ACA BRANCH NEW ZEALAND BRANCH

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ACA New Zealand Branch wishes everyone a safe, happy and prosperous 2024

PRESIDENT'S MESSAGE

from Ry Collier, ACA New Zealand President

Hello ACA NZ members. It has been a successful couple of years for the ACA - measured by progress, increased collaboration, and a shared commitment to excellence.

Several of our NZ committee and members volunteer in other ACA groups. Throughout the year, we have participated in technical groups, attended events, and collaborated in council and board meetings, all with the overarching goal of building a more sustainable future and positively influencing our society.

The ACA council has been actively engaged, meeting on four occasions in 2023. The council's core role is the interface between branches and members, and the ACA board's is to foster discussion, provide advice, and act as a sounding board on key industry issues. Raed El Sarraf (based in Christchurch) was appointed as the ACA Council Senior Vice-President for the term November 2023-2024. Raed brings great experience to the role through his technical knowledge and leadership skills. Watch this space for the ACA to bring more large events to NZ in the near future.

There are several 2023 ACA activities that I wanted to summarise here.

- Auckland division technical meeting in September - thank you Matt Vercoe for chairing the meeting, and Les Boulton for organising and coordinating with SCANZ, and for speaking at the event
- Joint ACA/SESOC "Protecting Structures from Fire" 1-day conference on 6th Nov - thank you Raed El Sarraf for organising and coordinating with SESOC, and Rene Hill and Raed for speaking at the event
- Sponsorship/prizes for secondary school science fairs in Taranaki, Wellington and Otago
- ACA Corrosion & Prevention (C&P) Conference held in Perth in November. 300+ full registrants, 48 exhibitors. 7 registered from NZ. 72 technical presentations plus the applicator day
- Our committee members Willie Mandeno, Grant Chamberlain and Les Boulton attended the conference, including council meetings, committee workshops, and award ceremonies, including the NZ-sponsored AC Kennett Award, and Les Boulton Case Study Award
- Willie Mandeno received a Certificate of Appreciation for recognition of voluntary service to the ACA

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President's message - continued

- Signing the ACA/AMPP Strategic Alliance that outlines the nature and intent of our partnership - how both organisations work together and invest in future joint opportunities
- Future options for the TAFE training in Certificate III Surface Preparation and Coating around Australia and New Zealand.
- New ACA website - refer to this for upcoming training and events.

Moving into 2024, we are currently planning for the Coatings and Applicator Groups' "roadshows" to include NZ this year. The next official branch event will be the AGM; scheduled for March. At that time I expect to hand over to the incoming branch president, Grant Chamberlain.

I want to take a moment to express my gratitude to everyone that assisted the committee over the past two years of my time in the role. Thank you to our members, sponsors, speakers, colleagues and businesses that support our volunteer activities.

Please be sure to view our newsletter articles and adverts to see upcoming events and explore the services that are available.

As always if you are personally interested in joining any of our groups then please contact us. We are all passionate about shared learning in the corrosion prevention field across many interesting industries and backgrounds.

THERMAL METAL SPRAY STANDARDS NEWS

Standards Australia has now formally approved a project to progress the publication of the long-awaited Part 3 of AS/NZS 2312 that will be a guide for the use of thermal metal spray (TMS) coatings to protect structural steel from atmospheric corrosion.

A draft standard, that had been finalised by the MT-014-01 Working Group last year, and discussed at the Coating Technical Group Forum at the ACA Conference in Perth, will be considered by the MT-014 committee on 20 February prior to its release for Public Comment.

ACA NZ members who have contributed to this draft include; Craig Ross, Matt Vercoe, Philip La Trobe, Raed Sarraf and Willie Mandeno.

TMS being applied in situ to Puhoi Viaduct girder

Q & A CORNER

Older ACA NZ members have probably seen a number of situations that may never have made it to a textbook.

If you have a question you'd like clarification on, email it to the Editor at lesboultonrust@gmail.com. We'll pose it to our panel of experts who will answer it in another Bulletin, so everyone can improve their knowledge.

Q:

Does the hardness of a metal affect its corrosion resistance?

& A: *Somewhat - the hardness and the corrosion resistance of a metal are related, but not directly correlated.*

In general, harder materials have better resistance to wear and abrasion during service but this does not mean they are more resistant to corrosion.

Corrosion resistance depends upon the metallurgical microstructure of a metal or alloy and its ability to form a protective oxide layer when exposed to corrosive environments. However, some metals can be both hard and corrosion resistant, for example, duplex stainless steels. Selecting different alloys and employing different heat treatments can be used to optimise both of these properties.

If galvanic corrosion is likely then metal hardness does not matter because there is no relation between hardness and the position of a metal in the Galvanic Series. However, harder metals may be more vulnerable to surface micro-cracking when heavily loaded in service. Then, localised penetration in contact with environmental corrosives may be more problematic for a hard metal or alloy. There are always a few factors in play, including the stress loading on an engineering component during service. The hardness of a material, which is related to the mechanical strength, should always be considered during the material selection process.

A portable hardness tester

RENEWED CONCERNS AROUND SILICOSIS

Craig Reynolds of BlastOne (Australia) recently presented a paper discussing the risk to industrial blasters of this often terminal illness due to exposure to silica dust. This was especially relevant given the recent publicity regarding the hazards to workers manufacturing or modifying engineered stone products such as bench tops. This has resulted in companies like Ikea and Bunnings removing them from their stores, following a Safe Work Australia report finding they posed “an unacceptable risk” to workers and its use should be banned.

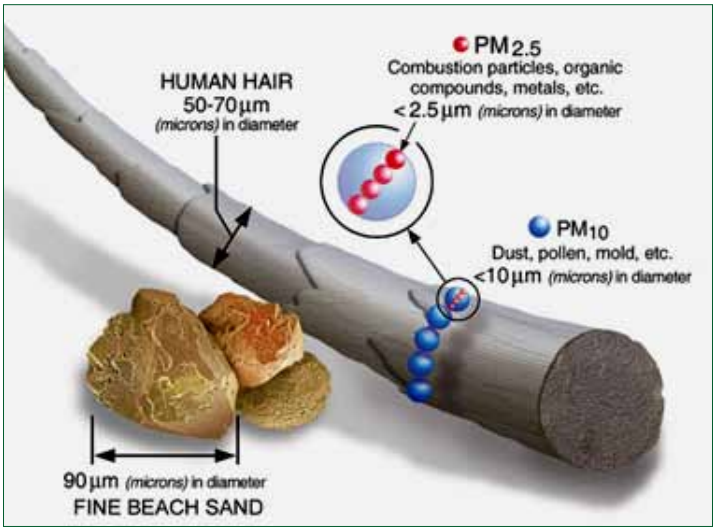
Up until the mid-1980s, beach or river sand was widely used as the media for the abrasive blasting of steel prior to painting - hence the term ‘sandblasting’. This sand typically contained 95 percent of crystalline silica which exploded on impact and so was very efficient in cleaning corroded steel, but created a fine silica dust with a ‘respirable’ particle size of between 0.5 and 5 microns (see figure 1).

These silica particles can become trapped in the lung, resulting in scarring and the growth of fibrotic nodules similar to those caused by some asbestos fibres. Sadly, the symptoms of silicosis may not appear until many years after exposure, and it is an incurable but preventable disease.

H&S regulations now limit the content of crystalline silica in abrasive to a maximum of two percent in NZ and one percent in Australia, with OSHA setting an eight-hour TWA maximum occupational exposure limit (OEL) for respirable silica dust of 0.05mg/m3.

It is interesting to note that glass is made from amorphous silica, and when crushed can be used as an abrasive media as it does not contain crystalline silica and has a less stringent OEL of 6mg/ m3. However, respiratory protection is still required as the glass particles can cause nose bleeds.

It should be noted that the grinding, sanding or cutting of concrete (figure 2) can also be a potential source of silica dust and the same engineering controls used with abrasive blasting, such as vacuum containment and dust suppression using water, as well as adequate respiratory protection, should always be employed to manage the risk of contracting silicosis.



Left: Figure 1 - showing particle size comparison

Above: Figure 2 - showing worker at risk of silicosis

Submitted by Willie Mandeno

INTERVIEW OF ACA NZ MEMBER DAVID CHARTERS

by Willie Mandeno

David, you are a Chartered Professional Engineer based in Dunedin, practicing in the civil/structural fields of engineering. Can you please briefly outline your work history and current role?

I founded DCL Consulting in 2011. The focus has been bridge inspection and durability engineering, along with developing strategies for maintenance. We have also been involved in work rehabilitating wharves. We design bridges and wharf structures and are heavily involved with cycleway structures. Donna joined us in 2014 and Christine in 2020. My current role is Director and Practice Principal and I am starting to reduce my hours reflecting my venerable age.

I know you have been an attendee of several ACA Conferences, most recently at CP23 in Perth. When and why did you become a member of ACA, and what were your impressions from your first conference.

I have thoroughly enjoyed all the conferences I have attended. I think the first was 2007 and I have only missed the Newcastle conference a couple of years ago due to Covid risk. My impression of the first conference was just how welcoming everyone was. I was able to start a network of colleagues and friends very quickly.

Since attending your first conference what involvement have you had with the ACA?

I have filled the role of Chair of the Concrete Structures and Buildings Technical Group. I have attended several courses and completed the Corrosion Home Study Course. Courses have included The Selection and Specification of Coatings, The Corrosion and Protection of Reinforced Concrete, Corrosion and Electrochemical Protection of Reinforced Concrete Structures. I have also progressed through the ACA Accreditation Scheme from Corrosion Technician to Corrosion Technologist.

How has your membership of ACA helped you in your work as a civil engineering consultant?

Corrosion Engineering is a niche position and there are not many of us in New Zealand. This has led to the acquisition of work for the practice and increased confidence mentoring my colleagues and preparing specifications. My colleagues are also members of the ACA and have attended The Corrosion and Protection of Concrete Structures and Buildings. The plan is to progress their training as funds permit.

I also enjoy a wide network of corrosion engineers to consult when I need to add certainty to solutions.

In addition to the ACA's Annual Conference, Seminars and Training Courses, are there any other activities that you think the ACA NZ Branch should organise to benefit infrastructure asset managers like yourself?

If there were sufficient numbers I'd love to see some more training courses run in New Zealand.

If the 2025 ACA Conference were to be held in Christchurch, how much support would you expect from South Islanders involved in corrosion prevention and mitigation?

Well, I'd certainly be into it and happy to help with organisation as best I could.

How to select the most appropriate spray equipment for your type of coating

No matter what market you serve, the success of a project will come down to having the right equipment that is capable of dependably delivering your coating type at the right application rate, under your specific operating conditions.

Application Demand

The rate at which coating is to be sprayed, or "application demand", is a key factor in selecting suitable spraying equipment. The pressure required to atomize the material often determines the appropriate pump, as does the tip size required for proper coverage, the number of guns, the duty cycle and pump flow rate.

A combination of both pressure and flow of the pump determines the application rate. Many pumps have enough pressure to spray a coating, but they're offered in different sizes (or flow rates). The flow rate that the pump is capable of achieving also needs to be considered. For example, a sprayer with a larger pump fluid section can handle more demanding applications because it cycles slower.

Distance from the pump to the gun

Keep in mind that to properly atomise and apply coating material, the pump must overcome pressure drop in the hose. As hose lengths increase, pressure drops increase and additional pumping pressure is needed.

The diameter of the spray hose also affects pressure drop. By increasing the hose diameter, pressure drop can be reduced. Elevation of the application area can also affect pressure drop. If the application area is higher than the sprayer, a larger pressure drop will occur through the hose. Coating suppliers and product data sheets can provide additional information on pressure and flow requirements.

Want to know more?

Strouds carry out new product and application trials with all major coating manufacturers in-house, positioning us to guide you on best-practice equipment selection. Let us know your coating challenges!

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Advertorial

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