

A journal of the Institute of Corrosion

# Corrosion Management

Media Pack  
**2019**



INSTITUTE OF CORROSION

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# Corrosion Management

www.icorr.org

The leading Journal and Website for corrosion control and prevention, Corrosion Management is published bi-monthly and is sent to subscribers throughout the world.

www.icorr.org complements Corrosion Management as the Institute's official website. Both the journal and the website are read by a large international audience of academics and professionals in the field of corrosion science, technology and engineering management.

## Key Facts

### Corrosion Management

- Circulation of 1500 subscribers.
- Published bimonthly – 6 issues a year.
- 75% of subscribers UK Based.
- Majority of readers employed at senior level as decision makers and specifiers in their field.
- The main focus of each issue is a themed technical article (see the features list on the back page).
- Editorial also includes: Institute News, Industry News, Innovative Products, Diary of Events, Recruitment and currently the Sustaining Members Directory.

www.icorr.org

- All the latest industry news is updated on a regular basis.
- Conferences and events can be booked online.
- Visitors can 'find an expert' using our full searchable business directory.
- Visitors can also access information about the Institute and its activities as well as applying for membership online.



### Technical Article

## Reinforced Concrete – The state of the nation

By Chris Atkins, Matt MacDonald, Alfrincham, UK

We've all seen concrete structures with steel rusting away, bits of concrete falling off, and generally looking a bit tired and emotional. Anyone with a corrosion background will be wondering how it happened, and why aren't we doing something about it? To understand this, there's a little bit of history that is needed.

In about 1824 when Humphry Davy was talking about cathodic protection, Joseph Aspin entered Ordinary Portland Cement, the Institution of Civil Engineers received its Royal Charter, and a couple of patents were issued for making things out of concrete with reinforcement. This didn't really catch on until Francois Hennebique developed his system for reinforced concrete around 1900. Reinforced concrete now had design processes, so its use increased. In 1906, The Institution of Civil Engineers organised a committee on reinforced concrete, their preliminary and interim report stated: "The durability of reinforced concrete

in seawater was an open question...". Even in the early days, we weren't sure how long it would last. Design codes followed covering how to manage stresses and strains, and generally how to make big structures out of it. Everything was going along quite nicely - the steel didn't rust much, the structures were built by craftsmen, and there was enough spare capacity in the materials for them to survive nicely. From a corrosion point of view, this was because concrete is alkaline and steel in alkaline environments is passive. However concrete can lose its alkalinity over time, by reacting with atmospheric carbon dioxide, but this takes a long time, so for the first 40 years or so, steel corrosion in concrete didn't really happen. There were a few cases, but these could be pinned on the people that built them not doing a proper job, it didn't look like a problem.

In 1942 in amidst the chaos, the city of Detroit became the first city in the world to salt its roads in winter. This caught on, not surprising really, since the numbers were staggering. A study carried out by Margarete University in Milwaukee, Wisconsin, found that road salt reduced crashes by 88 percent, injuries by 85 percent, and accident costs by 85 percent by the early 1970s. The UK currently uses 0.15 to 0.2 million tonnes. The use of road salts coincided with a major boom in the use of reinforced concrete. The UK highway network constructed around 15,000 concrete structures in the same period. Towards the end of this it was realised that parts could be built in factories. Factories meant better control so there should be fewer problems. In the same way it takes a while for corrosion to start due to carbonation, it took a while for the consequences of

#### Institute News

### London Branch

The branch will continue to hold its technical meetings at Imperial College, Silwood Park, Maidenhead. The evening starts with the presentation at 8.30. Followed by refreshments and networking between 8.30 and 9.30. For details of the next meeting, see the ICIM website.

### Midland Branch

The Branch will hold its AGM on 14th April at 6.30pm at the Warwick Hotel, Warwick. The AGM will be held in the Warwick Hotel, Warwick. The AGM will be held in the Warwick Hotel, Warwick.



Following hard and fast in the past, the industry will now be looking at a programme of more preventative than reactive corrosion control measures. This will be followed by a presentation on the industry and standards, followed by a panel discussion.

The day will be rounded off by the ICIM AGM from 6.30-8.00pm.

Details of the Council House for Birmingham, Coventry, Derby, Leicester, London, Manchester, Newcastle, Nottingham, Oxford, Plymouth, Southampton, Swansea, and Warwick can be found on the ICIM website.

### North West Branch

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### North East Branch

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### LONDON BRANCH EVENT

Thursday 19 October 2007, 17.30pm (8.00pm)

From the Foundations of Electricity to Modern Corrosion Failures

Organised by SCI's London Group and the Institute of Corrosion

SCI, 1155 Belgrave Square, London, SW1E 5RS

19th October 2007

### North West Branch

After a couple of years of inactivity it was decided to re-organise the branch. The first meeting of the new branch was held on 26th September at Loughborough University. The evening started with the presentation at 8.30. Followed by refreshments and networking between 8.30 and 9.30. For details of the next meeting, see the ICIM website.

### North East Branch

Details of the Council House for Birmingham, Coventry, Derby, Leicester, London, Manchester, Newcastle, Nottingham, Oxford, Plymouth, Southampton, Swansea, and Warwick can be found on the ICIM website.

# Advertising Opportunities

We have a range of advertising opportunities in Corrosion Management Magazine. However because this is a technical journal, space is limited and is booked on a first come first served basis.

## Display Advertising

We have a number of display advertising slots available throughout the magazine which can be booked at the following rates:

Full page (w)210mm x (h)297mm  
£800.00

Half Page (w)190mm x (h)130mm  
£495.00

Quarter page (w)90mm x (h)130mm  
£395.00

## Recruitment Advertising

Advertising your vacancy in Corrosion Management is an extremely effective way of reaching corrosion related professionals and academics. Backed by our online Job Board it offers the perfect platform for corrosion related professionals.

Full Page – £1200.00

Half Page – £700.00

Quarter page – £450.00

## Online Job Board

£195.00 + VAT if placed in conjunction with an advertisement in the magazine  
£295.00 + VAT Web posting only, for 30 days

## Leaflet Inserts

We can design, print and insert your leaflets into Corrosion Management, or if you prefer to supply your own leaflets, we will insert them in the magazine.

Design, print and insert an A5 double sided leaflet – £595.00

Design, print and insert an A5 four page or A4 two page leaflet – £845.00

Insertion of you own leaflets (Maximum A4 sheet) – £295.00



## Prime Positions

The inside front cover and inside back cover are our prime advertising positions. These prime positions are offered to Sustaining member companies free of charge and attract a 25% loading charge for all other advertisers.

## Series Discount

We are pleased to offer a range of series discounts to advertisers. Series bookings are billed in full after the first insertion.

2 insertions – 5% discount

3 insertions – 10% discount

4 insertions – 15% discount

5 insertions – 20% discount

6 insertions – 35% discount

## Sustaining Members Discount

All our sustaining member companies enjoy a 15% discount in addition to our standard discount structure.



# 2019 Features List

To help you target your advertising effectively we have developed a features list for 2019.

January/February issue - Pipelines

March/April Issue - Testing / Corrosion Mechanisms

May/June Issue - Cp Planning and Monitoring

July/August Issue - Petrochem

September/October Issue - Bridges

November/December Issue - Oil and Gas



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# Corrosion Management

Selection of materials for handling waste waters

Discover what is happening in your area with Local Research News Page 4

Find out about all the latest industry news Page 11

**Technical Article**

### Case

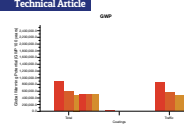


Figure 4 - GWP Results for bridge maintenance over the 100 year life.

The results demonstrate the benefits of reduced frequency of bridge repainting and longer maintenance intervals, with the longest durability coating system (system 3) producing approximately 40% less environmental impact (carbon footprint) as compared with system 1.

This benefit is directly related to the reduction in traffic re-routing achieved by the use of the longer durability coating system.

In all cases, the direct contribution of the coating themselves is approximately 2% of the total carbon footprint, and this is reported for the other impact categories, except for their effect on eutrophication, which was slightly higher – and dependent on the amount of LCA evaluation, where the relative contribution of the coating was the dominant factor.

In all cases, the higher durability of coating system 3 led to this system producing the lowest environmental impact figure over the full 100-year life of the bridge.

**Conclusions**

Based on the evidence of the three LCA analyses, the main factors that influence the environmental performance of a bridge over its life cycle are the amount of coating used per year, and the number of road closures days per year, as shown below.

System	System 1 2 layer E Epoxy Durability	System 2 3 layer E Epoxy Durability	System 3 4 layer E Epoxy Durability
Amount of coating (kg/m <sup>2</sup> /year)	40.6	38.2	26.3
Closure days/year	0.88	0.12	0.08

Figure 5 - LCA Results showing the contribution of each case to the total GWP of a bridge over the 100 year life cycle.

The increased number of coats and additional time taken to coat the bridge tend to result in more than compensated for by the lower frequency of maintenance painting in the more efficient and environmentally friendly scenario, so that the systems having the greatest number of coats and longest durability produce the best environmental performance over the life of the bridge.

Coating system 3 therefore has the best overall performance over the full 100-year period.

**Scenario 3 - Coating Processes only**

The environmental impacts of the coating systems were assessed for the individual components (coat) of each system and at each maintenance activity, and the results presented below in Figures 7 and 8.

It can be seen that in the individual maintenance activities, the higher thickness system (system 3) produces the highest carbon dioxide, yet in the overall lifetime position this is the most environmentally friendly system. The higher impact of the coating specification in its own right is compensated over the lifetime of the bridge by the lower painting frequency.

It is therefore clear that the frequency of maintenance scheduling is the main factor determining the environmental impact of paint over the total life cycle of the structure.

When the total GWP data is separated into the contribution made by individual coats (Figure 6), it can be seen that despite having more coats applied, and a higher total film thickness than other systems 1 or 2, coating specification 3 still gives the best results.

Of the individual coats, the zinc primer contributes most to the overall carbon footprint of systems 1 and 2, but with system 3, the MMA intermediate coat contributes the most.

**GWP over Timeline (Moment when coating is applied)**

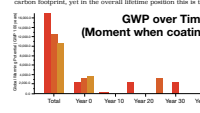


Figure 7 - GWP Results for bridge maintenance coating assessed at each application over the 100 year life of the bridge.

The direct impact of the coating themselves is not significant when compared with the full bridge construction programme and the need to re-raise traffic during construction and maintenance activities. Indeed, the main difference between the three coating specifications can be attributed mainly to variations in traffic disruptions during maintenance cycles.

While the overall environmental impact associated with building and maintaining a bridge will be reduced to the state of the construction – i.e. that length and width of the bridge – the relative trends established during this study will remain valid for other similar (size/specification and maintenance cycle).

**Encapsulation membrane for corrosion protection**

Solobas has released Solobas 542 encapsulation membrane. This coating can be brush or spray applied onto complex surfaces to protect them from the most severe corrosion conditions. It can be cut and peeled back during required maintenance, or to check the status of the substrate, before being fully removed with an extra layer.

The new product can provide outstanding protection in a range of machinery and equipment. From the metal bridge, in the rivers of offshore platforms, the elasticity and adhesion properties allow it to accommodate and bond effectively to many types of metallic and painted surfaces, with exceptions in fluoropolymer. This coating comes in two colours, grey and orange. The grey finish has excellent corrosion inhibition for water turbines, the bright orange enhances the lighting/signage areas which can be painted and inspected.

According to the company, depending on the temperature and humidity of the environment, the internal holes between coats and fasteners to become secondary, secondary material diverts for the coated equipment, and as a result of its water-uptake, including corrosion inhibitors, it provides a durable layer of protection against many types of corrosion, such as galvanic and crevice. It is also an impregnation-free system.

**Advanced "splash zone" coatings from Hempel**

Hempel has launched two new advanced coatings, designed to protect the concrete, steel, and structural steelwork in marine environments. Multi-protect 1500-40 and 1500-20.

According to the company, these advanced coatings are highly resistant to salt crystallisation, freeze/thaw cycles, and are suitable for use in cold or unpredictable weather, which can help extend application periods. The coatings are also suitable for use in the application solution. The LCA levels in these products are in line with regulatory requirements for low temperature cure applications, and are REACH compliant to meet environmental regulations required to be introduced in the EU in 2018.

**New Holiday Detector Curing Agents for Low Temperatures**

DeFelsko has made available a new instrument to detect holidays and pinholes in coatings on metal and concrete. The PowerFree LFO low-voltage holiday detector is a new portable tool that provides faster holiday cure detection with variable output of sensitivity and conforms with various standards.

The instrument comes with a number of optional hardware and extension accessories to increase the tool's reach and adapt it to specific situations, and is waterproof, dustproof and shockproof, and uses three AA batteries.

**Innovative Products**

**Hempel Advanced Materials of Structured, recently launched three low-temperature curing agents, used for longer curing applications including oil and gas, marine, transportation and industrial maintenance.**

The company says its Ara Cool products were designed to meet the need for faster curing at low temperatures and reduced levels of volatile organic compounds, and are suitable for many applications, including anti-corrosion and protective coatings, and decorative paints.

To advertise in Corrosion Management Magazine please contact the Advertising Manager Jonathan Phillips on 0114 273 0132 or email [jonathan@squareone.co.uk](mailto:jonathan@squareone.co.uk)