ACA BRANCH NEW ZEALAND BRANCH

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ACA NZ BRANCH
PRESIDENT'S REPORT MID-YEAR 2023-2024

While the divisions around NZ have their own technical sessions and division meetings, the NZ branch committee formally meet in September each year. Representatives from each division are invited, who also hold office positions for several important ACA groups including Education, Technical, Membership, Electrolysis, and Financial. Each member is asked to submit a report of their area. These reports are available to members by contacting the secretary at acanz.mail@gmail.com.

Our NZ branch activities have increased this year with a few technical meetings in the regions so far. To maintain awareness of our industry with our younger citizens we have supported school science fairs at several national locations again this year (Taranaki, Wellington and Otago), donating cash prizes for projects related to material durability and corrosion. Our events and articles are published on the ACA website for members and public awareness, and we are fortunate to be able to continue reporting our news frequently through the bulletin, edited by Les and Corrie. We published a survey on readership but there was a limited response so we may take this into consideration for future communication methods. Communicating further, we have also provided a technical article written in partnership with the ACA CEO for the New Zealand Infrastructure Review magazine.

We are seeing more activity and involvement from our ACA head office and the board, with frequent meetings with branch presidents and the ACA council which serve as a communication line between the head office and stakeholders. There are several improvements coming online with staffing, systems, and offers of support.

Our Education officer Willie Mandeno has been busy supporting ACA training plans and instructing in NZ and Australia. We continue to create training opportunities for our NZ members through the ACA and AMPP partnership, including cathodic protection, coatings inspection, and corrosion technology courses. We are working on bringing more courses to NZ in 2024.

I am very proud of our team of dedicated volunteers to maintain the NZ activities and would like to thank our Branch Committee members for their efforts across several areas. For the remainder of the year we have the ACA Corrosion & Prevention Conference to look forward to in Perth, and a joint event with SESOC in Auckland "Protecting structures from Fire". Both events are in November and are open for registration via the ACA website.

Please remember to speak up on corrosion topics within your business and social circles and invite others to join the organisation and technical committees. Finally, in the governance space, the ACA has some excellent opportunities to join our council and the board - please contact us for details. *from Ry Collier, ACANZ President*

ACANZ would like to gratefully acknowledge this month's sponsor…

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:

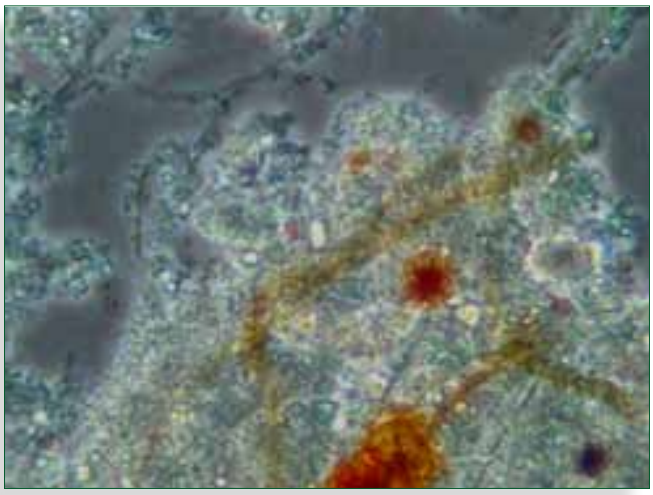
Can micro-organisms eat metal?

& A: *Yes!*

Microbiologically Influenced Corrosion (MIC) is a major failure issue for pipelines and equipment buried in soils, or exposed to aqueous environments that contain micro-organisms such as bacteria, and is an insidious threat in various industries.

MIC is commonly observed in cooling water systems, piping, vessels and storage tanks. The corrosion rate of MIC can cause relatively high through-wall penetration – within weeks or even days – especially in cases where fluids are stagnant or untreated.

Pitting corrosion with subsurface loss of metal greater than the opening of the surface is a typical sign of MIC. The pitting attack is often observed at the bottom of a pipe, particularly at areas of flow disruption or stagnant conditions which favour the formation of a biofilm.



Iron-oxidising bacteria in a biofilm

Alloys susceptible to MIC include carbon steel, aluminium, stainless steel and brass, and can also impact non-metals such as concrete and plastics.

MIC involves interaction between micro-organisms such as bacteria, fungi and algae, a corrosive media, and the construction material. Bacteria can be aerobic requiring oxygen to become active, or anaerobic requiring no oxygen for corrosion activity. MIC is sustained by microbes attaching to a metal surface via an exopolymeric substance, which is the main constituent of the slime under which the biofilm forms at the solid-liquid interface. Afterwards, the metal surface suffers localised corrosion due to the metabolic action of the micro-organism.

MIC is challenging to predict, control, mitigate, and to prevent. But with comprehensive mitigation strategies including detection, proper sampling, assessment, control, monitoring, good design, materials selection, and the application of cathodic protection with appropriate coatings - guided by proper training - the susceptibility of a system to MIC can be kept satisfactorily low.

Acknowledgement: Corrosionpedia

FIRST ORIGINS OF STAINLESS STEEL DISCOVERED

British archaeologists believe they have found early examples of rudimentary stainless steel dating back to somewhere around 1000BC.

Crucible slag sample from Chahak (Rahil Alipour, UCL)

The discovery of crucible steel with low chromium content has been found at the ancient town of Chahak in Iran. Although the crucible steel chemical composition does not match what is considered to be modern stainless steel, it does appear to be an early attempt to incorporate chromium into carbon steel. The ancient Persian crucible steel would have been used to make armour and weapons; Persian crucible steel tools and weapons are on display in museums around the world. The addition of chromium (chromite ore) to pig iron in crucibles would have made the crucible steel objects a lot harder and stronger, a desirable property at the time.

The researchers used radio-carbon dating to pinpoint the creation date of the early uses of chromium. They believe the chromium-steel was likely used to improve the mechanical properties of weapons, armour and tools.

The history of today's stainless steel can be traced back to the 19th century when scientists noticed that iron-chromium alloys resisted corrosion by certain acids. Nowadays, stainless steels with at least 12% chromium are manufactured for their corrosion resistance in addition to having good mechanical properties.

The origin of the martensitic and ferritic type stainless steels has been attributed to British metallurgist Harry Brearley in 1912. Austenitic stainless steel (steel with both chromium and nickel) was discovered by German metallurgists during World War 1.

Both countries were trying to manufacture a new alloy to make gun barrels that would resist corrosion in the poor conditions that prevailed in the WW1 trenches. But by the time the discovery of "stainless steel" was ready for any military applications the war was over.

Acknowledgement: Corrosionpedia

CONCRETE DURABILITY EXPERT HONOURED

The 2006 co-winner of ACA's Arthur Kennett Award and Wellington Division member, Sue Freitag, received an Outstanding Contribution Award at the recent 2023 Concrete NZ Conference in Hamilton for her decades of service to the concrete industry.

Sue began her career in the early 1980's as a concrete scientist with the Ministry of Works and Development (MSD) and has subsequently worked as a concrete technologist with its successors; WORKS, Opus and WSP NZ. She has specialised in concrete durability including pioneering work investigating the extent and severity of the destructive alkali silica reaction (ASR) in New Zealand structures. The Award recognises significant contributions that Sue has made to many NZ Standards and technical guidelines over the past forty years.

As an internationally recognised specialist in ASR, Sue also serves on the Concrete Institute of Australia (CIA) and RILEM technical groups and committees.

Reference: *https://concretenz.org.nz/news/655091/Sue-Freitag-Acknowledged-With-Outstanding-Contribution-Award-For-Decades-of-Industry-Service.htm*

Submitted by Willie Mandeno

SCANZ MEETING – WE'RE INVITED

Exclusive Tour of MOTAT's Multi-Award-Winning Aviation Hall, Auckland

Date: **Wednesday, 22 Nov 2023**

Time: 4:15 pm: Assemble at Aviation Hall, tour concludes 6.00pm
6.30pm: Optional dinner, details tba

Venue: **Aviation Display Hall, MOTAT,** 98 Motions Rd, Western Springs, Auckland

Cost: SCANZ Members – Free MOTAT tour only Please note all guests and non-members will be charged **$19.00** to cover costs.

RSVP: **Mandatory,** please confirm attendance by **17 November.** Email secretary@scanz.org.nz.

SCANZ warmly invites ACA members, friends, family and work colleagues to MOTAT's multi-award-winning Aviation Hall. You'll have the chance to explore a remarkable collection of recreational, military, topdressing, and commercial aircraft.

The collection not only boasts astonishing technology but also celebrates the evolution of New Zealand aviation since Vivian Walsh's pioneering flight in a British Howard Wright biplane back in February 1911.

This tour is not available to the general public. Our tour guides will include aspects of how they maintain the planes, including their paint and protective coatings.

"At Metspray, we have some of New Zealand's most experienced and qualified industrial coatings professionals"

Advertorial

Introducing Metspray's longest serving staff member Anaitasesi 'Sesi' Piutau, who talks about how he got into the coatings industry, the path he took to get to where he is now, and what he thinks the future holds for the industry.

How did you get started in the coatings industry?

I emigrated from Tonga in 1999 as a teenager, and we had a friend working at Metspray who introduced me to the company. I was first trained as an arc sprayer but as I hadn't been in New Zealand long, I spoke minimal English, so I signed up for evening English classes. I would go to work, go home, have a shower, go to my English class, go home, eat dinner, and fall into to bed.

What was the path you took to where you are now?

I've been at Metspray for over 20 years now, and I still learn something new every day!

I'm Metspray's Maintenance Manager and Blasting/Coating Trainer. I repair and service all our grit blasting, thermal metal spraying and painting machinery and equipment. I also fabricate just about anything that's needed to assist with operations. And I provide blasting and coating training to new staff.

After a few years of arc spraying, I trained as a painter, and did both for about five years then trained as a grit blaster. My first 10 years at Metspray, I tried to learn as much as I could, all the different application methods for protective coatings. I pushed myself to learn as much as possible, not just about coatings; about operations, loading and unloading in the yard, and how to drive a forklift.

The entire time I was working as a blaster/applicator, I would offer to help our engineer repair and maintain our machinery. He saw I was eager to learn, and was happy to pass on his skills and knowledge. He gave me opportunities to learn and grow, and then responsibilities. I'd also work alongside the contractors who were called in to fix our machines. I could see there was a way I could save the business money if I learned from these specialists. Soon, if something broke down I'd be asked to stop whatever I was doing to fix it.

I've also worked as Operations and QA foreman and Site Foreman, but I prefer to work with my hands. As the company's grown, I'm glad it's enabled me to become Maintenance Manager, as I find this type of work most rewarding.

What do you like about working in the coatings industry?

I've learnt a lot of things in this industry through experience. Receiving good feedback and improving my skills motivates me to work harder. My favourite projects are probably the ones I see when I drive around the city, like school canopies, billboard and big screen frames (like the one we did at Eden Park), and of course, our work on Auckland Zoo's Southeast Asian Jungle Track.

Would you encourage others to work in the coatings industry?

It is an up-and-coming industry in NZ and Australia with governments and consultants slowly realising the importance of protective coatings. People get a chance to create something beautiful - it gives you a sense of pride when you've successfully finished a job that was not only hard and complex but also had to look good. There are always opportunities to learn different skills, grow and try different roles.

What's the biggest lesson you've learnt while working in protective coatings?

You have to know how to protect different materials - what temperature something needs to be when applying the paint, about the substrate and where it's going - what the corrosion zone will be and the environmental factors in situ. These all influence the paint we use, the film thickness, the number of coats and the curing temperature, which along with humidity we control precisely in our factories, to ensure our work always meets specifications.

What would you like to see change or improve in the coatings industry in the future?

The industry's growing fast and the technology and products available is changing. QA standards are stricter and there are new intumescent products coming out. With all of this comes new operating procedures and application practices. I'd like to see more regulated training programmes and information available so we can train for each specific product to ensure that especially our more experienced industry practitioners stay current and are still able to train our up-and-coming coatings professionals in the future.

What advice would you give to someone who wants to join the coatings industry?

Always strive to do better and learn to work smart. It's easier if you learn to visualise projects before you start painting so you can properly set up the project and equipment. Learn to look at the steel and understand how to process it. And most importantly, enjoy it.

ACA LAUNCHES UPDATED WEBSITE

After months of planning, designing, refining and checking, ACA has launched its updated website, aimed at making it easier for members and visitors to access the information they need.

"With a simple and clean layout, our main goal was to make it easier to find information on the website," explained ACA's CEO Maree Tetlow.

Check it out yourself, and see what you think!

https://corrosion.com.au

Joint ACANZ/SESOC 1-day conference

PROTECTING STRUCTURES FROM FIRE

Date: **Monday, November 6, 2023**

Time: **All day** - 8.00am Registration to approx. 6.00pm

Venue: **Ellerslie Racecourse, Auckland**

Speakers: Hamish Denize, Paul Horne, Tess Beetham, Andy Buchanan, Charles Clifton, Garth Moran, Alex Kokorin, Frank Kang, Rene Hill and Raed El Sarraf

Cost: SESOC/ACA member $600 + GST, Non-member $680 + GST

Registration: https://cwevents.eventsair.com/sesocaca23/regsa/Site/Register

ACA NZ BRANCH COMMITTEE & OFFICERS 2023

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