ACA BRANCH NEW ZEALAND BRANCH

APRIL 2026 Volume 69 Issue 03. Online: www.corrosion.com.au

2026 ACA NZ Branch Annual General Meeting and Get Together

On Friday 27 March ACANZ held its AGM, which was accompanied by interesting and exciting events.

In the afternoon Ry Collier hosted a very interesting site tour of Methanex NZ for local and visiting ACANZ members. Pictured are attendees from FirstGas/Clarus, PPG paints, SGS, Ferric Consulting, and Methanex.

Clarus hosted the AGM at their offices, where the attendees were first treated to a talk on laser cladding - the application of metal coatings to metal substrates using lasers to weld the metal coating onto the substrate. The process is very precise and can be used to apply a layer of a metal that is harder, more corrosion resistant, or has some other desired property that the main component does not have. For more information contact Matt Vercoe and Metal Spray Suppliers Ltd.

The AGM followed the presentation. The main focus was adoption of new rules for the NZ Branch. Revision of the rules was driven by the Incorporated Societies Act of 2022, which requires all existing incorporated societies to re-register with governing rules that met the requirements of the 2022 Act, by 5 April. Under the old, 2015, rules a quorum of 20 members was required to pass the Special Resolution to adopt the rules. There was a great turn out with 10 people attending in person, and 6 online - in addition to 10 members who 'apologised' and advised their agreement to implementation of the rules, or nominated a proxy to vote in their stead by submitting a proxy form. The new rules also reduce the minimum quorum to 10% of membership or 15 members, and addresses the recent dissolution of the regional divisions.

The AGM was also attended by the ACA CEO David Roche, who introduced himself to the NZ members and gave a rundown on the ACA's plans for the coming year, and further ahead.

Following the AGM, Gary Janmaat of PPG, Jason Matthews of Grit Engineering, and Rob Burroughs of Firstgas were welcomed onto the Branch committee.

After the meeting the attendees moved to the nearby The Corner Brewery and Smok'n Comrades to carry on discussions over a drink and food. Thanks to PPG for sponsoring the drinks and Metal Spray Suppliers for sponsoring the food for the members.

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: *How do you carry out a plastic failure analysis ?*

A: This response follows on from the discussion on types of plastics in the last Bulletin

Conducting a failure analysis on a broken plastic component often requires analytical tools that are different to those used for a metallurgical failure analysis. With the techniques discussed here comparison to an unused plastic component is often necessary to conclusively evaluate whether the polymer, additives, molecular structure, molecular weight, or properties, have changed during or because of service.

In severe instances, polymer failure analysis may be required to determine liability in cases of hazardous device failures. Identifying the root cause of a plastic failure requires polymer-specific analytical techniques to detect changes in material composition, structure, and properties. A plastic failure analysis involves gathering information, a preliminary examination, macroscopic examination of the fracture surface, secondary cracking and the surface condition. The primary difference in the analysis of failed plastic components is the analytical tools that are used to identify the material and its properties.

Identifying the type of plastic

Probably the first and most common analytical approach is to identify the type of polymer using Fourier Transform Infrared spectroscopy (FTIR). When infrared radiation strikes a plastic, some radiation is absorbed, and some of it passes on through. The spectrum of the absorbed light provides a fingerprint of the molecular structure. For example, the molecular structure of polyethylene is quite different from that of nylon, so the basic IR spectrum is different. Subsequently, the identification of the plastic can be obtained by comparing that spectrum to spectra of known plastics. This results in a qualitative identification of the base polymer. FTIR can also provide some information as to the presence of various additives and filler materials if present above about 1%.

To determine whether the failed plastic was as originally specified, a sample of an unused plastic component is analysed and the IR spectra compared. However, low-level additives, such as antioxidants,

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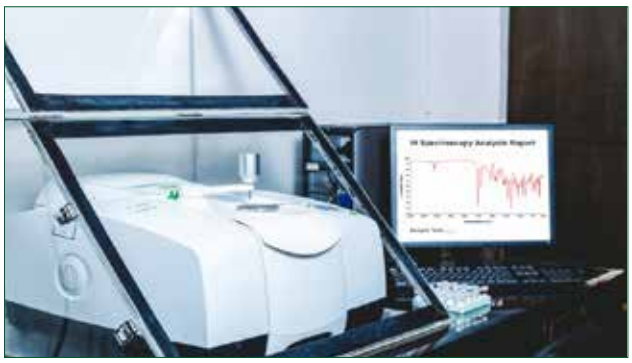
may not be detected. An advantage of this technique is the identification of absorbed chemicals, which can be useful in determining the cause of failure. Such causes include chemical attack and environmental stress cracking.



FTIR instrument with the IR spectrum of the plastic sample that was analysed shown on the monitor

How to determine why a plastic is brittle

Since polymers are often semi-crystalline, the amorphous phase softens at a temperature referred to as the glass transition temperature (Tg). The glass transition represents the reversible change from a hard or brittle state to a viscous or rubbery condition. This parameter can provide information regarding the aging of the plastic, effectiveness of the plasticiser, resistance of the plastic to oxidation, and whether the plastic component met the design requirements for the temperature of operation. When comparing results to a used or different sample, the measured Tg can vary based on various factors. These include the Tg measuring technique used, heating rate, anisotropic nature of the sample, and data reduction. Tg can also vary based on the crystallinity of the polymer, extent of cross-linking, and type and quantity of plasticiser used.

Other useful techniques

When the appropriate loadings of various additives, such as plasticiser, flame retardants, or UV stabilisers, are required as part of the plastic failure analysis, thermogravimetric analysis (TGA) is a good tool. TGA can also provide insight into thermal or oxidation degradation mechanisms. TGA measures the amount and rate of change in the sample weight as a function of temperature or time at a given temperature. The inclusion of a mass spectrometer can identify the evolved gases from the volatilisation or decomposition of the plastic components. Failure modes that might cause a loss of molecular weight or distribution of the polymer chain include thermal degradation, photo or UV oxidation, chemical attack, and biodegradation.

Gel permeation chromatography (GPC) is a size exclusion chromatographic technique that uses a packed column to segregate the various components. Multiple columns are used to separate the polymeric constituents. The polymer is further separated by molecular weight, producing a molecular weight distribution of the plastic.

Other techniques, such as melt flow index or solution viscosity, do not provide a distribution of molecular weights. However, the melt flow index or melt flow rate which measures the viscosity of the plastic in the molten state, is a technique for measuring the viscosity molecular weight. The viscosity molecular weight is inversely proportional to the melt flow rate.

Mechanical tests are often performed to evaluate whether the properties of the failed polymer have changed. These can include tensile, flexural, and impact resistance properties. There are various standard methods (ASTM) for such tests since the sample size is a critical parameter. Durometer testing of elastomers and softer plastics is helpful for evaluating changes in the properties of the plastic. The depth of penetration by a spring-loaded probe is measured on a standardised scale. The penetration depth for the applied force is related to the elastic modulus and viscoelastic behaviour of the material, but it is not a fundamental property. There are different standardised scales available depending upon the “softness” of the polymer material.

Scanning electron microscopy (SEM) of the fracture surface can also provide insight into whether the failure mode was via a brittle or ductile mechanism, the crack origin, and the presence of defects such as voids or impurities. Examining the fracture surface of a fibre-reinforced plastic by SEM can assist in evaluating the particle distribution, porosity, and adhesion of the reinforcement with the polymer.

This brief account illustrates how plastic failure analysis is different to metal failure analysis. The analytical tools employed for polymers are quite different, but the overall failure analysis approach remains the same.

Reference: Corrosionpedia, S. Bradley, January 2026

Fatal accident due to boat trailer corrosion

A boat trailer that broke free from a Taranaki man's vehicle, crashing into a woman's car and instantly killing her, not only had "excessive" corrosion and seized brakes, but so much rust that it went through entire sections of the trailer frame. The boat and trailer should not have been on the road.

The owner appeared in the Te Kūiti District Court where he admitted dangerous driving causing the death of the woman in July 2025. The trailer's WOF had expired in July 2016 as it had been "extensively affected by corrosion", to the point there were visible holes in its frame.

As he travelled south of Te Kūiti on SH3, the trailer broke on the drawbar, about 30cm back from the tow ball. At the same time another vehicle was travelling north in the passing lane. The trailer and boat crossed the centre line, crashing into the car. Due to the impact the boat moved off the trailer and careered straight through the windscreen, fatally striking the driver.

The police serious crash unit found numerous issues with the trailer. The front right section of its frame was "compromised by excessive corrosion to the point where it had rusted through the entire thickness of the structure, leaving visible holes". There was also "excessive corrosion" at the pivot point, where the front drawbar of the trailer is held to the cross beam by a bolt

"The defendant's decision to tow the unroadworthy trailer created a situation where the public was placed in danger," the police summary of facts stated. The boat trailer driver was convicted and remanded on bail to reappear for sentencing this month, ie. April 2026.

The fatal boat trailer case serves as a landmark legal and technical precedent regarding the responsibilities of vehicle owners toward structural integrity of their trailers. The incident involved the catastrophic mechanical failure of a triple-axle boat trailer, leading to a fatal collision and the subsequent conviction of the operator for dangerous driving causing death.

Owners must inspect their boat trailers for structural integrity

Source: RNZ August 2025

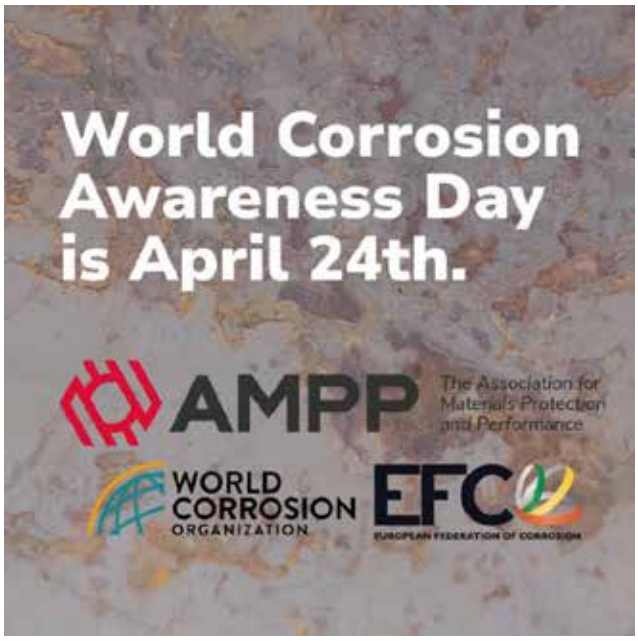
World Corrosion Awareness Day 2026

What is World Corrosion Awareness Day?

World Corrosion Awareness Day, held annually on April 24th, is a global initiative that raises awareness about the impact of corrosion and the importance of corrosion prevention. The campaign encourages engineers, organisations, and industry leaders to share knowledge and highlight how corrosion control protects infrastructure, the environment, and public safety.

Corrosion affects nearly everything we rely on, yet its impact often goes unnoticed until something fails. World Corrosion Awareness Day 2026 invites the world to change that. Led by AMPP in collaboration with the World Corrosion Organisation (WCO), European Federation of Corrosion (EFC), International Corrosion Council (ICC), and the Australasian Corrosion Association (ACA) this year's global campaign focuses on sparking conversation, correcting misconceptions, and making corrosion prevention relevant to everyday life.

From safety and infrastructure resilience to sustainability and economic impact, World Corrosion Awareness Day 2026 uses short, engaging, social-first content to connect technical expertise with real-world consequences and highlight the professionals working behind the scenes to protect critical assets from corrosion.



AMPP Coating Inspector Programme - NZ, Level 1

The AMPP Coating Inspector Program (CIP) Level 1 is returning to New Zealand in 2026, aligned with Corrosion & Prevention 2026 in Christchurch.

Christchurch

28 September – 3 October 2026

https://lnkd.in/gwm-8GG2

Auckland

19 – 24 October 2026

https://lnkd.in/gAgiqvYi

The course is an intensive presentation of the fundamental technology of coating application and inspection. It provides both the technical and practical fundamentals for coating inspection work on structural steel projects. This is the world's most recognised and specified coating inspection certification program.

Although specifically designed for Coating Inspector Trainees, this program benefits anyone interested in gaining a better understanding of coatings and inspection including Project Managers, Engineers, Maintenance and Quality Assurance/Control Personnel, Contractors and Specification Writers, and Coating Applicators.

For more information, go to:

https://www.corrosion.com.au/training/training-programs/coating-inspector-program-level-1-ampp/

Where industry meets innovation

CORROSION & PREVENTION 2026

Durability in the Real and Digital World

Te Pae Convention Centre, Christchurch NZ

Tuesday 6 - Friday 9 October 2026

SHAPE THE FUTURE OF CORROSION MANAGEMENT

SUBMIT YOUR ABSTRACTS FOR 2026

The call for abstracts is now open for technical papers and case studies on all subjects related to corrosion and its control, asset management, and case studies, etc.

We welcome papers from university, government, private enterprises, asset owners, consultants, contractors and manufacturers to share the latest developments and information in our industry.

Submissions Deadline: Midnight Friday 17th April

https://corrosion-prevention2026.eventsair.site/abstracts

Corrosion & Prevention 2026 - Christchurch https://corrosion-prevention2026.eventsair.site/

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