Harry ‘Up the Mainsail’ Hatley
29th May 1928 - 13th December 2009
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Approved Courses

- **Painting Inspector** Levels 1, 2 & 3
- **Pipeline Coatings Inspector** Level 2
- **Cathodic protection of re-inforced concrete structures** Levels 1 & 2
- **Insulation Inspector** Level 2
- **Fire Proofing Inspector** Level 2
- **Cathodic protection of buried and submerged structures** Levels 1 & 2

The inaugural training course for ICorr Hot Dip Galvanising Inspector certification will be held on 23 & 24 March, 2010.

The course is programmed so as to allow candidates seeking ICorr certification to sit the examination on the afternoon of the second day, if they so wish.

The assistance of the Galvanizers Association in the production of this course is acknowledged.

For further information or administrative details, costs and bookings for courses and examinations or detailed information packages **free of charge**, please contact:

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Tel: +44 (0)1709 560459  Fax: +44 (0)1709 557705
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Welcome back to a New Year and, rather scarly, a new decade. 'Twas a whole ten years ago since we were worrying about the Millennium Bug. The only hiccup I personally encountered was one ageing laptop used to remotely monitor an early nineties CP system that lost the plot and had to be put down. Apologies for the inadvertent data handling pun (lost the plot, geddit?), although anyone who spotted it would be poor company at a party and you certainly wouldn’t want to get stuck in a lift with them.

My photograph this time features me and some concrete with a combined age of one thousand nine hundred and thirty six years. It is, of course, the Pantheon in Rome and the large grey object is part of the Roman concrete roof, still the largest unreinforced concrete dome in the world. The smaller grey object is me and I’ve gone a little more arty this time, although I’ve resisted the standard ‘halo’ shot with the oculus circling my head.

Talk of ancient concrete takes me back to Albania and my recent visit I referred to last time. If you recall, we were there to help establish a maintenance regime for their bridges and part of this involved a series of training courses to familiarise them with the concept of asset management and the basics of structural degradation and repair. Somewhere near the start of a talk on reinforced concrete there was a throwaway line regarding the oldest known concrete dating from 5,600 BC in Lepenski Vir on the banks of the Danube in Eastern Serbia, less than a day’s drive away from where I was speaking. This would normally induce little more than a momentary gap of disbelief (I may be building my part up a little) before hitting them with a continuous timeline of development that takes you through the Egyptians and Romans to the introduction of Portland cement in the 1840’s. Pretty exciting stuff, I’m sure you’ll agree.

Unfortunately, rather than the mild response I might have reasonably expected (after the slight pause for translation), one particular delegate decide to take umbrage, or the Albanian equivalent, and leapt to his feet protesting violently about such an outrageous claim. Having established through the translator that he hadn’t had a funny turn or been stung by a wasp, it transpired he was outraged at such a ridiculous claim and demanded immediate independent justification. You may be surprised and disappointed to learn I had forgotten to pack my Albanian translation of ‘A History of Concrete’ and so had to attempt to placate him with personal assurances on the veracity of my affirmations, which probably didn’t help the translator much.

Initially, as you might suspect, I was concerned he had been put out by the suggestion that a neighbouring country had initiated such an important technology. It would appear not. Being a proud and experienced civil engineer he seemed most bothered that the honour of such a development was not being heaped upon John Smeaton, the 18th century father of civil engineering and undoubted contributor to modern concrete technology. I suspect the fact that the Albanian for concrete is ‘beton’, a relatively modern term used by the French, did not help. Thankfully he eventually agreed to differ and sat down to sullenly scan the remainder of my presentation for further glaring errors.

Just as well I didn’t mention the Pantheon roof!

The President Writes

MIDLAND BRANCH IN FULL SWING

We are delighted to announce that after an informative and enthusiastic Inaugural meeting on the 21st Jan 2010 the Midland Brach is now back in full swing. The Branch Committee was successfully elected with a good mixture of experience and youth. The first branch meeting has been set for 9th March 2010. In addition, Ideas for future events over the next 12 months were put to the floor and discussed by the Branch Committee, they are all being given due consideration, selected ideas will be taken to Lift Off after agreement and following setting up activities. Many Thanks to Paul Lambert for providing an interesting opening speech and to Impalloy for sponsoring the event.

For further details on the Midlands Branch Activities visit the ICorr website on www.ICorr.org and see the Midland Branch page under Branches and Divisions.
HARRY HATLEY OBITUARY

INTRODUCTION

I personally was very saddened to hear over the Christmas/New Year holiday period that Harry Hatley had passed away peacefully in December, at the age of 81 and his funeral was held at Emsworth Crematorium on Monday 4th January, the first working day of the New Year.

Harry’s funeral was packed and very moving tributes were made by his two sons, Jim and Rob. I was privileged to attend as the representative of the Institute of Corrosion, in view of Harry’s involvement with the corrosion world for most of his working life.

Harry was the forerunner in forcing interest in the need to preserve petrol stations – His statement on retirement was ‘I have spent a successful venture as the first pay cheque bounced. However some luck was on his side as he was quickly recruited by Caproco where he worked alongside Marshall Parker to apply CP on the new 30” gas pipeline routed from the north of British Columbia across the 49th parallel into the USA – some 900 miles in length. This was the grounding of adventure and education for both men with tense moments surveying from helicopters; making friends with the Indian tribes and finding that even such an eminent mathematician as Marshall Parker can be fooled by the complexities of CP design sometimes. The experiences were shared – with the bottle of whisky – and Harry was always proud of his autographed copy of Marshall Parker’s book – the bible for the CP industry at that time.

Harry left Caproco at the end of the project in May 1959 Harry was invited to join the Marine department of Costain John Brown Ltd (1965) was born. He always stated with pride what he said was his small input into the 1962 pipelines Act covering the maintenance of petroleum Pipelines (Coating and CP). Within Government restrictions they could still only supply sufficient Cathodic Protection to cover approximately 50 mile of pipelines per year but it did span over 10 years.

With only maintenance work remaining and the work intensity diminished Harry decided it was time to set up his own concern and the well known CP company Pipeline Maintenance Ltd (1965) was born.

Harry was the forerunner in forcing interest in the need to preserve petrol stations – His statement on retirement was ‘I have spent 40 years trying to persuade structure owners to protect their property with corrosion accounting for 7% of GDP in the UK and you would think by now all petrol stations would have been covered.’

By Robin Bailey.
AGM 2009
Dr Laura Galvin (nee Buckley), Honorary Secretary

The 2009 AGM was accompanied by ‘Xmas Lectures’ where over 30 people attended in all – a record for recent years AGM’s.

The lectures were entertaining and light-hearted introspectives on areas of corrosion dear to us all and given the response from the attendees it is planned that this style of event be repeated at next years AGM. In my bid to include as many Institute members as possible in ICorr business the AGM will move around the country: London, 2008; Manchester, 2009. It was proposed that the 2010 event be hosted by the newly formed Midlands branch: Details will be posted on the website nearer the time. I hope to see you there! Maybe Aberdeen, Ireland or Yorkshire for 2011?

Manchester 2010

Dr Nicholas Stevens gave a tongue in cheek presentation titled ‘Alcoholic Materials Science’ highlighting the role of the production of alcoholic beverages in the history of the development of the sciences.

Prehistoric cultures took advantage of fermentation as a way of creating drinks that served as a safe store of calories and energy that could be preserved without spoiling far longer than water, but possibly also for their use in different cultural or religious practices. The early written history of the use of alcohol in civilized societies began with the Greek idea of the Symposium as a drinking party at which science and philosophy might also be discussed, obviously a distant ancestor of the modern conference.

In the development of ways of transporting wines, the history of sparkling wines is particularly influenced by technological progress. Before the development of strong glass from coal fired glassworks, first pioneered in Newcastle-on-Tyne by Sir Robert Mansell, any wine which was bottled before fermentation had completed would simply cause the bottle to explode and be wasted. The bottles from the English glassworks were the first ones strong enough to allow any wine to re-ferment in the bottle and become fizzy, and it has even been rediscovered recently that English cooperers importing still wine from Champagne in barrels would add sugar as they bottled the wine, allowing it to re-ferment in the bottles as early as the 1660s, a technique not widely adopted in the Champagne region until the early 1800s.

The final part of the talk touched on the contribution made to the development of thermodynamics by James Prescott Joule, a prominent Manchester brewer whose expertise in precise temperature measurements was informed by the technical expertise necessary for his trade, and whose name has now become immortal as the unit of energy.

President Paul Lambert’s presentation entitled ‘Rust – for fun and profit’ was a brief history of the corrosion profession and Paul’s personal introduction to it. Having chosen (probably wisely) between media and metallurgy, he found himself in the first year of a new materials degree course at Aston University. While the fledgling course was a mish-mash of metallurgy, physics, mechanics, chemistry and, less understandably, technical drawing (a skill he is still proud to lack to this day) it did introduce him to the world of construction materials and, more specifically, the corrosion of reinforced concrete.

While he has periodically escaped concrete matters for those of a more mainstream nature, it is still the area where he works most and with concerns over bridges in the USA, his own encounters with Albania infrastructure and the local authorities in the UK kindly spreading hundreds of thousand of tonnes of salt every time there is bit of a ‘cold snap’, it looks like remaining a good source of both fun and profit for Paul and other members of the Institute for many years to come.

BARRY WINDSOR HONOURED AT AGM

Barry Windsor joined the Institute in 1973 and has taken an active interest since then to the present day. He is a dedicated member of the Northwest branch committee having served as Chairman, Secretary and Treasurer. He has rarely missed a meeting and has regularly presented talks to evening meetings and symposia. Nationally he has served as a Council Member, is a member of the PAC and has presented papers at annual conferences and internationally in the USA, Far East and Australia. His knowledge of corrosion, corrosion protection and paint are encyclopaedic and his willingness to share his knowledge and experience legendary.

To recognise Barry’s unique contribution to the Institute in general and the North West Branch in particular, he was presented with an Honorary Lifetime Fellowship at the Institute’s AGM held at Manchester University on the 9th December 2009.

Barry Windsor being awarded with an Honorary Lifetime Fellowship by Paul Lambert.
The North West Branch of the Institute of Corrosion is saddened to report the death of a valued member on the 4th September 2009.

Richard, affectionately known as ‘RGM’, died peacefully, of a brain haemorrhage at the University of Wales Hospital, Cardiff. For the past 18 months he had been working on behalf of Det Norske Veritas (DNV) on the new gas terminal project at South Hook, Milford Haven.

RGM was born in Newport, Monmouthshire, South Wales, on the 6th of December 1947 and was the youngest of four siblings. He went to school in Newport and later at Ormskirk Grammar School when the family moved to Lancashire, where he excelled both academically and at sport, becoming both Head Boy and Captain of Sports. He was an outstanding athlete, competing at County level, and one of the school records he set stands to this day. He was also passionate about Rugby.

He obtained a BSc in Geology from the University of Sheffield in 1970 and a Masters in Geochemistry from Leeds University the following year. Subsequently, Richard took a post on a game reserve in Uganda where he was conducting geological surveys and working towards his PhD when political instability in that country put his life in danger and he was forced to leave suddenly with only his passport and the clothes he was wearing.

He married in 1973 and joined the Regular Army (the Royal Regiment of Wales) a year later. He attended Sandhurst and attained the rank of Captain. He had various positions including that of Equerry to the Prince of Wales, Platoon Commander and was an undercover operative in Ulster. By 1979 he had three sons, the eldest being Mark, followed by twin boys Paul and John. He resigned his commission in the Army, moved to Melton Mowbray and embarked on his career as a Corrosion Specialist in the Oil Industry. He was divorced in 1984.

For the past twenty-two years he had a loyal and loving partner, Alicia Borowska, and arrangements for the funeral were made by Alicia. The service took place at Southern Cemetery, Manchester. As befits a patriotic Welshman, his coffin was draped with the Welsh Dragon flag and much of the proceedings had a strong Welsh influence. The service was conducted by his brother, the Reverend A. Miller, and music included Tallis’ Spem in Alium, the Welsh National Anthem, Men of Harlech, and Mifanwy. All three sons spoke of their father during the service. Alicia gave a short eulogy, and Paul Arkeley of DNV gave an informal description of his work with that organisation and highlighted the respect in which he was held by colleagues at Milford Haven and within DNV as a whole. A reception was held after the service at the Didsbury Park Hotel, which provided a fitting opportunity for family, friends and work colleagues to meet, chat in the sunshine and reminisce about times spent with him.

When I first met Richard he was living in Didsbury, Manchester, though he had spent much of his career working in the oil industry in Norway, Saudi Arabia, in the USA and in North Africa. He was a convivial character who was exceptionally well read and he enjoyed a wide circle of friends from the army, UMIST, DNV, Trefriw and elsewhere. He was a Guest Lecturer and Consultant at the Corrosion and Protection Centre, University of Manchester, and he would attend North West Branch meetings when his busy work schedule allowed. He originated and sponsored the cash prize given to the winner of the Institute of Corrosion “Young Speaker of the Year” competition for students of corrosion science and technology.

Richard Miller was an admirable and positive person. The world of corrosion science and related industries will miss him, and condolences are extended to Alicia and to his family. His spiritual journey will hopefully encounter his favourite road sign “Croeso y Cymru” – Welcome to Wales.

B. Windsor
NW Branch
(I owe a debt of gratitude to Richard’s partner, Alicia, and Bill Cox for their assistance in the compilation of this obituary.)
The London Branch started their 2010 programme of events with a New Year presentation by David H Deacon, as the guest lecturer. There was a very good turn out, despite the adverse weather conditions, with over 30 members and their guests attending. David split his presentations into three sections. Firstly he paid a tribute to, The Late Harry Hatley, who had sadly passed away in December. Secondly, he briefly summarised the History of the Institute with the 50th anniversary celebrations and finally, he talked about, Coatings Specifications – Successes and Failures a talk, which had previously, been given last year to the Royal Institute of Chartered Surveyors, at their annual Master Class Seminar.

David, summarised the input of Harry Hatley to the Institute over 50 years, being a Founder Member, a National Chairman of BACE and the first Chairman of the London Branch Committee. In particular, Harry had been a Member of the membership and PAC Committees and was the author of the first code of professional conduct and this significant input had been recognised by the 50th Anniversary Committee, who awarded him VIP status, for his contribution to both industry and the Institute. A one minute silence, in memory of Harry then preceded the rest of his talk.

Secondly David briefly reviewed the six parts of the History of Institute, which have been covered in previous issues of this magazine, but he has pointed out that there were two further sections to be continued and these would be in the next issues.

He listed some of the achievements of individual Presidents, who had been involved in leading the Institute over the 50 years and he picked out in his own view, the three major achievements overt the past 50 years, with Redvers Parkins [President-1982-83] as the third greatest achievement with his involvement with NACE, the CCEJV and the CEA, which expanded the Institute and finally becoming President of NACE.

His second placed achievement was Dr T P Hoar [President-1969-70] for his involvement with the DTI committee on the cost of corrosion in the UK and the effect that this had on the development and changes of the Institute over many years.

David, however, recognised that the greatest achievement was John O’Shea [President-2000–2002] for the acquisition of Corrosion House, something, which had been attempted by the Institute on many occasions in the past, but never previously achieved and this was coupled with major conferences and exhibitions in, Edinburgh–Scotland and Cardiff–Wales, as well as Dublin–Ireland. He also was responsible for introducing recognition by the Science Council, for our members Chartered Science status.

David’s third item, was the subject of, Coatings Specifications – Successes and Failures, which he illustrated with two failures and two successes. He picked these from many examples he could have used, following his career as a coatings consultant, in an industry in which he started in 1957.

The first failure he selected was a coating system based on aluminium thermal metal spray, with a sealer and four coats of paint, which had been designed for a 25 year life to first maintenance, but was showing signs of breakdown after 5 years. He pointed out that this was an example of one of many failures of this type of system, which had been specified by engineers, without understanding the structures to which it could be applied. He said it had been selected on reputation, but on the basis of ‘horses for courses’ he stated that many engineers without knowledge picked the wrong horse for the wrong course.

His second failure related to an offshore wind turbine farm, where a high build coating system had failed within the first year of the coating life, which had been designed, again for 25 years to first major maintenance, with an expectation that it would last at least 15 years. David was able to point out the causes for the failure, and how these could have been covered by a detailed specification and an understanding of the coating system.

His two successes were both London based structures. The first one being the Thames Barrier, with which he had been involved, since 1972 and interestingly at the first discussion meeting he attended, Harry Hatley was present to discuss the use of Cathodic protection, in conjunction with the coating system. David pointed out that over 30 different systems had been tested over a 7 year period and the final detailed coating specification called for a one coat paint system, for a 25 year life. He pointed out that this system had been examined over the last 4 years, now that it had reached its 25 years and the findings of the recent survey extended the life to first major maintenance to 40 years, a tremendous success for all those involved in this coating contract for such an important structure.

His final success was the refurbishment of the Cutty Sark. He pointed out that although this project was still in the early stages, the testing and evaluation, which was based on the previous testing and evaluation of steel for the Thames Barrier had enabled a projected life of 40 years and possibly the Client’s request for a 50 year life would be achieved.

In conclusion, David linked his three themes together, by pointing out that Harry Hatley had, had an immense interest in all of the projects and in looking at the final section of the history ‘the new millennium and where are we going?’ [2000 – 2009] and beyond, David pointed out that examples he had picked, the flood defence systems, the conservation of historic structures, and the protection of the new phase of wind turbine energy, were chosen as examples of work that members of the Institute would be increasingly involved with, over the next 50 years.

A vote of thanks was given by Geoff White, Secretary of the ICorr London Branch. The next meeting of London Branch will be on the 11th February 2010 and will be a presentation by David Eyre, of Penspen on AC mitigation.

**CHRISTMAS LUNCHEON**

The London Branch Annual Christmas Luncheon event in December was held at the new location of the Royal Overseas League where 142 members and guests enjoyed the new venue which was received with popular acclaim. The guest speaker was Rt. Hon. Ann Widdecombe MP who entertained with interesting and amusing political anecdotes; she is pictured with ICorr President Prof. Paul Lambert, and London Branch Chairman, Brian Goldie. Thanks go to Mike Allen for organising the event again for us.

Thanks also go to Derek Hoskins, Jim Glynn and Andy Taylor for organising the raffle.
## The Galloway Award 2010

The Corrosion Science Division of ICorr would like to announce the opening of the Galloway Award for 2010 for submissions from students working in any area of corrosion science and corrosion engineering. This Award, established in 1998, celebrates the work of Jack Galloway, a founder member of the British Association of Corrosion Engineers (BACE) from which the Institute of Corrosion derived, and whose granddaughter Nicola was guest of honour at the recent 50th Anniversary celebrations at the Thames Barrier.

Students are invited to submit a short technical article discussing their work for consideration for the award. This should be 3000-5000 words in length and may include figures as appropriate. The winning article will be published in Corrosion Management, and the prize consists of a certificate and a cheque for £250. The Institute does not keep copyright of the material, so this need not preclude later publications if students wish to offer a snapshot of an ongoing project, or work towards a thesis.

The winner is also invited to present their work at the 51st Corrosion Science Symposium in Southampton this September. Submissions should be sent to Nicholas.Stevens@manchester.ac.uk or to Dr Nicholas Stevens, Corrosion and Protection Centre, School of Materials, A11, Jackson’s Mill, Sackville Street, University of Manchester, Manchester, M13 9PL, to arrive by the end of July 2010.

## Institute of Corrosion’s Corrosion Engineering Division Symposium on ‘Corrosion Monitoring’

Birchwood Park, Warrington, Thursday 29th April 2010

This one day meeting will be the third in a series of recent working days of the Institute of Corrosion’s Corrosion Engineering Division (previous meetings were held at Birmingham and Buxton). The meeting will be held at The Centre, Birchwood Park, near Warrington. The meeting will start with two plenary lectures on aspects of corrosion monitoring, as shown in the programme below. This will be followed by meetings of the CED working groups (see Leaflet enclosed in this issue of Corrosion Management) combined with a short tour of Serco’s corrosion and inspection laboratories in nearby Walton House, in small groups. Agendas for the working group meetings will be published separately in advance on the CED web site www.icorr.org/branches/corrosion_engineering_division.phtml. These meetings will include separate topical presentations arranged by the chairs of the individual working groups. There will also be time for topical discussions and formulation of future activities of the groups. The meeting will close with a final plenary lecture on another aspect of corrosion monitoring. This working day will be a good opportunity to network with other corrosion professionals from different industry sectors. For information on becoming involved with CED working parties please see the CED web site or contact the Chair of CED, Nick Smart (mailto:nick.smart@serco.com). For registration to attend the meeting, please complete and return the registration form on the enclosed leaflet.

### Provisional Programme

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<td>Registration and coffee</td>
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<td>10.00-10.15</td>
<td>Welcome and Introduction</td>
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<tr>
<td>10.15-10.45</td>
<td>Corrosion Monitoring - Fact or Fiction? (Nick Smart, Serco)</td>
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<td>10.45-11.15</td>
<td>Corrosion Monitoring in the Oil and Gas Industry (Colin Britton, consultant)</td>
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<td>11.15-11.30</td>
<td>Coffee (Gareth Hinds, National Physical Laboratory)</td>
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<td>11.30-12.30</td>
<td>Working Group Meetings / Tour of Serco laboratories</td>
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<td>12.30-13.30</td>
<td>Lunch</td>
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<td>Working Group meetings / Tour of Serco laboratories</td>
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<td>15.00-15.15</td>
<td>Tea</td>
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<td>15.15-15.45</td>
<td>Monitoring of Anti-Corrosive Coatings using Electrochemical Techniques (Douglas Mills, University of Northampton)</td>
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<td>15.45-16.00</td>
<td>Closing discussion (Paul Lambert, Mott MacDonald, ICorr president)</td>
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INNOVATIVE COMBINED PRETREATMENT-PRIMER WILL CUT WASTE AND COSTS

Authors: Dr. G. Simmons & Dr. C. Lowe (Becker Industrial Coatings, Liverpool), Dr. J. Watts & Dr. P. Marino (University of Surrey).

Eliminating a process that consumes a lot of chemicals and produces a lot of waste presents the coil coating industry with its next big challenge – and opportunity!

On reaching the end of the galvanising line, it is well known that galvanised steel must be oiled or otherwise protected prior to shipping or putting into storage, to prevent formation of white rust and other inconvenient deposits. These oils must be removed prior to coating, using a strong alkaline solution that prepares the surface for pretreatment. Pretreatments have until very recently been based around chromate chemistry, which has proved highly effective in promoting adhesion and preventing corrosion. Nevertheless, there is now increasing pressure to stop the use of chromates, due to their toxicity. To eliminate one step in the process, thereby improving efficiency, coating and pretreatment suppliers have been asked to develop a coating that can be applied at the end of galvanising lines. This would offer the additional benefits of reducing the need to dump or recycle spent pretreatment chemicals and maybe open up the possibility of multi-coat systems, assuming the pretreatment section on a colour-coating line could be converted.

Traditional approach

Cleaning solutions are typically based on potassium or sodium hydroxide, although process requirements mean that other technologies, such as surfactant chemistry, are also used. The potassium hydroxide is used to break down and remove the oil. Once clean, pretreatment converts the zinc at the surface to zinc oxide and zinc hydroxide, and deposits chemicals such as chromates or titanates onto the surface, forming a barrier layer that also makes the metal less susceptible to corrosion, that is it forms a passivation layer. This pretreatment leaves active groups on the surface that react chemically with the primer applied on top, as the strip is heated to 230°C in an oven. The result is a strongly bound organic layer, creating a painted metal surface that resists corrosion and delamination.

The galvanising process

It is worth considering the galvanising process at this point, as well as the nature of the products generated by a galvanising line. Basically, cold rolled steel is cleaned and then annealed to remove any stresses that have built up during its manufacture. The steel emerges from the annealing oven at around 460°C, straight into a galvanising bath of molten metal operating at between 450° and 460°C. Normally the outlet from the oven dips into the zinc bath, so as to avoid the atmosphere changing from hydrogen rich (inside the oven) to oxygen rich (outside). The galvanising bath consists mainly of zinc, but small amounts of aluminium are added to facilitate zinc adhesion to the steel through something called the inhibition layer, normally 50-100 nm thick. Excess...
aluminium migrates to the grain boundaries of the zinc and – more importantly – the zinc/air interface, once the coated surface leaves the bath. This occurs because the crystal structures of zinc and aluminium are different – and incompatible. Consequently, aluminium dominates the surface of the galvanised layer which, at 450°C, will rapidly turn into aluminium oxide. This leaves a 2-3 nm (nanometre) thick layer of aluminium oxide on the surface, once the product has cooled. This will normally be disrupted by the skin pass or tempering operation\(^2\) but, as has been shown, any aluminium oxide forced into the bulk can migrate back to the surface over time\(^3\). In normal circumstances, the galvanised steel is then passivated by a chromate rinse, or oiled, and thus made ready for processing.

**Adhesion, alumina and alkaline cleaning**

The presence of alumina at the surface of hot-dip galvanising steel is not a problem for the traditionalist, because it is readily soluble in alkaline solutions. The cleaning required to remove the oil prior to pretreating and painting has the added bonus of removing the aluminium oxide as well. XPS analysis, a technique that looks at the top 5nm only (5 millionths of a metre), reveals the difference between cleaned and non-cleaned hot-dip galvanised steel\(^4\). If the alumina is not removed, adhesion can be badly affected. This is because the functional groups in the organic coating do not react readily with the alumina and, should they do so, the alumina is not strongly bound to the zinc, which is a consequence of the different crystal structures. The result is a weak boundary layer.

**Pretreatment primer**

Galvanising lines run at high speeds (180 m/min), with very little space at the end of them for application and curing equipment. Consequently, combined paint/pretreatment technology needs to be based on fast drying systems. If the need to fit abatement equipment to deal with solvent emissions can also be avoided, so much the better. The two paint technologies that fit this profile are UV-curable and waterborne systems.
UV-curable coatings are 100% ‘solid’, with effectively no volatile emissions. Waterborne paints can be formulated so that the VOC content is less than 2%. Both use radiation to effect drying. UV–curable coatings, as the name suggests, require UV light. Waterborne coatings generally employ IR-radiation to heat the coating and the substrate. The former cures via a radical mechanism, the latter normally just dries.

Both are dependent on aggressive chemicals, such as acids, to react with the metal surface, thereby achieving good adhesion. The trick is not to use too much, because residual acid can cause degradation of the polymer. A cleaned surface tends to confer greater consistency and longer lifetimes, for the reasons discussed above.

The other challenges for the two types of coating are very different. Because of the absence of solvents, UV-curable systems have much higher viscosities than traditional primers. This makes coating at normal temperatures more difficult, necessitating application at higher temperatures. Formability is also an issue, if too much reactive diluent is used. On the plus side, the energy required to effect a fully crosslinked system is minimal.

Completely solvent-free waterborne systems can be difficult to achieve. Flow additives and other performance enhancers always seem to be supplied in solvent. A further problem occurs during long runs because residual material drying on the equipment, leaves a deposit that is hard to remove. Possibly the greatest challenge posed by waterborne systems is ensuring complete water removal in the short time frames available for drying.

Fewer chemicals, less equipment, improved margins

Although some aspects remain to be resolved, such as the adhesion issue (especially if the aluminium oxide layer is left in place), incorporation of technologies not normally associated with coil coatings seems to offer the key to making the new primer a reality. The LTD Laboratory continues to work on this subject in conjunction with the University of Surrey so that practical formulation work is aligned with careful surface analysis. This type of tandem development ensures that no stone is left unturned in the search for a robust system. Becker Industrie currently promote a UV curable solution and a waterborne pretreatment primer should be available within the next 2 years.

References

3 J-M. Mataigne, V. Vache, and M. Repoux, Revue de Metallurgie, 1, 2009
5 C. Lowe ECCA Proc Nov 2009
Newly incorporated in 2009, Corrosion Service Company Europe Limited (CSEU) is an Asset Integrity Engineering firm supplying Cathodic Protection, Anodic Protection, Potential Adjusted Protection and Remote Monitoring systems to industry within the European Union, its surrounding areas and North Africa. Spencers international sales development is further supported by sales offices in Singapore and Moscow.

Key industrial sectors for the Spencer Coatings product ranges include oil, water and gas pipelines, both full internal and external protection and the on-site protection of field joints, offshore oil and gas structures, protection of production platforms, drilling rigs, supply and safety vessels, roads and bridges, providing fully HA approved coating systems for road bridges and road lining systems.

Corrosion Service Company Europe Limited Asset Integrity Engineering, 59–60 Thames Street, Windsor, Berkshire SL4 6BA. Tel: +44 (0) 1753 272119 Fax: +44 (0) 1753 272120 Email: sales@corrosionservice.co.uk www.corrosionservice.co.uk
IRIS NV EXPANDS USE OF METAL SPRAYING

Metallisation customer, Iris NV, based in Belgium, has expanded its use of metal spraying and purchased additional Metallisation equipment to accommodate this expansion. Iris was founded in 1946 as an industrial painting company specialising in the treatment of gas pipes, electrical stations, high tension networks and power pylons.

The services offered by Iris became very popular, very quickly, throughout Belgium and it responded by expanding its services to include the protection of bridges and train stations. The company has continued to develop over the years and, in the late 1990s, built a brand new workshop measuring 100 metres by 20 metres, to enable the company to handle structures weighing up to 35 tonnes and measuring 35 square metres. Iris is now one of the leading companies in Belgium providing surface treatment, particularly anti-corrosion, to all types of structures.

Recently two of its most important clients, both in the petrochemical industry, requested metal spraying for a number of vessels and columns. Iris has been treating one of those clients’ pressure vessels, storage tanks and silos since 1964, so has an excellent understanding of the anti corrosion requirements. Metal spraying was the natural development for the protection of these vessels and tanks, as it’s proven to be a very robust coating solution for protecting against corrosion under insulation (CUI) of refinery / process plant vessels and steel fabrications. Both Shell and Exxon Mobil have embraced this process for the protection of steelwork against CUI applications.

As a result of the increased demands by many of its clients Iris decided, under the guidance of the workshop foreman, to teach more of its operators how to metal spray. The additional operators underwent an intense training course and completed the necessary qualifications to become proficient metal sprayers. This was critical to the client’s demands and specifications. It also ensured more members of the team now meet all of the industry standards and have an excellent understanding of all aspects of metal spraying.

Prior to spraying the distillation columns, for one of its petrochemical clients, the surface was prepared by grit blasting with steel grit to SA 2.5, with a surface roughness between 75µm and 110µm. This was then arc sprayed with aluminium Grade 1350 to a thickness of 250 µm. A seal coat was then applied to the columns with Sigmatherm paint to a thickness of 25µm.

To meet this high demand Iris is now experiencing from its clients’, the company has purchased an additional system, to add to the five Metallisation systems it already uses. The new system, the Metallisation Arc140/ S350-CL, will be located in the workshop, where two existing systems are in constant use. The other four machines are frequently used on the job. In the field Iris also uses the wire flame spray equipment. By investing in this extra, state of the art, metal spray equipment the company can now specialise even more in this technique. By specialising in metal spraying Iris is able to treat all kinds of materials under different, more complicated circumstances. Iris believes in and trusts these long standing techniques, such as aluminium metal spray (TSA), and is happy that this will ensure its leading position in the industrial painting industry.

For more information on metal spraying solutions, please contact Stuart Milton on 01384 252 464 or visit www.metallisation.com.
**DENSO PROTAL STANDS UP TO CANADIAN WINTERS**

After beginning one of North America’s largest hydro-electric tunnelling projects at Niagara Falls, the Ontario Power Generation company needed to supply vertical access to a 47.2 ft diameter tunnel being bored 459 feet below the surface. When completed the tunnel will measure over 33,000 feet in length.

The project called for five 36 inch diameter fresh air shafts to be bored vertically from the surface into the tunnel. These shafts will also provide equipment access and pump access for emergency water evacuation.

Denso North America Inc – Canada, a subsidiary of Winn & Coales International Ltd, was chosen to supply Protal 7250 and Protal 7125 epoxy based liquid coatings to all the exterior surfaces of the vertical steel pipes, each shaft covering a distances of nearly 500 ft vertically, linking to the horizontal tunnel beneath. Each of the five shafts was spaced approximately 13 feet apart along a specific section of the tunnel.

Each pipe section was coated in plant with Protal 7250 and shipped to site where it was hoisted by crane and lowered into the shaft. Using a collar arrangement to prevent the pipe length from slipping down the shaft, each hoisted pipe section was welded in place and lowered into the ground. The girth weld area was brush coated with Protal 7125 and the entire process was repeated until all the sections were finished. The vertical shaft work was completed in the winner months at sub-zero temperatures, hence the use of Protal 7125 which is specially formulated to cure at temperatures down to -20°C.

![Girth weld area being coated with Protal 7125 in sub-zero temperatures.](image)

**FLEXITALLIC TO THE RESCUE WITH FRG**

Set to revolutionise offshore asset maintenance, Flexitallic has launched the first-ever solution to sealing damaged flanges without the need for replacement or machining – the Flange Rescue Gasket (FRG).

The FRG is a unique invention developed in response to customer demand for a sealing solution to reduce the lengthy and costly process of flange maintenance in corrosive offshore environments. Flexitallic went further by creating the FRG which actually negates the requirement for flange replacement or machining, potentially reducing every flange inspection by 24 hours.

Utilising Flexitallic’s revolutionary sealing technology, highly compressible Sigma® ensures the FRG conforms to damaged flange surfaces to seal and prevent further deterioration. Restructured Sigma® PTFE bonded to the high integrity serrated metal ring provides a leak-free seal and blow out resistance. The bright, easily identifiable FRG has a PTFE coated body which is corrosion resistant and features integral bolt holes for ease of installation and ensures correct location. Superior mechanical integrity allows the use of the full range of torque reducing the risk of operator error to meet stringent HSE standards.

Previously, sealing issues with corroded flanges have discouraged frequent inspection. Now, flanges can easily be inspected and sealed effectively enabling fast, accurate assessment of internal corrosion.

The FRG is the ultimate corrosion management tool which is proactive in helping inspection and reactive in enabling repair. By reducing leaks and slowing corrosion, the possibility of shut-downs with associated HSE visits are dramatically reduced, as is the huge loss of revenue associated with a stop in production.

From corrosion management to health and safety, through environmental impact to incident avoidance, the FRG is poised to dramatically change flange inspection and maintenance forever.
**NET GAIN FOR CORROCOAT’S ZIPCOAT**

Anti-corrosion specialist manufacturer Corrocoat is celebrating passing the test requirements set out by Network Rail for bridge coating systems and particularly structural steel fabrications.

Two Corrocoat systems passed the tests – a multi-coat epoxy system and Zipcoat, a one-coat polyester system geared towards new coating developments. Applied in one coat, up to 750 microns, it has clear advantages over multi-coat epoxy systems. Ideally suited for environments where speed of application and a speedy return to service are of paramount importance, it provides a cost-effective and durable solution.

Zipcoat forms part of Corrocoat’s Polyglass range of high performance protective coatings, offering environmentally sound maintenance solutions for a wide range of applications.

In addition to bridges, these include: protection of any structural steelwork in aggressive atmospheric conditions, marine superstructures, decks, heli-decks and immersion conditions such as ships’ hulls, ballast tanks and piling.

Zipcoat is a multi-monomer isophthalic polyester, loaded with micro glassflake. It is normally applied as a single coat system, replacing the traditional primer, intermediate and top coat system, although it can be applied in multiple coats where required.

The product is designed for spray application, using standard airless spray equipment or plural component equipment and also has excellent hand application characteristics. And, in addition to speedy application, Zipcoat’s benefits include excellent resistance to corrosion and abrasion attack and outstanding life cycle costs.

Applicable at temperatures as high as 45 Deg C, the product will cure at sub zero temperatures and offers excellent edge coverage, often eliminating the need for stripe coating.

Low VOC emissions guarantee reduced environmental impact in line with developing legislation.

Further information from Corrocoat on: 0113 2760 760 info@corrocoat.com

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**NEW DIRECTOR**

Rob Cole has joined the board of Leeds-based Corrocoat as sales and business development director responsible for global sales issues.

He joined the company, a world leader in anti-corrosion technology, as business development manager in 2006, having previously worked in sales in chemicals, paper and food industries.

Corrocoat is currently expanding its global network with licensees newly appointed in China, Malta, Egypt and Oman.
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Email: uksales@alfreon@ppg.com www.ameron-bv.com

SPENCER COATINGS LTD

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

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

STOPAQ UK LTD

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

SUPPLIERS GENERAL

DOORBOS EQUIPMENT

Tel: 023 8064 3388 Fax: 023 8064 3399
Email: sales@doornboserquipco.uk
Website: www.doornboserquipco.uk

Reader Enquiry: CM015
SUPPLIERS GENERAL

FERNOX
MAKE WATER WORK
Cookson Electronics, Forsyth Rd, Woking, Surrey GU21 5RZ
Tel: 01483 793200  Fax: 01483 793201  www.fernox.com

GMA GARNET (EUROPE) GMBH
PO Box 9, Middleswich, Cheshire, CW10 9FD
Tel: 01606 836233  Fax: 01606 836610
www.gmagarnet.co.uk

HODGE CLEMCO LTD
Abrasives Works, Gibson Lane, Melton, North Ferriby, East Yorkshire, HU14 3HN
Tel: 01482 633305  Fax: 01482 634835
www.hodgeclemco.co.uk

IICORR
INTEGRITY INSPECTION CORROSION
1 Minto Place, Altens Industrial Estate, Aberdeen, AB12 3SN
Tel: 01224 898282  Fax: 01224 898202
Email: info@iicorr.com  www.iicorr.com

JETCHEM SYSTEMS LIMITED
Cuba Industrial Estate, Stubbs, Ramsbottom, Lancashire BL0 0NE  Tel: 01706 828 888  Fax: 01706 828 000
Email: sales@jetchem.com  Website: www.jetchem.com

METACOR
External Corrosion Management Ltd, Suites 5 & 6, 221-229 Union Street, Aberdeen AB10 6BQ
Tel: 00 44 1224 621915 (ext119)  Fax: 00 44 1224 621215
www.metacor.co.uk

PAROC GROUP
Technical Insulation
Manufacturers of High Quality Mineral Wool Products
PO Box 294, F1-01301 Vantaa, Finland
UK Sales office Tel: 01942 814127  Fax: 0870 7628257

RA MATERIALS & FOUNDRIES
Park Works, Newton Heath, Manchester M40 2BA
Tel: 0161 9544213  Fax: 0161 2054739

RGL SERVICES
TEL: 02380812921  FAX: 02380814016
e: enquiries@rglservices.co.uk
www.rglservices.co.uk

SCANGRIT
Eastfield Road, South Killingholme, Immingholme, Immingham, North LINCS DN40 3NF
Tel: 01469 574715  Fax: 01469 571644
Email: sales@scangrit.co.uk  Website: www.scangrit.co.uk

ELSEVIER SCIENCE LTD
The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GD
Tel: 01865 843000  Fax: 01865 843010

INSTITUTE OF METAL FINISHING
Exeter House, 48 Holloway Head, Birmingham B1 1NQ
Tel: 0121 6227387  Fax: 0121 6666316
Email: exeterhouse@instituitemetalfinishing.org
www.uk-finishing.org.uk

MPI GROUP
Peel House, Upper South View, Farnham, Surrey GU9 7JN
Tel: 01252 732220  Fax: 01252 732221
www.protectivecoatingseurope.com

ELNORMETRON INTERNATIONAL LTD
Inspection Equipment Suppliers
Measure - Monitor - Improve
+44 (0) 161 371 6000
sales@elometer.com
www.elometer.com

ARGYLL-RUANE LTD.
Meadowbank Rd, Rotherham, South Yorkshire S61 2NF  UK
Tel: +44 (0)1709 560459  Fax: +44 (0)1709 557705
E-mail: enquiries@ruanetpo.com
Website: www.ruanetpo.com
<table>
<thead>
<tr>
<th>Company Name</th>
<th>Address</th>
<th>Phone Number</th>
</tr>
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<tbody>
<tr>
<td>Alltask Limited</td>
<td>Alltask House, Commissioners Road, Strood, Kent, ME2 4EJ</td>
<td>01634 298000</td>
</tr>
<tr>
<td>APB Construction (UK)</td>
<td>Unit 3, Bramley Way, Hellaby Industrial Estate, Hellaby, Rotherham, S. Yorkshire, S66 8Q8</td>
<td>01709 541000</td>
</tr>
<tr>
<td>Austin Hayes Ltd</td>
<td>Carlton Works, Cemetery Road, Yeadon, Leeds, LS19 7BD, UK</td>
<td>0113 250 2255</td>
</tr>
<tr>
<td>Beever Limited</td>
<td>Little Coldharbour farm, Tong Lane, Lamburhurst, Kent, TN3 8AD, UK</td>
<td>01892 890045</td>
</tr>
<tr>
<td>Briton Fabricators Ltd</td>
<td>Watnall Road, Hucknall, Notts, NG15 6EP</td>
<td>0115 963 2901</td>
</tr>
<tr>
<td>Cameron Limited</td>
<td>Queen Street, Stourton, Leeds, LS10 1SB, UK</td>
<td>0113 276 4389</td>
</tr>
<tr>
<td>Cape Industrial Services</td>
<td>Cape House, 3 Red Hall Avenue, Paragon Business Village, Wakefield, WF1 2UL</td>
<td>01224 215800</td>
</tr>
<tr>
<td>Cleveland Bridge UK Ltd</td>
<td>Cleveland House, Yarm Road, Darlington, DL1 4DE</td>
<td>01325 502345</td>
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<tr>
<td>Collis Engineering Railway Contracts</td>
<td>Salcombe Road, Meadow Lane Industrial Estate, Alfreton, Derbyshire, DE55 7RG</td>
<td>01773 833255</td>
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<tr>
<td>Concrete TS Ltd</td>
<td>Unit B2 (2), Moss Industrial Estate, Leigh, Lancs, WN7 3PT, UK</td>
<td>01942 261909</td>
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<tr>
<td>Corrocoat</td>
<td>Forster Street, Leeds, LS10 1PW</td>
<td>01132760760</td>
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<tr>
<td>Denholm Industrial</td>
<td>21 Boden Street, Glasgow, G40 3PU</td>
<td>0141 445 3939</td>
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<tr>
<td>Dyer &amp; Butler Ltd (Rail)</td>
<td>Mead House, Station Road, Nursling, Southampton, SO16 0AH, UK</td>
<td>02380 667549</td>
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<tr>
<td>F A Clover &amp; Son Ltd</td>
<td>Bardolph Road, Richmond Surrey, TW9 2LH</td>
<td>0208 948 6321</td>
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<tr>
<td>Forth Estuary Transport Authority</td>
<td>Forth Road Bridge, Administration Office South Queensferry, EH30 9SF</td>
<td>0131 319 1699</td>
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<tr>
<td>Harrison Engineering Lancashire Ltd</td>
<td>Judge Wilmy Mill, Longworth Road Billington, Clitheroe, Lancashire, BB7 9TP</td>
<td>01254 823993</td>
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<tr>
<td>Hayes and Horne</td>
<td>Rear Barn, Wixenford Industrial, Plymouth, PL9 8AA</td>
<td>01752 401234</td>
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<tr>
<td>Hyepic Services Ltd</td>
<td>Unit 3 Meadowfield Industrial Estate, Cowdenbeath Road, Burntsiland, Fife, KY3 0LH</td>
<td>01592 874661</td>
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<tr>
<td>Industrial Coating Services</td>
<td>5 Danesbury Crescent, Kingsstanding, Birmingham, B44 0QP</td>
<td>0121 384 2266</td>
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<tr>
<td>Jack Tighe Coatings</td>
<td>Sandall Lane, Kirk Sandall, Doncaster, DN3 1QR</td>
<td>01302 880360</td>
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<td>Jack Tighe Ltd</td>
<td>Redbourne Mere, Kirton Lindsey, Gainsborough, Lincs, DN21 4NW, UK</td>
<td>01652 640003</td>
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<tr>
<td>Mabey Bridge Ltd</td>
<td>Station Road, Chepstow, Monmouthshire, NP16 SYL</td>
<td>01291 623801</td>
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<tr>
<td>Merseyside Coatings Ltd</td>
<td>Pickerings Road, Halebank Industrial Estate, Widnes, Cheshire, WA8 8XW</td>
<td>0151 423 6166</td>
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<tr>
<td>Nusteel Structures</td>
<td>Lymne Industrial Estate, Lymne, Hythe, Kent, CT21 4LR</td>
<td>01303 268112</td>
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<tr>
<td>Paintel Ltd</td>
<td>26 St George’s Road, Saltash, Cornwall, PL12 6EH</td>
<td>01752 842720</td>
</tr>
<tr>
<td>Palmers 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 Cardiff, CF3 2EWx</td>
<td>02920 777070</td>
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<tr>
<td>Pyeroy Limited</td>
<td>Kirkstone House, St Omers Road, Western Riverside Route, Gateshead, Wear, NE11 9EZ</td>
<td>01911 4932600</td>
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<tr>
<td>Roy Hankinson Limited</td>
<td>Alexander House, Monks Ferry, Birkenhead Wirral, CH41 5LH</td>
<td>0870 7892020</td>
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<tr>
<td>Company Name</td>
<td>Address</td>
<td>Telephone Number</td>
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<tr>
<td>Shutdown Maintenance Services Ltd</td>
<td>Kingsnorth Industrial, Hoo, Rochester, Kent, ME3 9ND</td>
<td>01634 256969</td>
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<tr>
<td>Site Coat Services Ltd</td>
<td>Unit 11 Old Wharf, Grantham</td>
<td>01476 577473</td>
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<tr>
<td>Supablast Nationwide</td>
<td>Jubilee Estate, Gorsey Lane, Coleshill, Birmingham, B46 1JU</td>
<td>01675 464446</td>
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<tr>
<td>T I Protective Coatings</td>
<td>Unit 6, Lodge Bank, Crown Lane, Horwich, Bolton, Lancs, BL6 SHY</td>
<td>01204 468080</td>
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<tr>
<td>Walker Construction</td>
<td>Park Farm Road, Folkestone, DA9 9RR</td>
<td>01322 387000</td>
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<tr>
<td>Wardle Painters Ltd</td>
<td>Unit 5, Wimborne Building, Atlantic Way, Barry Docks, Glamorgan, CF63 3RA, UK</td>
<td>01446 748620</td>
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<tr>
<td>Abrasion Ltd</td>
<td>Unit 1 B, Oj Industrial Park, Claybank Road, Portsmouth, PO3 5SX, UK</td>
<td>02392 661023</td>
</tr>
<tr>
<td>Alfred Bagnall &amp; Sons</td>
<td>6 Manor Lane, Shipley, West Yorkshire, BD18 3RD</td>
<td>01302 853259</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>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>01355 248223</td>
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<td>Coating Services Ltd</td>
<td>Partington Street, Mumps Bridge, Oldham, OL1 3RU, UK</td>
<td>0161 665 1998</td>
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<tr>
<td>Community Clean</td>
<td>11 Old Forge Road, Ferndown Industrial Estate, Ferndown, Wimborne, Dorset, BH21 7RJ, UK</td>
<td>0845 6850133</td>
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<tr>
<td>Fairhurst Ward Abbotts</td>
<td>225 London Road, Greenhithe, Kent, DA9 9RR</td>
<td>01322 387000</td>
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<td>Gemini Corrosion</td>
<td>Broomhill Road, Spurryhill Industrial, Stonehaven, Aberdeen, AB39 2NH</td>
<td>01569 765488</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>01924 272606</td>
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<tr>
<td>JPV (Painters) Ltd</td>
<td>Unit 8 Prospect Way, Hutton Industrial Estate, Brentwood, Essex, CM13 1xA, UK</td>
<td>01277 201515</td>
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<tr>
<td>Lanarkshire Welding Co.</td>
<td>82 John Street, Wishaw, Lanarkshire, ML2 7TQ</td>
<td>01698 264271</td>
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<tr>
<td>Maclean and Speirs</td>
<td>Unit D, East Fulton Farm, Darluith Road, Limwood, PA3 3TP</td>
<td>01505 324777</td>
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<tr>
<td>Northern Protective</td>
<td>16 High Reach, Fairfield Industrial Estate, Bill Quay, Gateshead, Tyne &amp; Wear, NE10 0JR</td>
<td>0191 438 5555</td>
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<tr>
<td>P C Richardson &amp; Co</td>
<td>Courville House, Ellerbeck Court, Stokeley Business Park, Stokeley, TS9 5PT, UK</td>
<td>01642 714791</td>
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<tr>
<td>Rowecord Engineering</td>
<td>Neptune Works, Usk Way, Newport, South Wales, NP20 2SS</td>
<td>01633 250511</td>
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<tr>
<td>South Staffs Protective Coatings</td>
<td>Bloomfield Road, tipton, West Midlands, DY4 9EE</td>
<td>0121 522 2373</td>
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<tr>
<td>Standish Metal</td>
<td>Potter Place, West Pimbo, Skelmersdale, Lancs, WNB 9PW, UK</td>
<td>01695 455977</td>
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<td>T&amp;T Coatings Ltd</td>
<td>Snowdon House, Snowdon Road, Middlesbrough, TS2 1DY, UK</td>
<td>01642 247972</td>
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<tr>
<td>William Hare Ltd</td>
<td>Brandleholme House, Brandleholme Road, Burys, Lancs, BL8 1J, UK</td>
<td>0161 609 0000</td>
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<tr>
<td>Barrier Ltd</td>
<td>Stephenson Street, Walsend, Tyne &amp; Wear, NE28 6UE, UK</td>
<td>0191 262 0510</td>
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<td>Coastground Ltd</td>
<td>Morton Petoe Road, Capton Hall Industrial, Great Yarmouth, Norfolk, NR31 0LT</td>
<td>01493 650455</td>
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<tr>
<td>ENC (Yorkshire) Ltd</td>
<td>Unit 38 Rotherham Road, Dinnington, Sheffield, S25 3RF</td>
<td>01909 567860</td>
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<tr>
<td>Forward Protective</td>
<td>Vernon Street, Shirebrook, Mansfield, Notts, NG20 8SS</td>
<td>01623 748323</td>
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<tr>
<td>G W Burton Ltd</td>
<td>New Court, Wooddalling, Norwich, Norfolk, NR11 6SA</td>
<td>01263 584203</td>
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</tbody>
</table>
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

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

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

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

Matatec Ship Repairers
MacGregor House, Seaton Delaval, Tyne & Wear, NE25 0PT
T: 0191 2379900

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

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

 Prize Spraying
Eastdale, Carlton Colville, Lowestoft, Suffolk, NR33 8WL
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

Southern Contracting
Unit 6, Trident Business Shore Road, NE28 6UE
T: 0191 262 0510

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

Watson Steel Structures
Lostock Lane, Lostock, Bolton, BL6 4BL
T: 01204 699999

W G Beaumont & Son
Unit L1, Chadwell Heath Industrial, Kemp Road, Dagenham, RM8 1SL
T: 0208 590 8523
15-19 February 2010
NACE BASIC CORROSION COURSE (Route to certification)
Venue: Aberdeen
For further details email: p.sidky@cmc.ltd.uk

23rd February 2010
Material & Chemical Selection & Ongoing Corrosion Management Issues for Bundled Pipeline Systems
For further details contact Dr. Yee Chin Tang,
Tel: 01224 335 005 Email: yee.chin.tang@DNV.com

11th March 2010
LONDON BRANCH MEETING & AGM
Speaker Prof. Paul Lambert, ICorr President
Venue: Naval Club, 38 Hill Street, London W1
17.30 for 18.15 start. AGM to commence at 18.00

8th April 2010
London Branch meeting (Joint with OCCA)
Speaker to be announced
Venue: Naval Club, 38 Hill Street, London W1
17.30 for 18.15 start

13th April 2010
Fabrication and Installation of a Multi-Platform Impressed Current Cathodic protection System, an Operator’s View
For further details contact Dr. Yee Chin Tang,
Tel: 01224 870 100 Email: yee.chin.tang@DNV.com

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

27th May 2010
UNDERGROUND CORROSION ONE DAY SEMINAR
HSL Facilities, Buxton

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

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

4th December 2011
Fray International Symposium
Venue: Hilton Cancun, Golf and Spa Resort, Cancun, Mexico
For further details contact Dr. Florian Kongoli,
Email: fkongoli@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)
This is an intensive 6-day course that prepares students for the NACE Cathodic Protection Technologist Certification Examination.
Course Venue: Holiday Inn Kensington Forum, Kensington, London. 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.cfp.com

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