale and basic installation history of four recent offshore/ marine impressed current cathodic protection (ICCP) replacement projects. These included applications to a SPAR Structure in >180 meters (One in Gulf of Mexico, One in South China Sea) and a large dock complex in the Canadian Arctic. Each of the four projects had unique problems to overcome, and employed a range of different ICCP approaches. Design rationale and system performance will be addressed along with a basic installation case history of each project.

Material & Chemical Selection & Ongoing Corrosion Management Issues for Bundled Pipeline Systems Parallel was presented by Dr. Steve Turgoose to 51 attendees. Multiple production pipeline systems can suffer from some quite unique corrosion problems. Whilst the internal degradation mechanisms are the same as any producing system, the difference with multiple pipeline systems relates to the variable flow down different lines and the effect this has on water cut, corrosivity and dosed chemical levels. Some examples of Intertek-CAPCIS experience with various issues surrounding corrosion and integrity of parallel production pipelines were presented. These highlighted some major issues along with the methods used to understand, control and manage the degradation.
HOWARD CHAMBERS
17 JULY 1951 – 24 OCTOBER 2009

It is with great sadness, on behalf of Technology Offshore Onshore Ltd, I have to announce the sudden death of our Operations Manager Howard Chambers.

Howard died suddenly on the morning of Saturday 24 October 2009.

He was part of the team at TOO Ltd who have known each other for many years, in the independent inspection sector of our industry, and was a valued and much loved member of staff.

Howard an Institute of Corrosion registered Painting Inspector, started in the independent inspection business in 1974 with R.J.P. Nicklin Ltd being seconded to many major projects throughout the UK, Europe and the Middle East.

He joined Technology Offshore Onshore Ltd in 1983 and continued with his inspection work being seconded again to major clients and projects until 2001 when he was appointed as Operations Manager.

Howard was a quiet, intelligent, giant of a man and will be remembered as a great golf enthusiast who enjoyed his weekly golfing outings.

He was part of the winning team at the Institute of Corrosion Golf Day at Pannal Golf Club in 2003

To his detriment however, he was also a fanatical supporter of Sheffield Wednesday FC which was a great source of discussion, fun and comical banter, especially after the weekend during the football season, with me and other non Sheffield Wednesday fans in the office.

Howard was cremated on Thursday 5 November 2009, in Sheffield at which there were a number of eulogies from friends, golf and work colleagues, which displayed Howard’s love of humour wit and clever satire.

A reception was then held at Dore and Totley Golf Club Sheffield where Howard was a staunch member, which had on display many memories including photographs of Howard’s past but in the main his prowess on the golf course for all to view in particular the confirmation of his golf trophy successes.

Howard a divorcee, is sadly missed by all his colleagues at TOO Ltd and leaves a son Edward resident in the USA and a daughter Madeleine still residing in the Sheffield area.

R. McGibbon
Technical Director – Technology Offshore Onshore

LONDON BRANCH MARCH MEETING

London Branch invited the ICorr President, Professor Paul Lambert to speak at the March meeting. The title of his presentation was ‘Boyle to Brutland’ and it was a potted history of corrosion science successes and disasters from 1675 to the present day with references to the relevant scientists involved with the study of corrosion throughout that time span. His informative delivery was entertaining and liberally enlivened by his own brand of humour.

LONDON BRANCH PRESENTATION

At the London Branch meeting in February, Chairman Brian Goldie (bottom left) presented an engraved tankard to Steve Barke in recognition of his eight years service as Branch Treasurer. The speaker for the evening was Dr. David Eyre of Penspen (bottom right) who spoke eloquently and humorously about ac corrosion; his well illustrated presentation showed typical examples and described the causes and mitigation of such corrosion.

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www.icorr.org
Technical Topics No 24:
ATMOSPHERIC CORROSION
by Technical Secretary, Douglas J Mills

First TT of the New Year and I have decided it is time to reveal another interest of mine – the weather. I measure pressure, temperature and (along with my brother and cousin who live in different parts of the country to myself) keep rainfall records. But I have never attempted prediction (beyond next 24hr anyway)! Safer! (Perhaps it is the same with corrosion?). The year has started off a bit nippy. But the day that I write this, the mercury has hit a balmy 10°C. To remind us of the winter of 09/10 though, I include a picture of a frozen lake where the cracking is very similar to that which I saw a few years back while looking down a microscope at a metal sample that had undergone stress corrosion.

No question that weather plays a big part in corrosion, and sometimes unexpectedly. Many of us can remember the AA survey back in the 70s that showed the wettest parts of the country cars had the least corrosion (can you think of the explanation?). I have not done any actual experimental work in the field of atmospheric corrosion of uncoated metal but have come into contact with it from time to time. I did a consultancy on the effect of carbon fuel cycles back in the early 90s – this was aimed at calculating the “impacts” from the atmosphere on a range of materials. To predict the long term effects we relied quite heavily on the modeling work of a Dr Kucera who had produced a number of useful predictive equations. Going back a bit further, Ulick Evans was working on atmospheric corrosion in the lab in Cambridge during my time there (the actual experimental work was done by Bert Taylor but URE dropped in now and again). He was developing theories to try to understand the unexpectedly high rates of atmospheric corrosion of steel in sulphate atmospheres. He explained this neatly by a self-catalysing regenerating mechanism to drive the corrosion cell (that work got referenced in the “Impacts” work twenty years later). I rather envy atmospheric corrosion researchers as, to examine their samples, they have to make trips to the sea side (which I love being at) and/or to exotic places like Florida! But prediction is tricky. Very recently I reviewed a paper from the Heritage session of Eurocorr 2009 (in Nice) in which nominally identical lead statues in the grounds of a Palace in Queluz had corroded in markedly different ways. This was attributed in part to differing microenvironments. Also using historical relationships is fraught with difficulty as the environment can change over time and many metals are very sensitive to just small variations.

In recent times the atmosphere in Western countries has generally got more benign in terms of chemicals (sulphur etc) but there is more CO² and the overall temperature is higher. So maybe the overall corrosion rate is not changing? There is also the possibility of doing accelerated tests in the lab. In fact going back to the Cambridge days, I have a memory of John Hickling working with Dr J Chilton developing an atmospheric corrosion cabinet. Certainly designing and operating such cabinets is a challenge as you have to control the concentrations of aggressive species at very low levels if they are to simulate actual atmospheres.

When it comes to my speciality area of paint coatings, obviously the selection of the coating system will depend on what sort of atmosphere is expected in terms of aggressivity. There are five levels of classification from the relatively benign, dry indoor atmosphere (C1), up to a quite aggressive marine atmosphere (C5).

Recently at Eurocorr, Christofer Leygraf from the Royal Institute of Technology in Sweden gave a review lecture on atmospheric corrosion. In terms of experimental approaches to the subject, apart from the already mentioned field exposures and lab exposures (with in-situ analysis), he discussed exposure in ultra-high vacuum conditions using zinc in carboxylic acids as a model system. He emphasised that Corrosion and Run-Off are different processes that occur at different rates (the latter relates to possible damage to the environment e.g. causing aquatic toxicity), the former to the loss of structural integrity. He also pointed out that nano-sized particulate matter was often a product of atmospheric corrosion and its effect on human physiology was largely unknown.

In relation to the last point most people are familiar with weathering steel and I include a picture of such a steel at a Cycle Hire station in the middle of the Peak District. When weathering steels were first used they left nasty stains – less of problem now as they are mostly aged (weathered!) before use outside.

Moving on to other matters there is an article about CPD in this issue written in the main by the Science Council. This area is controversial and there are arguments in favour and against the 1 year validation that the SC proposes to instigate. In the next issue of CM, we may well run a short article giving the counter arguments and hopefully that will encourage you, the membership, to debate the area.

There is also the CED day meeting coming up in Warrington on Thursday April 29th. Loosely themed around Corrosion Monitoring, I myself will give a talk on Monitoring of coating systems. Hope to see some of you there!

For further details see CED on web page.

Any comments as usual please send them to: Douglas@hanbridge.freeserve.co.uk
THE CASE FOR ANNUAL REVALIDATION OF
THE CHARTERED SCIENTIST QUALIFICATION

By Mary Arbuthnot

Introduction by Douglas Mills

The Institute is a licensed body of the Science Council. This means that suitably qualified individuals can apply to become Chartered Scientist. Information on how to go about this is given on our website. Myself and Brenda Peters are the Council representatives. Recently the Science Council decided (somewhat controversially!) to opt for annual revalidation. What follows are edited sections of an article (edited by DJM) written by Mary Arbuthnot which discusses why this decision was taken and outlines its benefits to the individual chartered scientist. The article is mainly based on an interview Mary had with Ali Orr, the Deputy Registrar and Diana Garnham, the Chief Executive of the Science Council. Hence many of the views expressed are those of her interviewees.

Mary Arbuthnot

Diana Garnham, the Chief Executive of the Science Council

Ali Orr, the Deputy Registrar of the Science Council

The 2008 Science Council review of CPD requirements produced clearer CPD standards and moved from the original five-year revalidation requirement to annual revalidation phased in by 2011. To meet these requirements, Chartered Scientists will need to keep an accurate record of their CPD achievements for submission each year, subject to scrutiny by auditors, in order to remain active on the Register. This change in timing is the result of a general consensus by the Science Council’s licensed bodies that a five year gap for revalidation is too long and causes scientists to procrastinate recording their CPD until the last minute. It is hoped that a two year transition to annual revalidation will reduce this bottle-neck effect and allow ample time to make regular CPD recording both habit-forming and hassle-free. Reassuringly for those who fear a paperwork nightmare ahead, sophisticated technology now exists and is being developed for the professional market which enables registrants to manage their CPD and revalidation online, streamlining the process, making it paperless and much less cumbersome than in years past.

But CPD and revalidation are not without controversy. Perhaps unsurprisingly, there has been resistance to change, and a backlash against revalidation amongst some members of the CSci community who perceive it as time-consuming, ineffective, prone to dishonesty, and condescending. While acknowledging the validity of their concerns, the Science Council hopes to slowly win people over. Chartered Scientists need to develop a more reflective practice through engagement in CPD, which most scientists do anyway on a daily basis without even realising it. There is both a technical and conceptual side to revalidation and CPD, with the old CPD system relying heavily on the technical “input-based CPD” built around points earned for hours invested attending industry conferences or reading journals, this is useful but has its limitations. Now there is a more reflective ‘output-based CPD’ which is about measuring the benefits of CPD to your practice in a much broader way. For example, if you’re a psychologist who goes on a statistics course, you can demonstrate how you’ve used what you’ve learned to benefit your practice, even though statistics isn’t directly related to your field.

Understandably, increased scrutiny over the auditing period, as well as disciplinary complaints (peers reporting the infractions of their colleagues), can make many Chartered Scientists nervous. But the auditing process is not intended to catch hard-working scientists...
out, but instead to maintain CSci’s integrity and highly regarded reputation. People need to be reassured that if they’re still in employment it’s probably because they’re valuable and doing CPD without even realising it. Registrants should be aware that the audit will be peer-reviewed and assessors will always be Chartered Scientists like themselves, not some highly-paid consultant without any knowledge of the field. Once the revalidation transition is complete, a sample audit of 2.5% of registrant’s returns will be scrutinised by a minimum of two trained assessors. They will ask questions like, “Has your CPD been a mixture of different learning activities? Have you shown the benefits to your work? Has the CPD improved the quality of your practice?”

For those Chartered Scientists required to submit their CPD log to another registration body, the Science Council has signed up to the Hampton Regulations, which mean CSci’s don’t have to double up on paperwork.

While there might be a tendency to focus on the negative perceptions of revalidation, it is believed that the positive benefits to the individual far outweigh any potential burden. A 2007 government white paper for the NHS echoes this thinking, stating professional regulation “…should be as much about sustaining, improving and assuring the professional standards of the overwhelming majority of health professionals as it is about identifying and addressing poor practice or bad behaviour in the small minority.” And in a speech to the Science Council Licensed Bodies, Dame Carol Black noted that, on the subject of revalidation, reflective practice is crucial to maintaining professionalism and that a good professional wants to continue to be one and the process of revalidation attests to that fact.

A broader aspect of having CPD as part of the regular revalidation process is that it diversifies a scientist’s skill-set to meet the challenges of the 21st century business world. This comes at a time when increasingly the science sector is finding “T-Shaped professionals” in short supply. In this analogy, the stem of the letter ‘T’ represents a deep knowledge in a home discipline (whether it be chemistry, mathematics, biology etc.) while the horizontal top of the ‘T’ represents a broad set of transferrable skills, or individuals capable of interacting with and understanding specialists from a wide range of disciplines and functional areas. In the bigger picture, CPD helps professionals understand the objectives they are working towards and take ownership of their career progression, which in turn improves their productivity and creativity. Keeping up-to-date in one’s field ultimately means greater job satisfaction and a deeper commitment to one’s company and colleagues. On an individual level, regular tracking of one’s CPD progress isn’t just for revalidation – the chances are most scientists will use this data to enhance and keep their CVs, bios, and websites up-to-date too.

End Note: based on closing part of MA’s article but modified by DJM to make more relevant to Corrosion community. Increasingly scientists don’t identify themselves with just one body of professionals and this is particularly true of people working in the corrosion area. CSci is the scientific equivalent of the Euro, a currency of professional recognition that transcends the borders of any one discipline and empowers scientists to be collaborative instead of shutting them in their box… whether they are a microbiologist, an engineer or a corrosion scientist. This new method of revalidation encourages this and once employers recognise it, they should become very keen to support suitably qualified members of their work force to become Chartered. And this applies to people working in the corrosion and protection area as much as anybody else!

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**A SPY’S LONDON - PART 001**

This year, the London Branch Evening Guided Walking Tour will expose some well guarded secrets of Mayfair. An unexpected death by polonium is only one example of London’s undisputed claim as the European capital of espionage. If you thought 007 was mere fiction? Then come along and discover how very wrong you were...!

MI5, CIA, Philby and friends, significant park benches and designated lamp posts – all playing their part in the line of secret duties. Intelligence work does indeed go on right amongst us. Discover parts of Mayfair where Britain’s remarkable intelligence history were made and then enjoy refreshments in some very secret pubs along the route.

Our Walking tour will again be led by Ingrid M Wallenborg, Blue Badge tourist guide.

As usual, this is a free Event for members of the Institute and their family or friends are most welcome. We will depart from the Naval Club in the heart of Mayfair at 18.00. Light refreshments will be available from 17.50 and the traditional chilli and rice will be awaiting our return. This Event will go ahead whatever the weather conditions.

*The Co-ordinator is John O’Shea, who can be contacted at johno.shea@btinternet.com*
THE DEVELOPMENT OF INTERNATIONAL EXTERNAL PIPELINE COATING STANDARDS

Author: Keith Coulson P.Eng, FICorr

Abstract

In 2001 the International Standards Organisation (1) made a resolution at its TC67/SC2 Plenary meeting on Pipeline Transportation Systems in Bratislava(2), to start developing external pipeline coating standards for adoption and utilization by the global market. A Work Group under the direction of the ISO TC67/SC2 (3) committee was charged with this responsibility. It’s objective being to identifying both the specific needs of the market place and to clarify which coatings standards were needed to best serve the requirements of the pipeline community. While there were already a number of existing national and company standards available for the more commonly utilised pipeline coatings, it was quickly establish that their approaches were inconsistent. These standards varied considerably in the critical aspects of establishing and confirming pipe coating quality. It was therefore establish by ISO that harmonized pipeline coating standards were needed as the pipeline markets became more global in nature. The ISO Technical Committee ISO/TC67 therefore formed a Work Group WG14 (Petroleum and natural gas industries, Subcommittee SC2, Pipeline transportation systems) to identifying which coatings standards were needed to best serve the requirements of the pipeline community. This work is now coming to fruition and in the last few years ISO has issued three external pipeline-coating standards.

This paper describes the various types of pipeline coatings that were identified by the International Standards Organisation (ISO) as candidates for a global standard and highlights the various stages of development of each document. It also references and discusses in some manner all the coatings for which ISO picoeacting standards are being prepared and published. It does however, deal more specifically with the published standards for fusion bonded epoxy (FBE) coatings (4) and Field Joint (Girth Weld) Coating, (5) while giving an over view of the Two Layer PE Standard (6) that has recently been added to the ISO Coating Standards family.

Introduction

In 2001 the ISO Technical Committee TC67/SC2 met in Bratislava and laid out a programmeme to identify which pipeline coatings required an international standard. Representatives from the following countries conducted the review:

Canada, France, Germany, Italy, United Kingdom, USA

While the full gambit of various coatings was discussed, it was recognised that a priority rating had to be applied to the development of ISO External Pipeline Coating standards. Firstly, there was little point in committing a large amount of time and finances in developing and publishing standards for which there were no apparent need. Secondly, the publication of these standards needed to be expedited if they were to meet both the Industries needs and the ISO publication schedules. Focusing on a few relevant coatings would help satisfy both these criteria. It was finally agreed that while all pipeline coatings serve some important part in the battle against pipeline corrosion, there existed a need for standards on:

Two and Three Layer Polyethylene and Polypropylene Coatings;
Fusion Bond Epoxy (FBE);
Girth Weld Coatings (GWC);
and Concrete Coatings

TC67/SC2 formed Work Group Fourteen (WG14) and Matt Dabiri of Williams (USA) was appointed the convener of this entire programmeme. Each of the above four coating systems were allocated a project number starting with the ‘Three Layer Polyethylene and polypropylene Coatings’ which was WG14-1. The FBE coatings work group was designed WG14-2 with the rest of the coatings being allocated corresponding numbers.

It also became quickly apparent that to meet the stringent and significant time constraints specified for the publication of ISO standards, a single standard for both the two and three layer coatings was impractical. As a result of this the proposed single standard on ’Two and Three Layer PE/PP’, was split into separate standards. Also, as the WG14 programmeme rapidly expanded, the need for additional project management was required. To this end in 2006 Tom Weber (also of the USA) was approached to take on some of the workload and to work with Matt Dabiri as the co-convenor of WG14.

To this end by 2008 the structures for this development of ISO coating standards and the nominated team leader of each group was as follows:

WG14-1: ISO/DIS 21809-1 Petroleum and natural gas industries – External coatings for buried or submerged pipeline used in pipeline transportation systems – Part 1: Polyolefin Coatings (3-layer PE and 3-layer PP); Denis Grimshaw (UK) (7)


WG14-3: ISO/DIS 21809-3 Petroleum and natural gas industries – External coatings for buried or submerged pipeline used in pipeline transportation systems – Part 3: Field Joint Coatings, Marcel Roche (France). Published December 15, 2008 (5)

WG14-4: ISO/DIS 21809-4 Petroleum and natural gas industries – External coatings for buried or submerged pipeline used in pipeline transportation systems – Part 4: Polyethylene Coatings (2-layer PE), Dennis Wong (Canada), Published November 5, 2009 (6)

WG14-5: ISO/DIS 21809-5 Petroleum and natural gas industries – External coatings for buried or submerged pipeline used in pipeline transportation systems – Part 5: External Concrete Coatings, Betty Friedman (USA) (8)

A full list of the Work Group leaders, WG14 Co-ordinators and the ISO Editorial Committee is given in Table 1.

Structure for the Development of ISO Coating Standards

The development, review and voting for all ISO Coatings standards encompassed four distinct and separate stages. These were basically:

CD: Committee Draft
DIS; Draft International Standard
FDIS: Final Draft International Standard
IS: International Standard
Committee Draft CD

Each work group was formed and populated with nominated members of both the participating (P members) and observer (O members) countries of ISO. Typical industry committees normally consist of volunteers who offer their services in developing standards. However, within ISO only nominated persons are recognised. These persons have to be nominated by their respective national standards writing organisations e.g., British Standards Institute (UK), Deutsches Institut für Normung (DIN of Germany), Standards Council of Canada (Canada), in order to participate on these work groups.

In the case of FBE coatings (Work Group WG14-2), there was extremely wide interest in participating on the preparation of this standard. Representatives of the following countries, were nominated to partake and support the work group activities:

Brazi1, Canada, France, Germany, Italy, Norway, United Kingdom, UAE, USA.

See Table 2 for a complete list of the contributors to the development of 21809-2

Each country is charged with nominating parts or portion of their national standard (if one was available) for inclusion in the draft ISO standard. A number of items were felt by each of the Work Groups to be of critical importance, e.g., compliance reporting; yet generally none of the current international standards appeared to address these issues. This being the case the Work Groups developed the requirements by accepting commonly utilised industry practices. In total a consensus is reached on the contents of the draft standard and the document prepared. This draft document being then forwarded to ISO for comments and a subsequent vote on its acceptance by the ISO countries.

All of the proposed WG14 coating standards indicated in the Introduction of this paper, were approved at the committee draft (CD). This allowed them to then progress to the next stage of preparation, namely the Draft International Standard (DIS).

Draft International Standard (DIS)

The initial portion of the development of this stage of the standard is a review by the work group of all the comments that accompanied the vote at the CD stage. Subsequently the work group will then build a DIS that addressed all the comments, typos and suggestions for change. Before the DIS is however re-issued for vote and review as a Final Draft International Standard (FDIS), the ISO editorial committee (EDC) subjects the DIS to an editorial review. This is to ensure that all the suggested revisions and technical concerns have been correctly addressed. The comments submitted with the vote are either incorporated in the new draft of the standard or accompanied by an explanation from the Work Group as to why they felt the comments were not valid and therefore not included in the revision.

After a successful editorial review, the document is then prepared for issue and vote as an FDIS.

Final Draft International Standard (FDIS)

As with the DIS, the initial portion of the development of this stage of the standard is a review by the work group of all the comments that were submitted along with the vote at the DIS stage. Again the Work Group would classify the submissions as being perceived as non-persuasive and are ignored or as persuasive in which case the DIS would be revised to accommodate the persuasive comments. Another review by the ISO editorial committee (EDC) would be conducted to ensure that all the comments, typos and technical concerns have again been adequately and correctly addressed.

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Table One:
List of Work Group Leaders, Coordinators and Editorial Committee and Represented Countries for the Development of the WG14 ISO 21809 Standards

<table>
<thead>
<tr>
<th>Name</th>
<th>Responsibility</th>
<th>Country Represented</th>
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<tbody>
<tr>
<td>Denis Grimshaw</td>
<td>Work Group Leader WG14-1</td>
<td>UK/UAE</td>
</tr>
<tr>
<td>Keith Coulson</td>
<td>Work Group Leader WG14-2</td>
<td>Canada</td>
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<tr>
<td>Marcel Roche</td>
<td>Work Group Leader WG14-3</td>
<td>France</td>
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<tr>
<td>Dennis Wong</td>
<td>Work Group Leader WG14-4</td>
<td>Canada</td>
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<tr>
<td>Betty Freidman</td>
<td>Work Group Leader WG14-5</td>
<td>USA</td>
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<tr>
<td>Matt Dabiri</td>
<td>Co-ordinator of WG14</td>
<td>USA</td>
</tr>
<tr>
<td>Thomas Weber</td>
<td>Co-ordinator of WG14</td>
<td>USA</td>
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<tr>
<td>Rick Faircloth</td>
<td>TC67/SC Editorial Committee</td>
<td>USA</td>
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<tr>
<td>Richard Espiner</td>
<td>TC67/SC Editorial Committee</td>
<td>UK</td>
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<tr>
<td>Erling Gjertveit</td>
<td>TC67/SC Editorial Committee</td>
<td>Norway</td>
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<tr>
<td>Muayyad Ajjawi</td>
<td>TC67/SC Editorial Committee</td>
<td>Qatar</td>
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<tr>
<td>Gerhard Frolic</td>
<td>TC67/SC Editorial Committee</td>
<td>Germany</td>
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<tr>
<td>Harold Pauwel</td>
<td>Secretariat of TC67/SC2</td>
<td>Holland</td>
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<tr>
<th>Name</th>
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<tr>
<td>Joao Riego Filho</td>
<td>Brazil</td>
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<tr>
<td>Andre Koebsch</td>
<td>Brazil</td>
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<tr>
<td>Keith Coulson†</td>
<td>Canada</td>
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<tr>
<td>Dean Larose</td>
<td>Canada</td>
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<tr>
<td>Marcel Roche</td>
<td>France</td>
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<td>Patrick Moeller</td>
<td>Germany</td>
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<td>Dietmar Thomas</td>
<td>Germany</td>
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<td>Pio Anzalone</td>
<td>Italy</td>
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<td>Michele Castano</td>
<td>Italy</td>
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<td>Massimo Cornago</td>
<td>Italy</td>
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<tr>
<td>Tomas Synerberger†</td>
<td>Norway</td>
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<td>Matt Dabiri*</td>
<td>USA</td>
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<tr>
<td>Al Kehr</td>
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<td>Kuru Varughese</td>
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<td>Tom Weber*</td>
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<td>Adam Frame</td>
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<td>Denis Grimshaw</td>
<td>UK/UAE</td>
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<td>David Norman</td>
<td>UK</td>
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† Work Group Leader of TC67/SC2 WG14-2

* Not an official member of WG14-2, but made a major contribution to Clause 14: ‘Test Reports and Certificate of Compliance’

# Coordinator of Work Group WG14 of TC67/SC2
This being the case, the draft is then issued to ISO for voting as an FDIS.

**International Standard (IS)**

At the FDIS vote the member countries can no longer provide comments but have to vote either to accept or reject the standard. For example the 21809-2 standard for external FBE coatings was successfully accepted by a vote of 19 to accept, 3 abstentions and one negative vote from France. The process utilised by ISO for these voting stages is that the document must attain 66.66% or more positive votes (abstentions are not counted in the vote) and no more than 25% of negative votes. These criteria being satisfied, the document is then deemed acceptable for publication.

**Status of International Pipeline Coating Standards**

Work on the three coating standards for Three Layer Polyolefin (PO), FBE and Field Girth weld coatings were all initiated during 2002. The Two-layer PE coating standard (which was a spin off from the original Three and Two layer PO Standard) was initiated in 2004, while the concrete standard was started in 2005. At present their status being:

- WG14-1: Still at Draft International Standard Stage. Publication is now anticipated later in 2010 or early 2011
- WG14-2: Published December 15, 2007
- WG14-3: Published December 15, 2008
- WG14-4: Published November 5, 2009
- WG14-5: Final Draft International Standard is now out for vote with publication anticipated by the summer of 2010

With the exception of WG14-1 all the standards are presently within the ISO publication schedules. WG14-1 has been plagued with a change of scope (removal of the two layer PE coating) and concerns about differences between European and North American protocol for the application and testing of the final product.

**ISO Standard 21809-2 Fusion Bond Epoxy**

As with all the proposed ISO pipeline coating standards, this document specifies the qualification, application (see Figure 1), testing (See Figure 2) and handling (see Figure 3) of the plant application of single layer FBE coatings applied to the external surface of the pipe for the corrosion protection of bare steel pipe. As the pipe is intended for use in pipeline transportation systems for the petroleum and natural gas industry, this coating is tested/evaluated to ensure its suitability to act as the primary corrosion protection system when combined with cathodic protection systems (9)(10).

This 21809-2 standard provides in one single document a consistent and unified approach to the international requirements for coating line pipe with FBE. While there are in fact a number of other industry standards relating to the application of FBE coatings, it quickly becomes apparent that they are all different. One of the Work Group members recently recorded that some engineers have stated that the ‘wonderful thing about standards is that there are so many to choose from’. (11).

While this statement is true, the fact is that not all these standards are created equal or are at the same level of quality and technical competence. This has ultimately led to some inconsistency with the worldwide use of FBE coatings. This probably accounts for why the level of corrosion protection afforded by FBE and other pipeline coatings has varied over the years. This can be a real challenge when working in the global markets as the requirement for suppliers, manufacturers, applicators and end users vary from one standard to another. The objective of this 21809-2 FBE standard was to provide a consistent worldwide approach for all the pipeline stakeholders during the purchasing, manufacturing and application of FBE.

The first task for the FBE work group to overcome was the preparation of a Committee Draft (CD) that identified the critical and requisite components leading up to and during the process of applying FBE to line pipe. The work group immediately identified some shortcomings within the existing standards, e.g., the test method and interpretation of the DSC cure evaluation, inconsistent cathodic disbondment testing methods. This resulted in the inclusion of some alternative testing activities and the addition of a more balanced programme for testing, quality assurance and the document control of these activities. Some of the more critical shortcomings revolved around the lack of plant qualifications, harmonization of test methods and their criteria, along with a more concise document and test report procedure.

The progress of the document from a CD to a FDIS resulted in the evolution of a balanced document that was convenient for designers, department managers, production controllers and end users. The criteria and stipulated requirements of the 21809-2 standard was not fundamentally different in approach to any of the available standards. However, while not jeopardizing any fundamental requirements, for the first time in the pipeline industry the 21809-2 standard offered a balanced document that satisfied the needs of all the stakeholders and not just the customer or end users (which is common with numerous other documents).

The contributors of 21809-2 now feel confident that this standard has the ability to predict and identify defective materials or coatings. It also can direct the user to make the appropriate adjustments or corrections at the raw material manufacture, plant approval and project application stages to ensure that only the highest integrity coatings are presented for utilised by the pipeline industry.

**ISO Standard 21809-3 Field Joint Coating**

This part of ISO 21809 specifies requirements for field joint coating of seamless or welded steel pipes for pipeline transportation systems in the petroleum and natural gas industries as
defined in ISO 13623. It details the requirements for the qualification, application and testing of the corrosion protection coatings applied to steel surfaces left bare after the pipes and fittings (components) are joined by welding (see Figure 4). It does not however address additional mechanical protection, thermal insulation or joint in-fills for concrete weight-coated pipes.

Fibre-reinforced vinylester
Cast polyurethane
Flame-sprayed polypropylene powder applied over an epoxy layer
Polypropylene tapes/sheets hot-applied over an epoxy layer
Injection-moulded polypropylene over an epoxy layer
Flame-sprayed polyethylene powder applied over an epoxy layer
Polyethylene tapes/sheets hot-applied over an epoxy layer
Thermal spray aluminium (TSA)
Hot-applied microcrystalline wax coatings
Elastomeric coatings, EPDM-based
Elastomeric coatings, polyethylene-based

As with the FBE (21809-2) standard the first item the work group had to overcome was the preparation of a Committee Draft (CD). These identified the critical and requisite components leading to and during the process of applying field girth weld joint coatings to line pipe. (see Figure 5). The work group immediately identified some shortcomings within the existing standards in relation to critical deficiencies revolving around the lack of application and procedure qualifications, pre-production qualifications and pre-production trials. Also the harmonization of test methods, test criteria, along with a more concise document, inspection and test report procedure were identify as critical parameters to the successful application of a field coating. To ensure that all those aspects were covered in the standard, the following clauses were developed:

Application procedures and qualification
Application procedure specification (APS)
Coating materials

Procedure qualification trial (PQT)
Pre-production trial (PPT)
Qualification of coating and inspection personnel
Production testing and inspection
Certificates of compliance and traceability

As with all the proposed ISO pipeline coating standards, this document specifies that coatings applied to this standard are tested/evaluated to ensure its suitability to act as the primary corrosion protection system when combined with cathodic protection systems (ISO 15589-1/2) Petroleum and natural gas industries — Cathodic protection for pipeline transportation systems — Part 1 On land Pipelines and Part 2 Offshore Pipelines). (9)(10).

The 21809-3 standard provides a consistent approach to the application and testing of each of the numerous girth weld coatings covered by the requirements of the standard. While there are some general common requirements for the surface preparation, coating application, testing and repairs, each of the girth weld coatings have been specific categorised into one of the following coating types:

Bituminous, petrolatum, wax and polymeric tapes (Clause 10 of ISO 21809-3)
Heat-shrinkable coatings (Clause 11)
Fusion bonded epoxy powder coatings (Clause 12)
Liquid coatings (Clause 13)
Polyolefin based coatings (Clause 14)
Thermal spray aluminium (TSA) coatings (Clause 15)
Hot applied microcrystalline wax coatings (Clause 16)
Elastomeric coatings (Clause 17)

Each of these coating types has detailed requirements relating to the Coating identification and coating descriptions. Specific surface preparation requirements are defined, as obviously each coating type will require difference types of substrate preparation. While some coatings may only require hand tool cleaning (ISO 8504-3) (13); others can only provide an optimum performance if applied over power tool or abrasive blasted surfaces. These are clearly identified and describe in this new ISO pipeline coating standard.
Finally the application parameters and quality assurance testing techniques are addressed for each particular coating category. Items such as pre and post heating and any post cure requirements are itemized along with specific testing parameters and protocols. The overall objective is not to make all the coatings equal. However, the requirements should ensure that once the designer has selected a specific coating, he obtains the specific characteristics on the final field applied coating. This ultimately will provide full confidence that the coating system is totally ‘fit for purpose’.

This 21809-3 standard provides in one single document a consistent and unified approach to the international requirements for applying field joint coatings to line pipe. The primary objective of 21809-3 was to overcome any inconsistent approach and to ensure a level platform of requirements for all the various types of coatings.

The progress of the document from a CD to a FDIS resulted in the evolution of a balanced document that was convenient for designers, production contractors, field contractors and pipeline companies to utilize. For the first time in the pipeline industry the 21809-3 standard offers a balanced document that satisfied the needs of all the stakeholders and not just the design engineer, customer or pipeline companies.

**ISO Standard 21809-4 Polyethylene Coatings (2- layer PE)**

This latest addition to the family of ISO Pipeline coating standards was published on November 5, 2009. It follows the format of its sister standards from 21809. It basically classifies the two layer PE by the type of adhesive utilized with an over layer of extruded PE. There are three types of classifications are as follows:

- asphaltic modified rubber adhesive
- non asphaltic modified rubber adhesive (e.g. butyl based)
- hot melt or polymeric adhesive

The standard provides guidelines for the various requirements for each of the virgin and applied adhesive type, including those for thickness, operating temperature, stress levels, adhesion and soften points etc. Details requirements for the virgin and applied PE along with a testing programme for the plant-applied two layer systems are defined within the document.

**Consideration for Future Work**

Since the initialisation of work on the ISO 21809 series of pipeline coating standards in 2001 there was little if any variation to the original proposed catalogue of standards. However, in the last 18 months there have been a number of significant additions to the programmes. These are as follows:

- Firstly, a new work item has been proposed to expand the scope of the FBE Standard 21809-2. It has now been proposed that ISO 21809-2 be revised to include both dual layer FBE Coatings and systems that can operate beyond the present glass transition limit of 120°C.

- Secondly, at the meeting on TC67/SC2 (Petroleum and natural gas industries, Subcommittee SC2, Pipeline transportation systems) in Denmark in 2008, a new work item was proposed for the initiation of a standard for ‘Wet thermal insulation coatings’. The Technical committee accepted this proposal on wet thermal insulation coatings. Work Group Nineteen (WG19) has been formed to undertake the preparation of an additional ISO coating standard to cover the qualification, application and testing of wet thermal insulation coatings for pipelines, flow lines equipment and sub sea structures.

- Thirdly, additions to the systems included in 21809-3 are already being prepared and being considered for inclusion. This encapsulates even more types of girth weld coatings to provide the end-user with even more options to consider when designing their pipeline anti-corrosion systems.

**Conclusions**

This series of external pipeline coating standards represents the industrial integration of pipeline standards to be published through ISO for the use on burdened or submerged pipelines. Under the Vienna agreement with ISO and CEN (European Committee for Standardization) (14): these standards will be adopted as European Standards. As an international standard, this series of documents will probably supersede the present standards being published through the Standard Council of Canada, the America Petroleum Institute and the National Association of Corrosion Engineers. This will then bring a much-needed consistent and uniform approach to the qualification; application and testing of globally applied coatings. (15) This consistency of approach will help define the necessary requirements for material composition, dimensional tolerances and performance in regards to an internationally accepted set of criterion. Thus allowing objective comparisons and the elimination of the unnecessary variances in quality that the pipeline industry has encountered over the last few decades.

The ISO Work Groups responsible for the preparation of international pipeline coatings has developed a format and protocol for the construction of these coating standards. However, the introduction of new standards for thermal insulation coatings, along with the addition of dual layer and high temperature FBE coatings, demonstrate the flexibility of this protocol in readily accommodating revisions to existing coating systems. It also reflects the ability of ISO to effectively recognise the dynamic and changing nature of the needs of the pipeline industry.

The recent introduction of additional ISO pipeline coating standards, such as the Two Layer Polyolefin and External Concrete Coatings, will go even further to providing operating pipeline companies with optimum external coating systems for use on their domestic and global pipeline projects.

**Acknowledgements**

The author would like to thank the entire ISO TC67/SC2 Work Group 14 for their outstanding work in identifying the critical elements of these series of ISO 21809 standards. Also to Matt Dabiri and Tom Weber (both USA) as Work Group co-ordinators for the entire catalogue of ISO Pipeline Coating Standard.

Also, recognition is are due to the ISO Editorial Committee (EDC) of Rick Faircloth (USA), Richard Espiner (UK), Erling Gjertveit (Norway) and Muayyad Ajawwi (Qatar). In particular Rick Faircloth (USA) of the EDC is thanked for enlightening us during the work group meetings on the ‘secrets and mysteries’ of ISO processes and procedures.

We would also like to remember the contributions of the late Jan Verhagen (Holland) for championing this standard and to the late Gerhard Frolic (Germany) for his uncanny editorial skills during the initial drafting of these ISO standards.

**References**

International Standards Organization, Case postale 56, CH-1211, Geneva 20, Switzerland

ISO/DIS 21809-1 Petroleum and natural gas industries — External coatings for buried or submerged pipeline used in pipeline transportation systems — Part 1: Polyolefin Coatings (3-layer PE and 3-layer PP)

ISO/DIS 21809-5 Petroleum and natural gas industries — External coatings for buried or submerged pipeline used in pipeline transportation systems — Part 5: External Concrete Coatings

ISO 15589-1 P Petroleum and natural gas industries — Cathodic protection for pipeline transportation systems — Part 1 On land Pipelines

ISO 15589-2 P Petroleum and natural gas industries — Cathodic protection for pipeline transportation systems — Part 2 Offshore Pipelines

CROPICO MEASURES UP IN ANTI-CORROSION TESTING

A company manufacturing overhead transmission and distribution power line equipment has used a Cropico high performance microhmmeter for accurate resistance measurement during an anti-corrosion product testing programme.

Overhead Line Fittings (UK) works with the National Grid, power distribution network operators and their contractors to provide bespoke insulators, fittings and conductor accessories used in the installation and maintenance of overhead power cables.

As part of the services provided to customers, the company operates an in-house test facility at its head quarters in Atherstone, Warwickshire.

There it has been testing bi-metallic joints to assess how its oxide-inhibiting compound can reduce the rate of corrosion between electrical connections.

This is a major problem which costs utilities millions of pounds a year in maintenance and repair costs and can cause delays to essential services like the railways when power distribution lines fail.

OLF’s testing involved a heat cycle process which utilised a Cropico D05000 microhmmeter for the measurement of resistance levels.

A current of 700 Amps was passed through a bi-metallic joint in a cycle of one hour energised and 40 minutes de-energised. Humidity levels averaged 60% during the testing, which was twconducted on both compound treated and non-treated joints continuously for 96 hours.

Resistance readings were taken automatically at the rate of two per second showing that levels rose as the galvanic corrosion started to attack the joint.

The testing confirmed that an oxide-inhibiting compound can have a positive impact on the electrical performance of the type of bi-metallic joints used on transmission and distribution power liners.

Carl Ford, general manager at OLF, said the high performance capabilities of the D05000 had led to the decision to order another unit for the company’s operation in China for a similar test and measurement programme.

He added: “The D05000 is a very good instrument, offering superb performance, reliability and accuracy.

“It’s fulfilled all expectations and has impressed within the demands of the testing environment.”

The Cropico D05000 microhmmeter enables highly accurate low resistance measurement to be undertaken to ensure that products meet relevant technical performance standards and specifications.

Programmable current levels and the selection of different test speed settings give the D05000 tester the flexibility to accurately measure the resistance values of different cable products. These include single end and plain soft wires through to bunched, stranded and large diameter rope type conductors.

Accurate and reliable in-line cable resistance measurements taken in this way enable cable manufacturers to maintain optimum operating efficiencies in terms of copper raw material use.

The D05000 forms part of a comprehensive range of precision measurement instruments available from Cropico, part of the Seaward Group. More at www.cropico.co.uk
NEW ENERGY INSTITUTE WORKSHOP ON CORROSION MANAGEMENT
29-30 JUNE 2010 - ABERDEEN

As part of their new technical training programme the Energy Institute (EI) is running a workshop on Corrosion Management Essentials in Aberdeen on the 29-30 June 2010. The workshop will describe the model process of Corrosion Management for the upstream oil and gas sector and is based on the EI publication ‘Guidance for corrosion management in oil and gas production and processing’.

Development of the guidance was directed by the cross-industry Corrosion Management Working Group (CMWG), convened by Oil and Gas UK in 2007, to address concerns relating to degradation of ageing offshore production facilities due to corrosion and the need to improve related management processes. The CMWG included participants from the UK Health and Safety Executive (HSE) and the work was managed and funded as part of the EI’s Technical work programme. The publication provides the general principles and requirements for improving the management of corrosion in oil and gas production and processing, and draws and expands upon a previous report issued by the HSE in 2001. It is regarded as the most important document for describing good practice corrosion management processes for the oil and gas sector and aims to assist companies in maintaining asset integrity and compliance with corporate health safety and environmental requirements.

The corrosion management workshop will provide practical advice for successful implementation of a corrosion management policy using practical examples of corrosion threats and mitigation methods. Delegates who attend the training course will learn about the model process of corrosion management and how this fits into the wider safety framework and helps to comply with safety legislation. They will also obtain practical knowledge of methods of implementation and system maintenance.

The course is run by Mike Pursell, who has over forty years experience in the oil and gas sector. Mike has worked on corrosion and integrity management for Amoco, Marathon, Shell, ConocoPhillips and BP. He was the editing author of the EI guidance document, and is a Chartered Engineer, Fellow of the Institute of Corrosion and a NACE Certified Corrosion Specialist.

To reserve a place on the course, contact Will Sadler for details at HYPERLINK “mailto:wsadler@energyinst.org” wsadler@energyinst.org or +44 (0)20 7467 7135

For further information about EI publications on corrosion, including ‘Guidance for corrosion management in oil and gas production and processing’ and two handy pocket-sized reference books for on-site personnel (‘Corrosion threats handbook’ and the newly published ‘External corrosion awareness handbook’), visit the EI’s publication website at HYPERLINK “http://www.energypublishing.org” www.energypublishing.org

The EI is the leading chartered professional membership body for the international energy industry. With over 14,000 individuals and 300 companies in membership, it develops and disseminates knowledge and good practice to support working towards a safe, secure and sustainable energy system.
DENSOPOL PROTECTS OUTFALL PIPELINE

Winn & Coales’ Densopol 80 Tape System was recently selected to protect the field joints on the Alkimos outfall pipeline situated 40km north of Perth, Western Australia. It was supplied by Denso (Australia) Pty Ltd of Brunswick, Victoria, a subsidiary of Winn & Coales International Ltd. The project is part of the Alkimos Wastewater Treatment Scheme and is an alliance between the Water Corporation and the private sector, being named the Almimos Water Alliance.

The outfall pipeline is a 3.7km long 1270mm diameter MSCL pipe, comprising 294 joints which have been protected. The Sintakote pipe supplied by Tyco Water was delivered to site and then a concrete weight coating was applied.

At the cutback area Denso Primer ‘D’ was first applied, followed by the Densopol 80 Tape, spirally wrapped incorporating a 55% overlap. This effectively gives a protective coating of 4mm (4000 microns) prior to the cutback areas being in-filled with concrete.

The 3.7km long ocean outfall pipeline was buried up to 4 meters below the beach and sits in a trench on the seabed some 8-123 metres below sea level. Towards the end of the pipelines the depth of water is between 25-30 metres.

Winn & Coales (Denso) Ltd., Chapel Road, London SE27 0TR Tel: 020 8670 7511 Fax: 020 8761 2456 e-mail: mail@denso.net www.denso.net

1960-2010, 50 YEARS OF JOINTING PRECAST CONCRETE UNITS WITH TOKSTRIP

Manufacturers Winn & Coales (Denso) Ltd, the same company that launched the versatile anti-corrosion coating, DensoTape, over eighty years ago, are celebrating a landmark in 2010 for another of their famous products - Tokstrip. In 1960 they launched the rubber bitumen jointing strip to the civil construction industry. The product was designed for use either as a vertical seal between box culvert sections or as a horizontal seal between manhole or chamber ring sections. Right from the beginning, Tokstrip was eagerly accepted as it negated the need for traditional, time consuming, expensive concrete surrounds around manholes, or grouting between box culvert units. Not only that, it instantly provided an awterproof bond between the units which was immensely strong but also flexible, allowing for ground movement. In addition to these features it also contains a root inhibitor which effectively stopped the roots of trees pushing through the joints and eventually blocking or damaging the drain, which can be a major problem in some areas. Over the proceeding years the product has continued to grow in popularity and has been widely used on projects in the UK and overseas ranging from house drainage to major sewer construction, river diversion, flood relief schemes, tunnels and subways.

During this period it has become the market leader and built an enviable reputation for being an exceptional jointing material. Tokstrip continues today, 50 years on, to be specified on all kinds of applications, wherever precast concrete sections are used and a superior seal is required.

Winn & Coales (Denso) Ltd., Chapel Road, London SE27 0TR Tel: 020 8670 7511 Fax: 020 8761 2456 e-mail: mail@denso.net www.denso.net
BEL ZONA FAITH IN ITS ADHESIVE STRENGTH

Leading protective coating and polymer repair composite solution provider Belzona Polymeric demonstrated the outstanding performance of their structural adhesives with a powerful display of faith on the 29th January 2010.

Belzona has developed a range of unique products which offer unparalleled performance as protective coatings, repair composites and structural adhesives. The Belzona solutions differentiate themselves significantly from conventional methods with major benefits of the Heat Activated Series being their application to hot surfaces up to 150 °C – even whilst equipment is still in service, avoiding the need for outage which can ultimately lead to lost production costs. Furthermore, these products have been designed to be applied with minimal preparation and are tolerant of surfaces contaminated by water or oil.

During the 2010 Belzona Europe and Africa Conference held at the Harrogate Technology Centre Belzona demonstrated the adhesive properties of Belzona 1251 Heat Activated Products by suspending a Mercedes SL500 above a Mercedes S320 LCDI. The Belzona 1251 Heat Activated Metal was applied to a connecting joint only 75mm in diameter and cured immediately prior to the lift. With the Mercedes SL 500 AMG weighing over 2.2 tonnes and a minimal amount of adhesive it demonstrated that the Belzona 1251 Heat Activated Metal was able to carry over 1.8 million times its own weight! Further testing carried out by Belzona’s USA and UK laboratories demonstrated the product could actually lift over 20 tonnes in this configuration.

Belzona’s six identical 2010 Global Conferences allow Belzona Distributors and Service Partners to share experiences and be updated on the latest developments in both product technology and application solutions. During the meetings, delegates learnt of the background to the products and the testing which has been carried out to verify the products suitability. Belzona takes a truly global approach to problem solving with R&D, Testing and Technical Service Laboratories in the USA, Europe and Asia working in conjunction with their Distributors and Service Partners to deliver solutions for industry.

Delegates also learnt that the Belzona Heat Activated Series had applications other than for lifting expensive cars, such as corrosion and structural reinforcement for steam systems and hot process equipment in a variety of industries including Power Generation, Paper Manufacturing, Food, Drink and Petrochemical.

TITAN HMG PAINTS SHOWCASED IN INDIAN BUSINESS MISSION

Speaking at an official Indo-UK business seminar in Southern India recently, Patricia Hewitt MP, former cabinet minister and chair of the UK-India Business Council, said that the joint venture company forged between Manchester-based HMG Paints and Titan Paints & Chemicals of Coimbatore was an ideal example of how commercial partnerships can be fostered between the two countries.

Jointly organised by UK Trade & Investment and the Confederation of Indian Industry, the ‘Partners in Action’ seminar explored opportunities for partnering with the local business community, in order to expand overseas operations, and presented case studies of UK firms already doing business in India. The British Deputy High Commissioner in Southern India, Mike Nithavrianakis, led the seminar and a senior member of the Indian parliament, Poongothai Aladi Aruna, delivered a keynote address.

Two board members of Titan HMG Paints India Limited, Ravi Sam and John Fenton, used the occasion to announce that the JV will increase its production capacity three-fold over the next three years. It is also in the process of widening its product range to cover paint market sectors like marine finishes and specialist coatings.

“At present, the company has a production capacity of 100,000 litres per month,” said Managing Director, Ravi Sam. “We shall be investing Rs 12 crore (£1.6m) in the next two years, to increase capacity three times by 2012. Our sales target is to touch Rs 100 crore (£13.4m) over the next five years.”

Fellow board member, John Fenton, who was among a number of senior representatives from HMG Paints attending the event, added: “We shall soon appoint dealers all over South India and the nation’s leading industrial state of Maharashtra, in order to expand distribution and increase our customer base. India is a huge market and it is also a good stepping stone for supplying other countries, such as China, Malaysia and Thailand.”

Formed last year, Titan HMG Paints India is a JV enterprise between long-established surface coatings manufacturer HMG Paints, which this year celebrates its 80th anniversary, and a flagship company of the renowned LMW Group, Titan Paints & Chemicals, which itself dates back to 1947. Based in Coimbatore, one of the fastest growing cities in India and a favoured city for inward investment, the newly-formed company produces a wide range of industrial coatings, for protecting plant, machinery and other structures from abrasion, corrosion, weathering and chemical attack.

While Titan provides the domestic manufacturing resource and local sales and marketing expertise, HMG has contributed intellectual property in the shape of paint formulations, the latest production methodology and applications know-how arising from its unrivalled European market experience.

HMG paint technicians and production specialists regularly visit the Coimbatore plant, including Business Development Director, Steve Crossman, Senior Colour Technician, Nigel Sykes, Production Engineer, Russell Williams and Laboratory Technician, Jonathan Falder, to liaise with their opposite numbers in India. The latest outcome of this intelligence sharing has been the launch of five new paint products, including a metallic polyurethane topcoat and a synthetic enamel finish, which were unveiled by Patricia Hewitt MP at the seminar.
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<td>40 Grosvenor Gardens, London SW1W 0EB</td>
<td>Tel: 020 7565 7000 Fax: 020 7565 7100</td>
<td>Email: <a href="mailto:ho@sandberg.co.uk">ho@sandberg.co.uk</a></td>
<td>Website: <a href="http://www.sandberg.co.uk">www.sandberg.co.uk</a></td>
<td></td>
</tr>
<tr>
<td>SCALED SOLUTIONS LTD</td>
<td>INDEPENDENT LABORATORY SERVICES</td>
<td>Tel: 01506 439994</td>
<td>Email: <a href="mailto:enquiries@scaledsolutions.co.uk">enquiries@scaledsolutions.co.uk</a></td>
<td>Website: <a href="http://www.scaledsolutions.co.uk">www.scaledsolutions.co.uk</a></td>
<td></td>
</tr>
<tr>
<td>SCISITE LIMITED</td>
<td>Innovation Centre 3, Keele Science &amp; Business Park Keele, Staffordshire ST5 5NP</td>
<td>Tel: 01782 450 460</td>
<td>Email: <a href="mailto:info@scisite.co.uk">info@scisite.co.uk</a></td>
<td>Website: <a href="http://www.scisite.co.uk">www.scisite.co.uk</a></td>
<td></td>
</tr>
<tr>
<td>BREWERS PROTECTIVE COATINGS</td>
<td>Reform Rd, Maidenhead, Berkshire SL6 8DA</td>
<td>Tel: 01628 789859 Fax: 01628 672578</td>
<td>Email: <a href="mailto:info@brewersprotectivecoatings.co.uk">info@brewersprotectivecoatings.co.uk</a></td>
<td>Website: <a href="http://www.brewersprotectivecoatings.co.uk">www.brewersprotectivecoatings.co.uk</a></td>
<td></td>
</tr>
<tr>
<td>CARBOLINE</td>
<td>Offshore and Onshore protection, Waste water treatment plants, Specialist pipeline treatments, Environmentally friendly products</td>
<td>Tel: 07712 768411 Fax: 01475 529893</td>
<td></td>
<td><a href="http://www.carboneurope.com">www.carboneurope.com</a></td>
<td></td>
</tr>
</tbody>
</table>
SUSTAINING MEMBERS

INTERNATIONAL PAINT LIMITED

Stoneygate Lane, Felling, Gateshead, Tyne & Wear NE10 0JY
Tel: 0191 469 6111 Fax: 0191 496 0676
Email: simon.daly@internationalpaint.com
Website: www.international-pc.com

JOTUN PAINTS (EUROPE) LTD.

Stather Road, Flixborough, Scunthorpe, North Lincolnshire DN15 8RR
Tel: 01724 400 125 Fax: 01724 400 100
Email: decpaints@jotun.co.uk www.jotun.co.uk

CHEMCO INTERNATIONAL LTD

Units 3a & 3b, East Shawhead Industrial Estate, Coatbridge, Lanarkshire ML3 4LY
Tel: 01236 606060 Fax: 01236 606070

COUNTER CORROSION LTD

Formulators and Applicators of Customised Protective Coating and Lining Systems for Steel and Concrete
Tel: 01924 468559/380002 Fax: 01924 458019

DOORNBOS EQUIPMENT

Units 3a & 3b, East Shawhead Industrial Estate, Coatbridge, Lanarkshire ML3 4LY
Tel: 01236 606060 Fax: 01236 606070

SPENCER COATINGS LTD

Froghall Terrace, Aberdeen, AB24 3JN
Tel: 01224 788400 Fax: 01224 648116
Website: www.spencercoatings.co.uk

HEMPLE PAINTS LTD

Llantarnam Industrial Park
Cwmbran
Gwent NP44 3XF
Tel: 01633 874024 Fax: 01633 489012
Email: sales@hempel.co.uk www.hempel.com

LEIGHS PAINTS

MANUFACTURE AND SUPPLY OF SPECIALISED COATINGS
Tower Works, Kestor Street, Bolton BL2 2AL
Tel: 01204 521771 Fax: 01204 382115
www.leighspaints.co.uk

PPG PROTECTIVE & MARINE COATINGS

Sales Office Industrial Protective Coatings
Micro House, Station Approach
Wood Street North, Alfreton DE55 7JR
Tel: +44 (0) 1773 837 300 Fax: +44 (0) 1773 837 302
Email: uk-sales@alfretton@ppg.com www.ameron-bv.com

SPERI SPECIALTY POLYMER COATINGS INC

64 Tudor Avenue
Worcester Park
Surrey KT4 8TX
Tel: 020 8337 4953 Fax: 020 8337 4953
Website: www.spc-net.com

STOQAQ UK LTD

Court House Farm Units, Court House Farm
Breerton, Cheshire CW11 1RL
Tel: 0845 071 0688 Fax: 0845 071 0689
e: info@stopaq.co.uk Website: www.stopaq.co.uk

DOORBOS EQUIPMENT

Units 3a & 3b, East Shawhead Industrial Estate, Coatbridge, Lanarkshire ML3 4LY
Tel: 01236 606060 Fax: 01236 606070

CHEMCO INTERNATIONAL LTD

Units 3a & 3b, East Shawhead Industrial Estate, Coatbridge, Lanarkshire ML3 4LY
Tel: 01236 606060 Fax: 01236 606070

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Tel: 01924 468559/380002 Fax: 01924 458019

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Units 3a & 3b, East Shawhead Industrial Estate, Coatbridge, Lanarkshire ML3 4LY
Tel: 01236 606060 Fax: 01236 606070

SPECIALTY POLYMER COATINGS INC

64 Tudor Avenue
Worcester Park
Surrey KT4 8TX
Tel: 020 8337 4953 Fax: 020 8337 4953
Website: www.spc-net.com

STOQAQ UK LTD

Court House Farm Units, Court House Farm
Breerton, Cheshire CW11 1RL
Tel: 0845 071 0688 Fax: 0845 071 0689
e: info@stopaq.co.uk Website: www.stopaq.co.uk

HEMPLE PAINTS LTD

Llantarnam Industrial Park
Cwmbran
Gwent NP44 3XF
Tel: 01633 874024 Fax: 01633 489012
Email: sales@hempel.co.uk www.hempel.com
ICATS REGISTERED COMPANIES WITH QUALIFIED APPLICATORS

Alltask Limited
Alltask House, Commissioners Road, Strood, Kent, ME2 4EJ
T: 01634 299000

Alfred Bagnall & Sons
6 Manor Lane, Shipley, West Yorkshire, BD18 3RD
T: 01302 853259

APB Construction (UK)
Unit 3, Bramley Way, Hellaby Industrial Estate, Hellaby, Rotherham, S. Yorkshire, S66 8QB
T: 01709 541000

APB Group Limited
Ryandra House, Ryandra Business Park, Brookhouse Way, Cheadle, Staffs, ST10 1SR
T: 01538 755377

Armourcote Surface Technology plc
15/17 Colvilles Place, Kelvin Industrial Estate, East Kilbride, Scotland, G75 0PZ
T: 01355 248223

Austin Hayes Ltd
Carlton Works, Cemetery Road, Yeadon, Leeds, LS19 7BD, UK
T: 0113 250 2255

Beever Limited
Little Coldharbour farm, Tong Lane, Lamberhurst, Kent, TN3 8AD, UK
T: 01892 890045

Briton Fabricators Ltd
Watnall Road, Hucknall, Notts, NG15 6EP
T: 0115 963 2901

Cameron Limited
Queen Street, Stourton, Leeds, LS10 1SB, UK
T: 0113 276 4389

Cape Industrial Services
Cape House, 3 Red Hall Avenue, Paragon Business Village, Wakefield, WF1 2UL
T: 01224 215800

Cleveland Bridge UK Ltd
Cleveland House, Yarm Road, Darlington, DL1 4DE
T: 01325 502345

Coating Services Ltd
Partington Street, Mumps Bridge, Oldham, OL1 3RU, UK
T: 0161 665 1998

Collins Engineering Railway Contracts
Salcombe Road, Meadow Lane Industrial Estate, Alfreton, Derbyshire, DE55 7RG
T: 01773 833255

Concrete TS Ltd
Unit B2 (2), Moss Industrial Estate, Leigh, Lancs, WN7 3PT, UK
T: 01942 261909

Corrocoat
Forster Street, Leeds, LS10 1PW
T: 01132760760

Denholm Industrial
21 Boden Street, Glasgow, G40 3PU
T: 0141 445 3939

Dyer & Butler Ltd (Rail)
Mead House, Station Road, Nursling, Southampton, SO16 0AH, UK
T: 02380 667549

F & A Clover & Son Ltd
Bardolph Road, Richmond, Surrey, TW9 2LH
T: 0208 948 6321

Forth Estuary Transport Authority
Forth Road Bridge, Administration Office, South Queensferry, EH30 9SF
T: 0131 319 1699

Harrisons Engineering Lancashire Ltd
Judge Wilmey Mill, Longworth Road, Billington, Clitheroe, Lancashire, BB7 9TP
T: 01254 823993

Hayes and Horne
Rear Barn, Wixenford Industrial Estate, Plymouth, PL9 8AA
T: 01752 401234

Hyspec Services Ltd
Unit 3 Meadowfield Industrial Estate, Cowdenbeath Road, Burntisland, Fife, KY3 0LH
T: 01592 874661

Industrial Coating Services
5 Danesbury Crescent, Kingstanding, Birmingham, B44 0QP
T: 0121 384 2266

Industrial Painting
48-49 RCM Business Centres, Sandbeds Trading Estate, Dewsbury Road, Ossett, WF5 9ND
T: 01924 272606

Interserve Industrial
Unit 2, Olympic Park, Poole Hall Road, Ellesmere Port, Cheshire, CH66 1ST
T: 0151 3737660

Jack Tighe Coatings
Sandall Lane, Kirk Sandall, Doncaster, DN3 1QR
T: 01302 880360

Jack Tighe Ltd
Redbourne Mere, Kirton Lindsey, Gainsborough, Lincs, DN21 4NW, UK
T: 01652 640003

Lanarkshire Welding Co.
82 John Street, Wishaw, Lanarkshire, ML2 7TQ
T: 01698 264271

Mabey Bridge Ltd
Station Road, Chepstow, Monmouthshire, NP16 SYL
T: 01291 623801
<table>
<thead>
<tr>
<th>Company Name</th>
<th>Address</th>
<th>Phone Number</th>
</tr>
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<tbody>
<tr>
<td>Maclean and Speirs</td>
<td>Unit D, East Fulton Farm, Darluith Road, Linwood, PA3 3TP</td>
<td>01505 324777</td>
</tr>
<tr>
<td>Merseyside Coatings Ltd</td>
<td>Pickerings Road, Halebank Industrial Estate, Widnes, Cheshire, WA8 BXW</td>
<td>0151 423 6166</td>
</tr>
<tr>
<td>Northern Protective</td>
<td>16 High Reach, Fairfield Industrial Estate, Bill Quay, Gateshead, Tyne &amp; Wear, NE10 0UR</td>
<td>0191 438 5555</td>
</tr>
<tr>
<td>Nusteel Structures</td>
<td>Lympne Industrial Estate, Lympne, Hythe, Kent, CT21 4LR</td>
<td>T: 01303 268112</td>
</tr>
<tr>
<td>Paintel Ltd</td>
<td>26 St George's Road, Saltash, Cornwall, PL12 6EH</td>
<td>01752 842720</td>
</tr>
<tr>
<td>Palms Ltd</td>
<td>1120 Elliot Court, Herald Avenue, Coventry Business Park, Coventry, CV5 6UB</td>
<td>02476 710294</td>
</tr>
<tr>
<td>Port Painters Limited</td>
<td>Unit 3, Ringside Business, Hoel-Y-Rhosog</td>
<td>T: 02920 777070</td>
</tr>
<tr>
<td>Pyeroy Limited</td>
<td>Kirkstone House, St Omers Road, Western Riverside Route, Gateshead, Wear, NE11 9EZ</td>
<td>T: 0191 4932600</td>
</tr>
<tr>
<td>Roy Hankinson Limited</td>
<td>Alexander House, Monks Ferry, Birkenhead Wirral, CH41 5LU</td>
<td>0870 7892020</td>
</tr>
<tr>
<td>Rowecord Engineering</td>
<td>Neptune Works, Usk Way, Newport, South Wales, NP20 2SS</td>
<td>T: 01633 250511</td>
</tr>
<tr>
<td>Shutdown Maintenance Services Ltd</td>
<td>Kingsnorth Industrial, Hoo, Rochester, Kent, ME3 9ND</td>
<td>01634 256969</td>
</tr>
<tr>
<td>Site Coat Services Ltd</td>
<td>Unit 11 Old Wharf, Grantham Lincs, NG31 7AA</td>
<td>01476 57773</td>
</tr>
<tr>
<td>South Staffs Protective Coatings Ltd</td>
<td>Bloomfield Road, tipton, West Midlands, DY4 9EE</td>
<td>T: 0121 522 2373</td>
</tr>
<tr>
<td>Strada Contractors Ltd</td>
<td>Unit 9, Portsmouth Enterprise, Quatremaire Road, Portsmouth, PO3 5QT</td>
<td>T: 02392 666109</td>
</tr>
<tr>
<td>Supablast Nationwide</td>
<td>Jubilee Estate, Gorsey Lane, Coleshill, Birmingham, B46 1JJ</td>
<td>T: 01675 464446</td>
</tr>
<tr>
<td>T I Protective Coatings</td>
<td>Unit 6, Lodge Bank, Crown Lane, Horwich, Bolton, LANCs, BL6 SHY</td>
<td>T: 01204 468080</td>
</tr>
<tr>
<td>Walker Construction</td>
<td>Park Farm Road, Folkstone, DAA 9 RR</td>
<td>T: 01322 387000</td>
</tr>
<tr>
<td>Wardle Painters Ltd</td>
<td>Unit 5, Wimborne Building, Atlantic Way, Barry Docks, Gloulogan, CF63 3RA, UK</td>
<td>T: 01446 748620</td>
</tr>
<tr>
<td>William Hare Ltd</td>
<td>Bradsholme House, Bradsholme Road, Bury, Lancs, BLB 1JJ, UK</td>
<td>T: 0161 609 0000</td>
</tr>
</tbody>
</table>

**ICATS REGISTERED COMPANIES WITH APPLICATORS IN TRAINING**

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Address</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasion Ltd</td>
<td>Unit 1 B, OJ Industrial Park, Claybank Road, Portsmouth, PO2 5SX, UK</td>
<td>T: 02392 661023</td>
</tr>
<tr>
<td>Community Clean</td>
<td>11 Old Forge Road, Ferndown Industrial Estate, Ferndown, Wimborne, Dorset, BH21 7RR, UK</td>
<td>T: 0845 6850133</td>
</tr>
<tr>
<td>ENC (Yorkshire) Ltd</td>
<td>Unit 3B Rotherham Road, Dinnington Sheffield, S25 3RF</td>
<td>T: 01909 567860</td>
</tr>
<tr>
<td>Fairhurst Ward Abbotts</td>
<td>225 London Road, Greenhithe, Kent, DA9 9RR</td>
<td>T: 01322 387000</td>
</tr>
<tr>
<td>Gemini Corrosion</td>
<td>Broomhill Road, Spurryhilllock Industrial, Stonehaven, Aberdeenshire, AB39 2NH</td>
<td>T: 01569 765488</td>
</tr>
<tr>
<td>JPV (Painters) Ltd</td>
<td>Unit 8 Prospect Way, Hutton Industrial Estate, Brentwood, Essex, CM13 1XG, UK</td>
<td>T: 01277 201515</td>
</tr>
<tr>
<td>Matatec Ship Repairers</td>
<td>MacGregor House, Seaton Delaval Tyne &amp; Wear, NE25 0PT</td>
<td>T: 0191 2379900</td>
</tr>
<tr>
<td>P C Richardson &amp; Co</td>
<td>Courville House, Ellerbeck Court, Stokesley Business Park, Stokesley, TS9 5PT, UK</td>
<td>T: 01642 714791</td>
</tr>
<tr>
<td>Standish Metal</td>
<td>Potter Place, West Pimbo, Skelmersdale, Lancs, WNB 9PW, UK</td>
<td>T: 01695 455977</td>
</tr>
<tr>
<td>T&amp;T Coatings Ltd</td>
<td>Snowdon House, Snowdon Road, Middlesborough, TS2 1DY, UK</td>
<td>T: 01642 247972</td>
</tr>
<tr>
<td>W G Beaumont &amp; Son</td>
<td>Unit L1, Chadwell Heath Industrial, Kemp Road, Dagenham, RM8 1SL</td>
<td>T: 0208 590 8523</td>
</tr>
</tbody>
</table>
ICATS REGISTERED COMPANIES

Abbey Gritblasting Services
Unit 13, Clopton Commercial Park, Clopton, Woodbridge, Suffolk, IP12 3TP
T: 0191 262 0510

Barrier Ltd
Stephenson Street, Wallsend, Tyne & Wear, NE28 6UE, UK
T: 0191 262 0510

Coastground Ltd
Morton Peto Road, Capton Hall Industrial, Great Yarmouth, Norfolk, NR31 0LT
T: 01493 650455

Celtic Painting Consultancy Ltd
Rosedale, Carelicken Lane, Langstone, Newport, Gwent, NP18 2JZ
T: 01633 40019

Coastline Preservation Ltd
Tredgar Wharf, Marine Parade, Southamton, Hants, SO14 5JF
T: 02380 221480

Forward Protective
Vernon Street, Shirebrook, Mansfield, Notts, NG20 8SS
T: 01623 748323

GABRE (UK) LTD
9 Holme Road, Dromore, Omagh, Co Tyrone, BT78 3BX
T: 02882 897950

G W Burton Ltd
New Court, Wooddalling, Norwich, Norfolk, NR11 6SA
T: 01263 584203

GPS Services & Distribution Ltd
Alexandra Business Park, Riverside South, Pallion, Sunderland, Tyne & Wear, SR4 6UG
T: 01753 654123

GCS Painting Contractors Ltd
61 Portland Road, Selston, Nottingham, NG16 6AS
T: 01773 860983

H & S Decorating
Administration Building, Forth Road bridge, South Queensferry, Edinburgh, EH30 9SF
T: 01753 654123

Hempel UK Ltd
Llantarnam Park, Cwmbran, Gwent, NP44 3XF
T: 01633 874024

Hiil Price Associates Ltd
Hill Price Associates Ltd, 3 Prospect Place, The Maritime Quarter, Swansea, SA1 1QP
T: 01792 544255

Leigs Paints
Tower Works, Kestor Street, Bolton, Lancs, BL2 2AL
T: 01698 264271

Malakoff Limited
North Ness, Lerwick, Shetland, ZE1 0LZ, UK
T: 01595 695544

Matthew James Services
Unit 4, Shibdon Business, Cowen Road, Blaydon, Newcastle-Upon-Tyne, NE21 5TX
T: 0191 414 5700

Metal Cleaning UK Ltd
Randles Road, Knowsley Business Park, Knowsley, Merseyside, L34 9HX
T: 0151 5492449

MIS Services Ltd
Unit 12 Laurence Industrial, Eastwoodbury Lane, Southend-On-Sea, Essex, SS2 6RH
T: 01702 520400

New Image Specialist Painting Contractors
Askern House, High Street, Askern, Doncaster, DN6 0AA
T: 01302 708081

Opus Industrial Services
Ethan House, Royce Avenue, Cowpen Industrial, Estate, Billingham, TS23 4BX, UK
T: 01642 371850

Orrmac Coatings Ltd
Newton Chambers Road, Thorncliffe Park Estate, Chapeltown, Sheffield, S35 2PH
T: 0114 246 1237

Prize Spraying
Easdale, Carlton Colville, Lowestoft, Suffolk, NR33 8WJ
T: 01502 564437

R A Materials & Foundries
Unit 19, Heysham Business Park, Middleton Road, Heysham, Lancs, LA3 3PP
T: 01606 723426

R.L.P. Painting
Heathfield House, Old Bawtry Road, Finningley, Doncaster, DN9 3DD, UK
T: 01302 772222

Steel Protection Consultancy Ltd
7a High Street Mews, High Street, Leighton Buzzard, Beds, LU7 1EA, UK
T: 01525 852500

Sussex Blast Cleaning
Unit 35-37 Station Road, Hailsham, East Sussex, BN27 2ER
T: 01323 849229

TEMA Engineering Ltd
5-6 Curran Road, Cardiff, CF10 5DF, UK
T: 020920 344556

Tees Valley Coatings
Riverside Park Road, Middlesborough, Cleveland TS2 1UT
T: 01642 228141

The Renovate Services Co.
Amlwch Industrial Estate, Anglesey, LL68 9BQ
T: 01407 831331

Watson Steel Structures
Lostock Lane, Lostock, Bolton, BL6 4BL
T: 01204 699999
DIARY DATES 2010/11

29th April 2010
CED WORKING DAY AND SYMPOSIUM
ON CORROSION MONITORING
Venue: The Centre, Birchwood Park, Warrington WA3 6YN
Tel: 01925 282 940
Email: Thecentre@birchwoodpark.co.uk

6th May 2010
LONDON BRANCH GUIDED SOCIAL WALK-ABOUT
Co-ordinator – John O’Shea
Return to Naval Club for chile supper

27th May 2010
UNDERGROUND CORROSION ONE DAY SEMINAR
Tel: + 44 (0) 7795 420281
Email: john.thirkettle@thorcorrosion.co.uk

10th June 2010
London Branch Golf Day
Venue: Silvermere GC, Surrey
Team applications to Mike Moffat at:
Michaelmoffat@aol.com

2nd December 2010
Annual London Branch Luncheon
Royal Overseas League Club
Co-ordinator – Mike Allen
For further details contact
mike.allen9@btinternet.com

4th December 2011
Fray International Symposium
Venue: Hilton Cancun, Golf and Spa Resort, Cancun, Mexico
For further details contact Dr. Florian Kongoli,
Email: f.kongoli@flogen.com

28 June - 2 July 2010
Designing for Corrosion Control
(Route to NACE Certification)
The course reviews the principles of corrosion and corrosion control and applies the technology of corrosion prevention to the design process.
London: - Further details contact Paulette Sidky,
Tel: +44 (0)207 460 9408
Email: p.sidky@cmc.ltd.uk or website at www.nacegb.org

5 – 10 July 2010
NACE, CP-3
(route to NACE certification)
An intensive 6-day course that prepares students for the NACE Cathodic Protection Technologist Certification Examination.
Further details contact Paulette Sidky,
Tel: +44 (0)207 460 9408
Email: p.sidky@cmc.ltd.uk or website at www.nacegb.org

9th-12th November
Corrosion Control in the Oil and Gas Industry
Amsterdam: - Further details contact Colin Britton,
Tel: +44 (0)1480-860943 Email: cbrit79727@aol.com or website at www.cfpa.com

SHORT COURSES

29-30 November 2010
New Energy Institute workshop on Corrosion Management
The workshop will describe the model process of Corrosion Management for the upstream oil and gas sector and is based on the EI publication ‘Guidance for corrosion management in oil and gas production and processing’.
Contact: Will Sadler
Email: wsadler@energyinst.org
Tel: 020 7467 7135

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