March 2026
Issue 52

Flex

OFFICIAL PUBLICATION OF
COMPOSITES
ASSOCIATION
OF NEW ZEALAND

INSIDE this issue

Sustainability is KING

By Vineeth Babu
Adviser to CANZ

Sustainability in composites manufacturing is no longer a peripheral discussion; it is now a strategic imperative.

For New Zealand manufacturers operating across marine, aerospace, transport, infrastructure and industrial markets, the pressure to reduce waste, energy use, and carbon footprint is rising alongside the need to remain globally competitive.

While material innovation and recycling pathways continue to evolve, one of the most immediate and practical levers available to industry is the automation of manufacturing processes. Automation in composites should not be viewed purely as a productivity tool. Increasingly, it is proving to be a sustainability enabler, delivering measurable improvements in material efficiency, energy utilisation, quality consistency, and lifecycle performance.

Traditional composites manufacturing in New Zealand has been built on strong craftsmanship and flexible, low-volume production. However, manual processes inevitably introduce variability in fibre placement, resin content, trimming allowances, and rework rates.

Continued Page 2

From the President

Many key projects under way as we welcome in 2026

Well, 2026 is out of the bag – I hope you are doing the best to navigate any flooding and storm damage. Our thoughts are with all members effected. Do reach out if you have specific business recovery needs, there may be others who can assist within the CANZ network. Message the Whats App group, or contact Caroline at the CANZ office.

For 2026, CANZ has a number of key projects under way.

- **New website** – Following the brand redevelopment efforts the launch of the new website is top priority. We are currently working to migrate content. Thank you to Paul Burke and Rich Little for their assistance in this project. Stay tuned for the big reveal of a modern website, with updated logo and branding.
- **Member spotlights** – New content for the website will follow to showcase members, please get in contact to assist in promoting your skills, products and services on the CANZ site.
- **Refreshed Flexi Magazine** – Stay tuned for this. We aim to have alignment of our Flexi Magazine publication with our new branding and website by the next issue and enable enhanced digital access and reading.
- **UnWaste** – The cross sector working group is now established with meetings on the second Thursday of the month from10am. We're road testing the name UnWaste because "The Cross Sector Working group for reuse and recycling of fibreglass and carbon fibre materials to solve NZ's legacy and future composites waste issues intiated by CANZ" is a little wordy – tell us what you think.
- **Organisational data** – The set up of M365 and MSTeams is nearly complete. Thank you Vineeth Babu for driving this. The goal is to enable more sharing and visibility of CANZ resources and records and enable us to function more effectively as executive members change.
- **Conference planning** – In the past few years, numbers are down despite great feedback on the program from attendees. We are hoping to understand how to better support CANZ members to make use of the knowledge shared and networking opportunities. Please feed into planning decisions using the QR code at left.

2026 CANZ Conference
Feed in your preferences
to help us plan

By the time you read this the Circular Economy Hackathon featuring FRP reuse will have been held in Feilding. Perhaps the first of its kind, the event is a great opportunity to showcase the durability, remanufacturing options and ultimately the reuse potential of FRP materials. It's one that I am looking forward to sharing as part of NZ Country Report at JEC Sustainability Summit. More on that next issue.

Catherine Holyoake Taiapa
CANZ President

From Page 1

Sustainability now a strategic imperative

Each of these contributes directly to material waste, whether in the form of offcuts, excess resin, rejected parts, or conservatively overbuilt laminates.

Automated cutting, kitting, fibre placement, tape laying, and controlled infusion or prepreg lay-up systems allow manufacturers to move closer to net-shape manufacturing. Fibre is placed where it is structurally required, not where it is easiest to lay by hand. Ply books can be executed with far tighter tolerances, and resin content can be controlled rather than estimated. The result is less scrap, fewer rejected parts, and lighter, more efficient structures. In an industry where both fibre and resin carry significant embodied carbon and cost, material efficiency is sustainability in its most practical form.

Energy use in composites manufacturing is often hidden in plain sight: cure cycles that run longer than necessary, ovens or autoclaves operating under partial load, rework consuming additional machine time, and inefficient production sequencing. Automation, when paired with digital process control, offers a pathway to address these inefficiencies systematically. Robotic cells, sensor-driven process monitoring, and data-led production scheduling enable repeatable, optimised cure cycles, reduced idle time, and better use of capital equipment. In practical terms, this means fewer wasted kilowatt-hours per part produced and lower emissions per unit of output, metrics that are becoming increasingly important as New Zealand manufacturers face growing carbon reporting and customer-driven sustainability requirements.

Just as importantly, automation supports first-time-right manufacturing, reducing the hidden energy and material cost of scrap and rework.

Sustainability is not only about how a part is made, but also about how long it lasts and how well it performs in service. Automated processes deliver consistency in fibre alignment, laminate thickness, resin content, and compaction pressure that is difficult to achieve manually at scale. Higher consistency translates into predictable structural performance and longer service life, particularly in demanding marine and industrial environments common in New Zealand. Extending service life reduces the frequency of replacement, lowers lifecycle material consumption, and improves the return on the embodied energy invested in each component. From a whole-of-life perspective, automation supports a shift away from acceptable variability toward engineered reliability, which is a critical but often overlooked sustainability gain.

New Zealand's composites sector is characterised by high-mix, low-to-medium volume production, tight margins, and strong export exposure. In this context, automation is not about replicating high-volume aerospace or automotive factories overseas. It is about targeted, intelligent automation: automating the steps that drive waste, variability, and inefficiency, while preserving the flexibility that local manufacturers rely on. This may involve automated cutting and kitting, robotic trimming, digitally controlled infusion, or data-driven quality monitoring rather than fully automated production lines. The sustainability gains come not from scale alone, but from process discipline, repeatability, and data transparency.

The transition toward more automated and sustainable composites manufacturing will require coordinated effort across industry, research organisations, and equipment suppliers. Skills development, capital investment, and process re-engineering are all part of the equation. However, the direction is clear. Manufacturers who embrace automation as a sustainability tool, rather than solely as a cost-reduction exercise, will be better positioned to meet future regulatory, customer, and environmental expectations. For the New Zealand composites sector, automation represents a practical and achievable pathway to lower waste, lower energy intensity, higher quality, and stronger global competitiveness, while supporting the broader transition to a low-emissions, high-value manufacturing economy. ■

It's all hands to the plans

as human-powered flight project gains its wings

By Samuel Boyle
Human-powered flight project lead
University of Auckland

The University of Auckland Aeronautics Club is still working towards its main project of building a human powered aircraft (HPA).

The project involves students working across five teams - structures, wings, transmissions, controls, and systems. A big focus right now is structural design, especially around the carbon fibre spars and joints.

Because the aircraft needs to stay extremely light (around 36kg total), every kilogram matters. This where the composites industry and its developments in composites construction have made the difference between a project that will fly and one that won't.

Different spar shapes are being used depending on the expected loads -- round spars for torsion and hoop stress, and more rectangular sections where bending is the main concern.

So far, most designs have used unidirectional carbon fibre so the team can control stiffness by changing fibre orientation, but future iterations will likely include woven cloths to better handle multi-directional loads.

FEA has been a key tool for the structures team. It's being used to simulate how components like the winglet and propeller spars behave under load, helping optimise designs before they're built. Current results are looking good -- stresses and strains are well below material limits, and deflections are within acceptable ranges. That gives the team confidence to keep pushing designs lighter without compromising safety. But before the team fully trusts the FEA output, these results must be validated. Test rigs are being used to check that FEA results actually match real-world behaviour, which is important, given how critical these structures are. It's an important check - things don't always behave exactly how the models predict, so testing helps the team build confidence in the design.

The wings team has also been doing some practical manufacturing trials, experimenting with building wing sections using foam cores and PVC pipe spars, with mylar skin coverings. The goal is to find a lightweight, manufacturable method that provides enough stiffness and performance, while still being accessible for students to build and iterate on.

Joint design is another important area. Since a lot of the structure relies on bonded carbon fibre connections, the team has been experimenting with different manufacturing methods. Early attempts have highlighted issues like poor adhesion and brittle resin behaviour, but each iteration is improving the process. The goal is to get joints that are both strong and lightweight without requiring excessive finishing work.

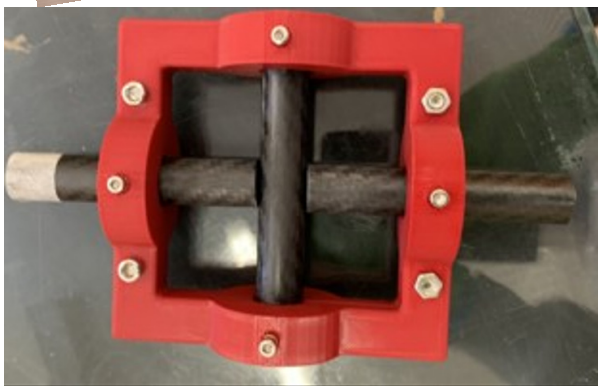
The transmissions team is also continuing with their work. They have developed a test rig to test different set ups of the entire transmission system, from the pilot all the way to the propeller shaft. Their goal is to create a lightweight, reliable solution which is customisable, allowing pilots of different heights to fly comfortably.

The project still requires a lot of work, but the mix of analysis, testing, and iteration is starting to pay off, and the project is moving in a good direction. ■

Wing test

Wing prototype

Wing setting



Joint in progress

Reuse and Recycling Committee Report

Proof that . . .

It's a team sport

By Catherine Holyoake Taiapa
catherine.taiapa@armatec.co.nz

This year, 2026, is about building our presence and helping others see the value of reusing composites.

Educating the general public and other industries to first identify composites and then see the possibilities is key.

CANZ has become s a central hub for support and information. We are developing resources for the new website to assist with this education and enable identification of composites – if you have any ideas to contribute please get in contact.

In late 2025 and early 2026, CANZ convened a Cross-Sector Working Group on Composites Reuse and Recycling, bringing together manufacturers, recyclers, researchers, designers, infrastructure specialists and end users. The aim was straightforward: move beyond discussion and demonstrate real, practical action on composite waste.

Five priority focus areas have been identified: leadership, collaboration, funding, education and technical showcase. Central to all five is the need for transparency, shared data and trust—particularly when exploring product stewardship pathways in a sector as diverse and fragmented as composites.

The working group is still in its early "forming" phase, but momentum is building. Monthly meetings are now established, CANZ is acting as the initial convenor, and discussions are under way on longer-term structure and industry-wide coordination. We've named this effort UnWaste. Get in touch for more details.

Circular Economy Hackathon, hosted in Feilding on 27–28 February – A huge thank you to Fibreglass Developments for hosting participants for demos at their premises; Gurit for participant "swag" and Armatec Environmental for sponsoring my attendance to represent CANZ.

We are hoping the event builds public awareness of the possibilities and is just the beginning in new collaborations to unwaste composites. Teams worked in real time to develop reuse concepts for decommissioned wind turbine nacelles — turning a complex waste challenge into an opportunity for innovation, collaboration and learning.

High industry support through participation, sponsorship or prizes has been acknowledged by the organisers as a key success factor. CANZ is proud to have sponsored the event with a prize to keep the materials value in circulation and provided mentors and workshops.

Through these events it has become obvious that CANZ provides a central point of commonality not available anywhere else – working together to solve material waste challenges provides value to CANZ members and wider New Zealand.

Thanks for being part of it! ■

Smile Awhile

A composites engineer is giving a plant tour to a new hire.

They walk past the layup room, where someone is gently persuading a piece of carbon fibre to behave.

They pass the autoclave, where another tech is staring at the pressure graph like it's a life-or-death stock market.

Then they reach the QA station, where an inspector is holding a part up to the light with the expression of someone searching for the meaning of life.

The new hire whispers, "Is it always this… intense?"

The engineer nods. "In this industry, every part has three states: almost perfect, definitely not perfect, and we'll fix it in post-cure."

The inspector overhears this and adds, "And don't forget the fourth state — it passed because the customer needed it yesterday."

Safety stickers available for members

A large range of safety stickers (samples above) are available for members to purchase from CANZ

50mm x 50mm $2.00 plus GST each.
100mm x 100mm $3.00 plus GST each.
150mm x 150mm $4.00 plus GST each (Acetone and MEKP only).

Contact Caroline Gibson at caroline@composites.org.nz if you wish to place an order.

flexi - Issue 52 - March 2026

1990's genius

Acknowledged around the world as the world's most revolutionary two-wheeler, the Britten V1000 (at left), is one of the most famous composite-intensive motorcycles ever built.

John Britten

He didn't just *use* composites, he designed a now world-famous motorcycle around them

The Britten Museum, which officially opened on February 18, 2026, in central Christchurch (93 Cambridge Terrace), is a permanent exhibition dedicated to the life and composites engineering genius of John Britten. Located opposite the Bridge of Remembrance, it showcases the world-famous Britten V1000 motorcycle and other machines.

By Graeme Stilwell
Editor

The quest for speed and fuel efficiency is nowhere more pronounced than in the motorcycle industry.

In both the competitive and recreational spaces of this industry lies the epitome of the valued role played by composites.

And perhaps the doyen of this revolution in motorcycle contruction is the late John Britten, acknowledged around the world as having produced the world's most revolutionary two-wheeler, the Britten V1000, one of the most famous composite-intensive motorcycles ever built.

John Britten's chassis, swingarm, forks, and many structural components were made from carbon/Kevlar composites -- radical for the early 1990s.

John Britten didn't just *use* composites — he redesigned the motorcycle around them.

Starting with the top chassis, a monocoque structure built from carbon/kevlar composites, replaced the traditional metal frame. This enabled his famous "frameless" design where the engine carried structural loads. The result? A dramatic reduction in weight while increasing stiffness.

Next came the carbon/kevlar swingarm. Integrated into the overall stressed-engine architecture, it was now extremely light and stiff, improving traction and handling. A carbon composite girder-style front end followed. Britten rejected telescopic forks and built his own composite girder system. This improved braking stability and reduced dive.

Bodywork and aerodynamic elements were also made from lightweight composites, contributing to the V1000's record-breaking performance.

Why was this revolutionary?

It was the early 1900's! At that time, major manufacturers were still experimenting cautiously with carbon fibre. Britten, working in a Christchurch garage, went all-in: he designed, moulded, and cured many composite parts himself. His approach anticipated modern superbike and MotoGP design by decades.

The Britten V1000's use of composites is a major reason why the bike weighed only 138kg to 139kg wet. Producing 165+ hp, it broke four world speed records.

The Britten experience will have undoubtedly set a fuse to the global trend towards composites, not just in motorcycles, but in virtually every aspect of our daily lives.

But it is the global motorcycle industry that has increasingly embraced composite materials —especially carbon-fibre and advanced glass-fibre —because manufacturers are under pressure to reduce weight, improve performance, and meet efficiency targets. This shift aligns with the broader global composites market, which is expanding rapidly due to demand from transportation sectors.

Lightweighting is the major driver though. Carbon-fibre and glass-fibre composites reduce mass while increasing stiffness, improving acceleration, handling, and fuel efficiency.

Design freedom is also a factor. Aerodynamic shapes and integrated components are more easily manufactured using composite technology. Add to that corrosion resistance, and the case for composites becomes compelling.

And as the new kid on the block, electric motorcycles offer new markets for the composites industry. Composites are used to lighten battery housings and structural components to offset battery weight.

Electric motorcycles are heavier due to batteries, so manufacturers use composites to offset weight.

New Zealand companies already supply composite housings and structural parts for EV sectors (cars, marine, aerospace), and this capability transfers directly to electric motorcycles.

New Zealand punches well above its weight in composites. While New Zealand doesn't mass-produce motorcycles, it does produce high-end carbon-fibre components, custom motorcycle parts, prototype and R&D components, and short-run production for performance bikes.

This aligns with New Zealand's strengths -- precision, small-batch, high-value manufacturing. ■

flexi - Issue 52 - March 2026

Keeping your cool

What catalyst do you need for thick laminates?

By Glenn Campbell
Technical Adviser to CANZ

The fabrication of thick laminates can easily result in high exotherm temperatures or over heating within the laminate, during cure with a risk of warpage.

Because of these high temperatures, thermally-induced stresses, and strainscome to play, not to forget possible micro-cracking due to a high degree of shrinkage occurring too quickly.

The areas where one needs to be careful and to use an appropriate catalyst level are usually found in the manufacture of flanges or where there is an overlap of two reasonably thick laminates. Other areas may include where thicker laminates may be applied to dense cores such as PET, Coremat or PVC, especially in closed mould applications.

The areas where one needs to be careful and to use an appropriate catalyst level are usually found in the manufacture of flanges or where there is an overlap of two reasonably thick laminates.

The problem with applying several plies of reinforcements and resin within a short period of time is that any heat from the previous applied ply accelerates the gel and cure of the new ply being applied.

So, what detrimental effect will this cause.

1) A shortening of the gel time due to a premature rise in temperature which incurs a rise in viscosity. This rise in viscosity will affect the wet out of the reinforcements causing the resin-to-glass ratio to change and therefore affecting the mechanical properties of the laminate.

2) Increase the amount of entrapped air.

3) An increase in the rate of shrinkage (too fast too soon), which in turn will increase the potential for warpage or in the case of in-mould production, the potential for pre-release (pulling on the applied gel coat surface), can occur.

To resolve this problem, typically we can expect a rise in exotherm of 30-50°C with each two plies of laminate being laid down at the same time.

For many years, the use of blended catalysts using Cumene Hydrogen Peroxide (CHP) together with MEKP has been used in the composites industry throughout the world, especially in the corrosion market. Typically, the mixed ratio has been three parts MEKP to one-part CHP, but even higher dosages of CHP have been used, especially at higher ambient temperatures above 30°C. The addition of the CHP has the effect of extending the gel time and lowering the peak exotherm. This also has advantages if the part is being made using closed mould techniques and filament winding.

By using MEKP blended with CHP the fabricator, now has the ability in closed and open moulding, to manufacture parts employing a variable laminate schedule, especially those thicker that can be achieved using just MEKP. ■

From regulation to reformulation

Gurit leads the way in safer epoxy chemistry for the marine and industrial sectors

Amy Moram, Chemical Compliance Manager and Sustainable Products Lead at Gurit.

Epoxies that meet new CMR regulations are available immediately from Gurit.

New website to improve navigation with dynamic visual identity

As the EU reclassified key epoxy diluents, Gurit's technical team has developed patent-pending alternatives for its marine and industrial customers. Products that meet new safety standards without compromising performance.

In 2024, the European Union chemical agency investigated 59 epoxy diluent chemicals and applied a CMR (carcinogenic, mutagenic, and reprotoxic) classification to them, which resulted in most two-component epoxy systems on the market also being reclassified. Supply chain communication of new classifications began this year, with harmonised classification expected to become legally binding for some substances from this year.

Gurit's technical experts had already been working for some time on removing CMR-classified chemicals from its product ranges, and late last year developed patent-pending technology for true alternatives for the very small number of the reclassified chemicals that are used in the company's products. The work has continued across Gurit's epoxy formulated range, with alternatives now available for most of the affected Gurit products.

Overall, the Gurit solutions have not affected cost or performance, a result which has been well received by customers, for whom it has been business-as-usual, with minimal impact on product qualification status.

The following Gurit products are not classified as CMR and are available immediately: Ampreg 32 (alternative to Ampreg 30) and Ampreg 33 (alternative to Ampreg 31) laminating systems; Ampreg 32/33 Thixotropic Pregel; Spabond 730, Spabond 575 (alternative to Spabond 570), Spabond 5 minute and BondPro 200 Series adhesives; as well as Ampro multipurpose system and S-Fair 700 filling and fairing compound.

Gurit's response to the changes is aligned with the company's global chemical safety strategy. The team continually monitors the regulatory landscape for early warnings of possible reclassifications and diligently works to reduce the number of Substances of Very High Concern (SVHCs), high hazard and CMR substances used in formulations and at production sites. The situation remains dynamic with new reclassifications occurring every year, resulting in an ever-growing SVHC list. Chemical safety and product performance are always front-of-mind for the Gurit team. By proactively testing, researching and developing alternatives, they ensure that marine, industrial and other customers can continue to access safer and high performing epoxy products.

"Chemical safety is fundamental to who we are at Gurit. Protecting our colleagues, our customers, and the end users of our products is a responsibility we take seriously, and we're committed to staying ahead of regulatory change. By continually reformulating and improving our chemistry, we ensure the composite market can rely on materials that are not only high-performing but also free from chemicals of concern," the company says in a media release.

Website relaunched to provide enhanced capabilities

The company has also announced the relaunch of its corporate website.

The updated platform offers improved navigation, enriched content and a fresh new look that reflects the company's multi-market focus, driven by innovation, performance, and sustainability, Gurit says.

The redesigned website introduces a modern, dynamic visual identity highlighting innovation and material excellence; simplified navigation enabling faster access to information and solutions; and expanded content showcasing applications, technical expertise and Gurit's full value-chain offering.

The site is designed to support customers across multiple industries, from next-generation wind blade development to advanced marine and lightweight industrial applications.

Across these markets, Gurit continues to focus on empowering customers with high-performance, sustainable solutions.

With the relaunch, Gurit enhances how it communicates its capabilities and supports customers in their upcoming projects. ■

JOIN US!

There are many good reasons why you will benefit from joining CANZ

1 Low Cost
The cost to members is very reasonable in view of the comprehensive service provided by the Association. This is a great investment for your future in our industry.

2 Composites Materials Specific
If you work with composites, carbon fibre and fibreglass, we are the only association that focuses entirely on these materials in NZ. These materials provide unique challenges and benefits in design, manufacturing, H&S, repair and disposal. Members keep up with technology, receive support and networking within this specialist area. CANZ is active in the Global Composites Sustainability Council and maintains links with other composites associations to keep members informed with worldwide relationships. This can help smaller businesses promote their work in association with a larger professional group.

3 Annual Conference
Keeping up-to-date with technology and business opportunities can be as easy as attending the Association's Conferences. A wide range of speakers update us on new materials, technology, equipment and market changes. Sustainability workshops, tours of facilities, hands-on equipment and materials demonstrations and trade displays with ideas and information for all. Feedback received, is these events are vibrant and future focused.

4 Networking
Enjoy valuable networking opportunities with your industry peers at our Conference and other events.

5 Regular Flexi Magazine
The regular Flexi magazine is published for members to keep them abreast of what is going on in the industry. Providing a publication of NZ-specific contributions and advertising can assist members engage staff, share news and collaborate on new topics of interest.

6 Industry Training & Education
The association has led in the development of training courses to suit our industry, working in association with the former New Zealand Marine and Composites Industry Training Organisation, now the Marine and Specialised Technologies Academy of New Zealand (MAST Academy). This is the only composites-specific training provider in NZ. Members can attend educational evenings to learn about materials and techniques, and suggest areas of focus for future work.

7 Legislation & Advocacy
The Composites Association keeps abreast of changes and issues guidelines to members. Advocates for composites industry to government bodies and provides a united voice for consultations and submissions, providing advocacy that is difficult to achieve as a single organisation. Recent examples of this is the Vocational Education Review where quick action was required to ensure composites was grouped with manufacturing, Workforce Development Council (WDC) consultations for developing qualifications and the UN Plastics Treaty round table events by MBIE.

8 Research, Marketing & Standards
As an association the voice of our industry is elevated beyond what an individual business can provide. Helping the wider public to recognise and appreciate the properties and performance of composites products is critical for our continued industry relevance and reach. Members can participate in strategic projects to market composites in New Zealand, develop and participate in NZ research and support the development of accepted standards. Working groups provide dedicated committees for key topics. Recent examples of this are contributions to Standards NZ development of swimming pool manufacturing standards, the Workplace Styrene monitoring project, industry survey with CIRCUIT (University of Auckland) and current review of FRP swimming pool manufacturing standard to be adopted in NZ. Suggestions for new projects are always welcome.

9 Sustainability
Increasingly, markets are requiring recycling as a filtering category for tenders or imposing import taxes based on sustainability criteria. The CANZ Reuse & Recycling committee is leading NZ towards solutions for carbon & glass fibre composites, providing education and development support to keep NZ manufacturers aware of sustainability improvements. CANZ annual waste survey provides data to support funding and improvements at an industry level. Recently two masters projects to support recycling have been completed in association with CANZ. Workshops and education are provided at annual conferences, by Flexi and Website.

10 Getting involved is easy
CANZ is a volunteer-run association reliant on participation and involvement from members. All members are encouraged to suggest new topics of work, join working groups and committees and serve on the executive committee. This can help staff and member businesses to develop leadership, input on strategy and network.

11 SOP, Policy & Practices Support
CANZ has available templated Standard Operating Procedures (SOPs) in various areas, example policies and guidelines. An example of this is the Composites Code Of Practice, which provides guidelines for suggested industry practices. This is currently under review and is a great opportunity for members to contribute.

12 Official Solicitors
CANZ would like to acknowledge and thank sponsor Clendons, Barristers and Solicitors, Commercial Lawyers, Auckland, now official solicitors for CANZ in its official magazines, newsletters and other communications to members.

13 Troubleshooting
CANZ members benefit from comprehensive access to the organisation's full members network for both technical and general support. This includes participation in the CANZ WhatsApp group, enabling prompt communication with fellow members regarding matters such as workload sharing, mold-related queries, or expert advice.

FLEXI Magazine is designed and produced for CANZ by Corporate Media Company Imagine Print Ltd 0274 322 590