

Connection

Issue 58 • March 2022

The official magazine of  **Composites**
Australia

SPECIAL EDITION **Women in** **Composites**

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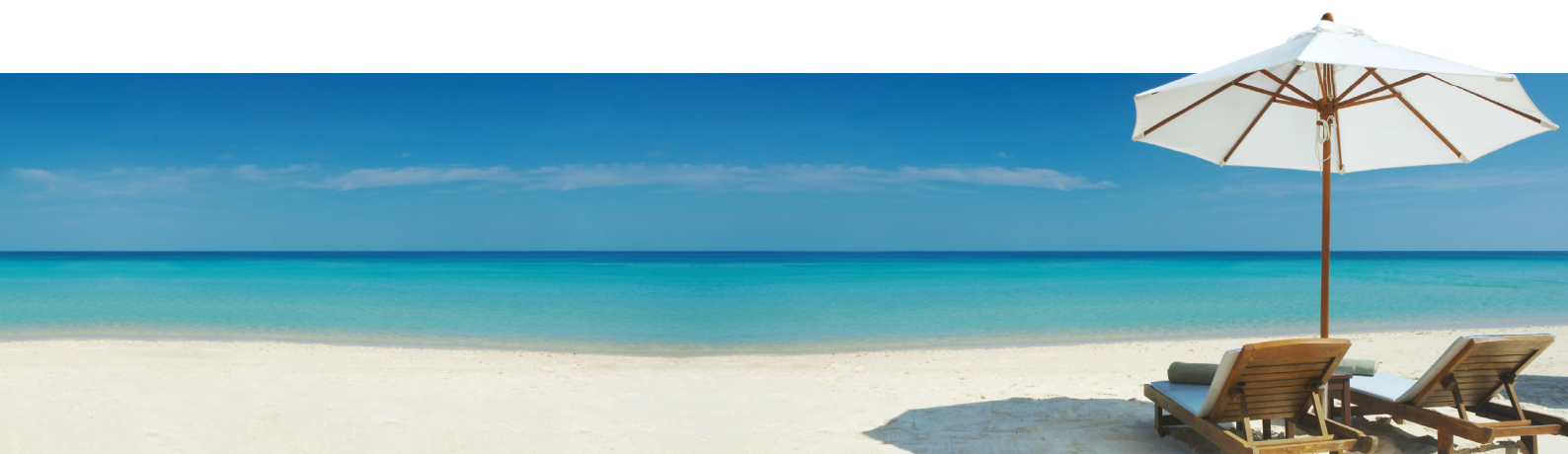


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Front Cover
The 58th edition of the Connection magazine celebrates International Women's Day, March 2022. This edition features the entrepreneurial careers and business journeys of eight remarkable women in the Australian composites industry.



Read their extraordinary stories.

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President's Letter



It is my pleasure to write this foreword for the 58th edition of the Connection magazine celebrating International Women's Day on 8th March 2022.

The articles chronicling the entrepreneurial careers and business journeys of eight remarkable women in the composites industry are heartening and inspiring in equal measure. It is especially interesting to discover the career background of our own Who's Who of Australian Contemporary Women. The association is very fortunate to have Kerry on its helm, ensuring we are all kept well informed of the important issues in our industry.

Collectively the eight women profiled here have been in the composites industry for a phenomenal 201 years in total. Some have come directly into the sector, while others, myself included, came a less direct path through a diverse range of careers. No doubt all have experienced both professional and personal challenges in their journeys. They are clearly women of great ability who have built unique businesses on their own terms and whose achievements deserve to be acknowledged and celebrated.

From its early days in the 1960s, women were barely visible in the composites workforce and certainly not as employers. The work demands grit and determination, skill and passion, and the ability to move with the times. My colleagues showcased in the following pages demonstrate all these qualities and more, and share a vision of a bright and prosperous future for their own companies and the entire composites sector, and I am proud to be among them.

While this special issue of Connection magazine inspired by International Women's Day, I expect we will continue to see more women achieving great things across the Composites sector.

Leona Reif
President

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Lorraine Duckworth

Director, ATL Composites

Written by Kerry Caulfield, Executive Director, Composites Australia Inc.

ATL Composites (ATL) is a leading manufacturer and supplier of advanced composite materials, engineering and technical services for the construction of high performance, lightweight structures. The company was originally founded on the transformative use of liquid epoxy formulations for timber boats and, subsequently, for a wide range of liquid and filled systems used in multiple industries including high performance marine applications. And at the tiller of this remarkable Australian company is the remarkable Lorraine Duckworth.

Having been bitten by the sailing bug early in her working life, Lorraine found herself sailing on the sparkling and chaotic waters Sydney Harbour out of the prestigious Cruising Yacht Club – the home of the Sydney to Hobart yacht race. An accomplished sailor, she quickly became immersed in the boat building techniques and materials that were leading the industry at that time. In its early years ATL was, and still is, the licensed manufacturer of WEST SYSTEM® epoxy products. The company established its corporate home in South East Queensland from which it has grown into a global business specialising in high performance yacht racing, commercial ferries, road and rail transportation, architectural, sporting equipment, mining, and automotive sectors.

Since 2000, Lorraine and Nicolas Cossich, Managing Director, have continued to lead the company, “We’ve always had a market driven approach to product development. Early products include DuFLEX® Composite Panels that quickly became an industry-standard, once introduced into the marine market, and is now specified for RV campers and specific architectural applications that require lightweight, but structurally effective solutions. Our move into sporting equipment has also been very successful with our KINETIX 110X, developed to provide ultra-white and high UV resistance, and now a leading product internationally for the manufacture of epoxy surfboards”, said Lorraine.

Over the decades, ATL has developed an extensive distributor network and clients across Australia and Asia, with



specific niche markets for DuFLEX panels in Europe and the USA. “ATL’s global family is one of our major achievements,” said Lorraine. “Since 2012, we’ve enjoyed a fruitful joint venture partnership with MuH von der Linden of Wesel, Germany to manufacture DuFLEX® panels for the European market. We also have enduring partnerships with DIAB Group Sweden, Hawkeye Industries USA, Airtech Inc USA, and of course our legacy relationship with WEST SYSTEM® Inc, USA. All have played a role in strengthening our position in existing markets, and our expansion into emerging composite industries.”

High profile international achievements include developing a unique epoxy system with extremely high compressive strength for the construction of James Cameron’s Deep Sea Challenger, a 7.3-metre deep diving submersible that made a record breaking 11 kilometre descent to the bottom of the Mariana Trench. Ellen Macarthur’s trimaran B & Q, gained the record for the fastest single-handed passage around the globe built with ATL’s R240 Wet-Preg epoxy combined with

Adventurer, sailor, activist Lisa Blair and Lorraine Duckworth from ATL Composites. Ahead of her journey from Brisbane to Albany, WA preparing for her circumnavigation of the Antarctic in January, Lisa met with Lorraine to stock up on WEST SYSTEM and other ATL products.

carbon fibre for hulls and decks. The list of monohulls and multihulls of all sizes built in Australia and overseas with ATL products and technical input is now too long to count.

Lorraine gives due credit to the talented ATL team. “Sailing performance relies on many things, including a skilled crew and a good boat. I’m proud of ATL’s team of industrial chemists and engineers who are dedicated to developing, analysing and specifying products to meet the challenging, and ever changing, conditions that ocean-going boats encounter.”

Today, as ATL Composites, the company boasts a workforce of 32, and holds International Certifications for Manufacturing and Quality standards including ISO2001-2015 Certification and DNVGL-CP-0421 and it is still operating from their Molendinar facility at the northern end of the Gold Coast.

Leona Reif

Director, FDP Composites Pty Ltd President, Composites Australia

Written by Kerry Caulfield, Executive Director, Composites Australia Inc.

For manufacturing professionals, walking the shop floor is a time honoured practice. It is where they get to observe production flows, track and analyse stock holdings firsthand, and are closest to production teams. For Leona Reif, Director of FDP Composites, walking the floor of her manufacturing facility is light-years away from her previous career in human services and organisational review with the Queensland State Government.

In 2008, Leona made the pivotal decision to leave her secure job to take over her father's composite fabricating business along with her brother John. With Leona leading in business development and John at the helm of production and sales, they forged new careers in manufacturing composite components for some of Australia's largest bus, coach and camper vehicle builders, as well as a range of other industry sectors. Leona admits that "To have grown the business from a small family company to a national manufacturing enterprise is an achievement which has brought me significant career satisfaction."

Their Brisbane-based company, FDP Composites, specialises in manufacturing composite components for the transport, bus and coach industries across two facilities. Large roofs and sides, as well as external bumpers, front and rear headers and flooring are fabricated in Brisbane, while the high-quality cosmetic finished internal components, such as dashboards, lockers and pillars are manufactured in their second facility on the Sunshine Coast using a range of closed moulding processes.

For many, a dramatic career change from public to private sector would be embarked on with caution. But for Leona it was an opportunity enthusiastically embraced, making the transition to her father's business at a time when he was looking to retire, and she wanted a change. "Dad always worked in the motor and bus building industry. He was late in his career when he started the business, then known as Fibreglass Design Panels, in 1999, and was hoping to pass on his legacy and enjoy a well deserved retirement. John and I were up for the challenge and I'm glad we were. I was eager to bring my knowledge of business process review into practice. Since coming into the business, we have seen significant growth as well as a shift in focus from hand lamination to closed moulding".

Like many Australian industries, bus and coach manufacture is transforming to a lower carbon footprint. Lighter, stronger components help improve fuel economy and range and reduce vehicular noise

and air emissions. With customers pushing for change, fleet operators and bus and coach manufacturers are responding with the rapid introduction of more efficient electric buses. A lighter bus gives extended range per charge cycle which helps to achieve greater journey distances.

"The sector's shift to sustainable mobility wasn't quite on the horizon when I started in FDP Composites, but I am proud that we have the opportunity to make a difference to the environmental performance of public transport," says Leona.

FDP Composites introduced a closed mould reusable silicone bag infusion process which has the added advantages of producing less waste and emissions. Producing a more uniform finish, the product addresses the dual challenges of reducing weight while preserving strength. At 13 metres long and three metres wide, FDP Composite's largest silicone vacuum bag has resulted in both time and consumables savings, doubling output from the production mould. "Empowering employees to focus on continuous improvement makes good business sense, because investment in improved processes ultimately increases productivity, quality and output. It's what makes running a business so rewarding".

Before joining FDP Composites, Leona was expert in management of service operations and business process review within government services. "With a Bachelor of Arts in Humanities, majoring in Applied Ethics and Politics, I was interested in how the decisions we make have flow on effects, and how examining the effects of those decisions can lead to improved outcomes. Good decision making requires systems thinking - an approach that views the system as a whole, interacting with its environment to meet objectives. Working in government was an opportunity to make a difference in the community. Now in manufacturing, I am applying the same set of skills in systems thinking to continuous improvement. Lean manufacturing is fundamentally an implementation of systems thinking".



In supporting the industry more broadly, Leona has also applied her governance and management skills to Composites Australia (CA). Her company became a financial member in their first year with FDPC, and Leona and John took a strong interest in the industry and developing relationships with other manufacturers. Appointed to the Board in 2014, Leona represented CA on an Austrade mission to Berlin in July 2015, as her experience in working within government made her the best candidate to ensure that CA was there to represent its members and promote Australian manufacturing.

JEC Asia in Seoul in November 2019 was another great collaboration, with CA facilitating a shared exhibition space between businesses, universities, and government to represent the Australian composites industry in the international arena. Leona joined the CA management team in hosting the Australian Trade Mission Pavilion. Her understanding of the benefits of research and knowledge, and how new technologies can improve a working environment is a driver for her in connecting with the wider

composites industry and continually learning and seeking new ways to improve her manufacturing business.

Having developed a strong working relationship with the CA board members and executive team, Leona was elected as President in October 2016. "I see my contribution to the sector as the development of a strong collegiate culture where members of the industry can learn and support each other to grow the industry as a whole.

"Much of what I have learnt about manufacturing and ways to improve our business have come from insights other manufacturers have generously shared through their involvement with CA, be it site tours, presentations at our conference, or conversations shared when we have an opportunity to get together socially as an industry and share our passion for making things. Without these opportunities to learn, our industry will struggle to meet the demands of our economy as it transforms to the manufacturing environment Australia needed to compete in the world economy".

Leona Reif, Director,
FDP Composites Pty
Ltd and President,
Composites Australia

Genelle Coghlan

Managing Director, Colan Australia

Written by Kerry Caulfield, Executive Director, Composites Australia Inc.

Genelle Coghlan is a materials geek. She loves the art of engineering purpose and performance into roll goods, tapes and braids, and pushing the limits of fibre compositions for enabling end-use applications in diverse manufacturing markets, be they composites, ballistic, filtration, industrial, hygiene, transport, infrastructure, motorsports and leisure.



Genelle Coghlan, Managing Director, Colan Australia in front of one of Colan's carbon fibre reels

Genelle is a successful serial entrepreneur with many years of business, finance and manufacturing experience in Australia and internationally. After qualifying as a lawyer, she established a successful tourism business overseas, notably in the Maldives archipelago which she called home for decades. Following the sale of this venture in 2004, Genelle returned to Australia to become Managing Director of her family company, Colan Australia. During the 18 years since that time, while offshore competition has forced over 60 Australian textile mills to close their doors, Genelle has managed to turn Colan from a loss-making company into a smaller but profitable venture.

Genelle counts this turnaround feat as her greatest business achievement: "When I took over Colan, the textile industry had an average rate of government assistance of 26 per cent – in the form of direct budget programs and tariffs. When this support was reduced to 5 per cent and offshore goods flooded in, textile companies like ours simply went to the wall. My strategy was to remain niche and be the

first to innovate through fibre properties and fabric construction," said Genelle.

Colan Australia has specialised in weaving industrial textiles from technical fibres since it was founded in 1954. "My father in the late 1950s was a pioneer of the industrial textile industry in Australia. He envisioned the growth of Australian manufacturing through technology transfer and introduced the manufacturing of woven fibreglass fabric into Australia," explained Genelle.

Close to seventy years later Colan, now with Genelle in charge, is still at the forefront of industrial textile manufacturing. The company produces a raft of fabrics for composites and protective and safety applications and is now Australia's only manufacturer of advanced technical fabrics. Remarkably, it is also the only mill in Australia with carbon fibre weaving capability.

Genelle admits to loving the thrill of R&D for new products and performance, be it flame retardant fabrics for use in protective clothing, ballistic fabrics used in bullet proof vests for military personnel protection, panels for military vehicles or high performing surfboards, storage tanks, pipes and boat hulls. "Developing fibres, yarns and textiles for performance applications is as fascinating as it is rewarding. Our technical fabric and tape range features exotic fibres like Basalt, Aramid (Kevlar) and Innegra, all of which we brought in early," explains Genelle.

In recent years Colan developed and patented a new synthetic polyacrylate fibre – PCA – that has exceptional high temperature resistance and moisture management properties. This unique fibre is being made into bush fire blankets for our rural fire services.

"With the exception of a project with CSIRO, we do all our own research and development without outside assistance. It is frustrating to see government grants go to others to learn what we already know!" says Genelle. "For most of my career in manufacturing, I've been the only woman in external R&D meetings and there have been too many occasions when someone else has painstakingly explained my own product and equipment to me, assuming I know little."

Genelle has also been successful in developing export markets for both fabrics and product.

“We engineered and manufactured textiles that were made into flak jackets to protect our soldiers during the East Timor Crisis of 1999. One of the protective measures for our defence force in Afghanistan was also anti-flash protective hoods,” she said.

“I came into this company knowing that markets mature, shift and change. As a lawyer, I understand that business is a contest – a contest for influence and competition in the form of price, quality, design, sales, location, and almost every business process. For Colan, success has come from remaining niche, and being the first to innovate.”

Genelle’s achievements are respected across industry. She is acknowledged as one of the top professional female non-executive directors of Australian listed companies, including a Director at AJ Lucas Group Ltd. from 2010 until 2016, and currently MD of Metis Technologies. Genelle is also an active member of the composites industry as a committee member of Composites Australia Inc. since 2007, and serving as President between 2010 and 2016.

Colan developed the first specialised fibreglass fabrics for boat builders and surfboard manufacturers. Initially it was used as a sheath to cover wooden boats. The

technology and application skills developed to a point where fibreglass could be used for full fibre moulded hulls and subsequently adapted into the defence, industrial, transport, infrastructure and sports and leisure manufacturing markets.

Another early product line was the acoustic woven material called ‘grill cloth’ that lined the speakers of radiograms and televisions that were made in Australia by PYE, Phillips and Amalgamated Wireless Australasia Ltd or AWA, to name a few. “My father engineered and manufactured the fabrics to absorb vibration and move synchronously with the sound waves,” explained Genelle.

The Huntingwood site in NSW is Colan’s third since the company was founded. The mill was purpose built for Colan’s manufacturing requirements, particularly for the multiaxial fabric that was developed over 20 years ago for the Huon-class Minehunter built for the Royal Australian Navy at Australian Defence Industries shipyards at Newcastle. The facility optimized the flow of processing raw materials into finished products and housing textile manufacturing equipment that was produced for a myriad of end-uses, including Formula 1 cars, naval vessels, refrigerated semi-trailers, caravans and surfboards.

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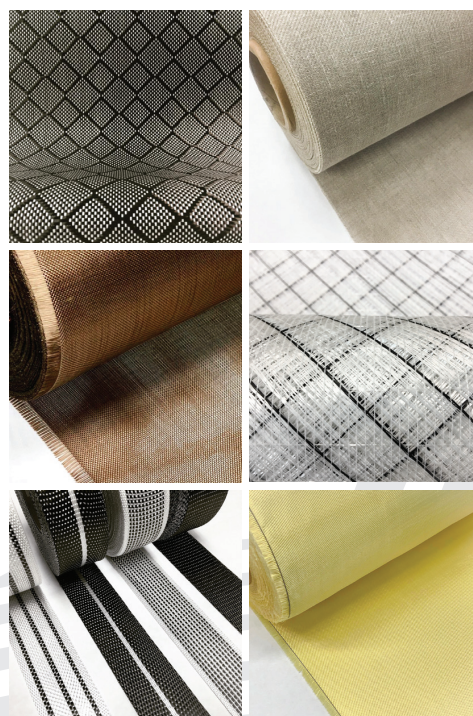
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Lynley Papineau

Managing Director, Aquatic Leisure Technologies (ALT)

Written by Kerryn Caulfield, Executive Director, Composites Australia Inc.

The backyard pool is the ultimate Aussie playground; a private oasis for fitness and relaxation, and a focal point for family leisure time. Many of these backyard pools are made by Aquatic Leisure Technologies (ALT), Australia's largest swimming pool manufacturer.

Producing under the brands Aqua Technics, Buccaneer Swimming Pools, Sapphire Pools, Palm City Pools, Quantum Composite Pools, Round Pools Australia and Riverina Pools, the group also includes Eleven Finance, Jadan Landscapes, Jadan Pool Renovations and Leeder Tanks. ALT was founded as Aqua Technics in 1976, Lew Beale joined the business in 1978 as a supervisor and soon became the owner and inventor of many technologies. ALT has made and installed over 61,000 pools, just over 60 per cent of which leaves WA for either the eastern states or overseas.

Lynley Papineau
Managing Director,
Aquatic Leisure
Technologies (ALT)



At the helm of this extraordinary company is Lynley Papineau. While Lynley describes herself as “focussed and results orientated,” others call her a powerhouse.

Graduating from Curtin University with a Bachelor of Commerce (double major in Marketing and Public Relations), Lynley officially joined the family business of Aquatic Leisure Technologies Pty Ltd in 1994. Like most children who grow up in small business families, Lynley spent many school holidays helping out in the office and factory. After graduating, she started out in purchasing and stock control and moved successively into other areas of the business, from marketing and quality control, auditing manufacture, through to installation, sales and administration. “These roles helped build a solid foundation to understand how the business operated, and more importantly I got to know the people who I worked alongside. Walking through the factory is still one of the highlights of my day,” advised Lynley.

As a family company, ALT counts family values as the core of its identity and value system. “The ALT workforce is one of the company’s greatest accomplishments. We care about them and their families, many of whom have been with us for up to 33 years. We have many second-generation staff members and it is great to see them work along-side their parents. Values have to be practiced, otherwise you lose them. We worked out that our management team has a total of 192 years of business experience and almost 50% of our senior management team are women.”

The WA economy is intrinsically linked to the fortunes of commodity prices and mining exports, as well as the overall Australian economy. Over the 45 years that ALT has been in business, both these economies have seen the gamut of economic conditions. “I’m proud of navigating the company through the commodity price boom and the subsequent soft market forcing us to consolidate and temper expansion strategies. While we can’t control the economy, we can choose how we react and manage our way through, while at the same time looking for ways to do things better,” says Lynley.

Lynley advises that shocks to the economy can also

“As a family company, ALT counts family values as the core of its identity and value system. The ALT workforce is one of the company’s greatest accomplishments. We care about them and their families, many of whom have been with us for up to 33 years. Values have to be practiced, otherwise you lose them.”

be transformative. “Developing offshore and interstate markets is one of our future-proofing strategies that my brother Ben initiated a number of years ago and I was able to grow further. We are now a truly global company with a presence in the UK, Europe, North America, New Zealand and Reunion Island.”

“The last two years have reinforced our commitment to evolving ALT through continuous improvement and pioneering advancement in materials. Bringing graphene technology to market after years of extensive R&D with First Graphene, the WA based supplier and developer of high-performing graphene products, is one of our step-change achievements. Graphene Nano-Tech is now incorporated into the structure of our pools, creating a totally new patent-pending construction process that is 30 per cent lighter and 30 per cent stronger than traditional fibreglass pool technology.” says Lynley.

Lynley also recognises that ALT operates as part of a larger industrial community. She is an active member and a board director of several industry bodies, in many cases originally as the only woman. In 2000, Lynley was elected as the first female president of the Swimming Pool and Spa Association of Western Australia (SPASA WA), serving as SPASA WA President again from 2012-2014. She also joined the national body SPASA Australia as a Director in 2013 and was Chair of the Board from 2014-2018, stewarding transformative mergers with other state bodies. In 2017, Lynley joined The Chamber of Commerce and Industry of Western Australia Ltd (CCIWA) Manufacturing Forum and in November 2021 was invited on CCIWA General Council to participate in providing policy recommendations and industry feedback.

She has also represented the industry at a local, state and federal government level including appointments with the WA Building Commission - Building Act Working Committee and involvement in reviewing various Australian Standards. Most recently Lynley was a member of the PL-41 Committee that reviewed the Australian Standards AS1838 & AS1839 for fibreglass swimming pool manufacture and installation which had not been reviewed since 1994.

Australia now has the highest rate of pools per capita in the world. In Brisbane, Perth and regional Queensland almost one in five homes has its own backyard pool. Of the estimated 30,000 new in-ground pools to be built this year across Australia, 65 to 70% are made of fibreglass, an increase from 5 percent during the 1980s when concrete and/or vinyl liner were the materials of choice.

Competition drove innovation in pool shapes and finishes. Maintaining and growing market share necessitated investment in pool shell technology and material inputs for unique pool finishes and advanced colours. Manufacturing, marketing, franchising, installation and servicing networks were developed in parallel. Australian fibreglass pools and spas are now the most technologically advanced in the world with competitors driving each other for new product improvements.

In addition to large purpose-built factories, Australian pool manufacturers have built a sophisticated network of well-trained builders and solid dealer networks. Developed to fortify the domestic market, this comprehensive system is now termed “the Australian model.” A model that is both exportable and attractive to offshore interests, particularly to North America where the market for Australian designed and made pools has been growing steadily for some years

Lynley’s achievements go further than managing a large vertical manufacturing and distribution company. She won the 2001 National Telstra Business Woman of the Year Award – Private Sector and was awarded a Centenary Medal by the Commonwealth of Australia in 2000, acknowledging her contribution to business.

At a personal level, Lynley is equally proud of her husband of 27 years and two children, and her ability to juggle a busy family life with an even busier professional one. “Working in your own family business allows you flexibility which was important for me to still be an active part of the kids school life. My husband is my biggest supporter and between the two of us we made it work.”

ALT is WA’s most awarded swimming pool company, winning a phenomenal 240 awards over the past 46 years. It was the first pool company in WA to win a Telstra Small Business Award and since then has added a plethora of others to the trophy cabinet.

Krystyna Nikolas

Financial Controller, Marky Industries

Written by Kerry Caulfield, Executive Director of Composites Australia Inc.

Krystyna Nikolas can still tie a 'truckies' knot' which she describes as a useful knot for tying down and securing a load. "A truckies' knot can be tightened easily without much strength using secure tie points on both sides of the load. You can pull it tight by pulling sideways while preventing the tail end from slipping through the loop," explains Krystyna.

It's a job she did many times in the early years of the manufacturing business, Marky Industries that she co-founded with her husband Martin in 1978 while they were both still teenagers.

From hand laminating, polishing plugs, grinding and trimming, there are few jobs that Krystyna hasn't done in the company's journey from a \$50 start-up to employing over 70 people manufacturing products for the mining, transport, construction, chemical, defence, recreational and building industries.

As a child born of parents who migrated from post war Poland to seek work and a better life, Krystyna is justifiably proud of Marky's employment record. "I take pride in knowing that we have provided employment for people for the years we've been in business, some of whom have been with us for over 25 years," confides Krystyna.

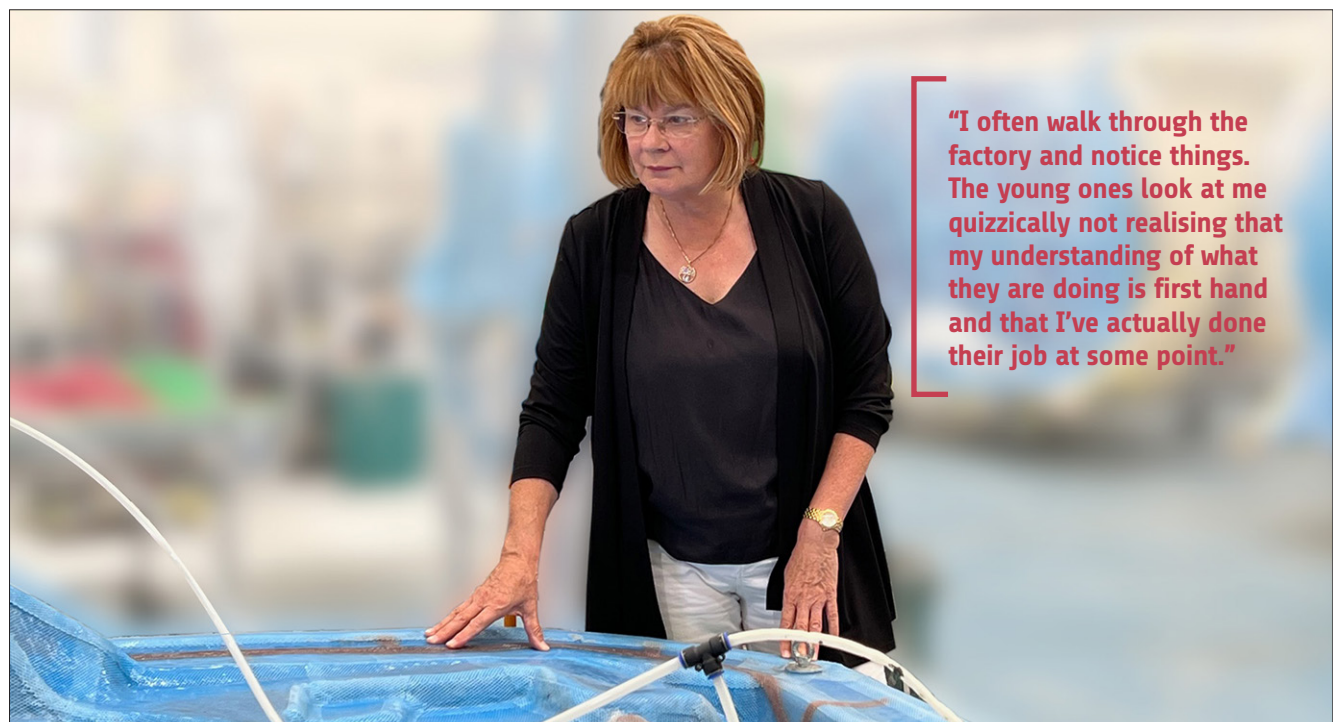
As a frontier industry in the 1970s and 80s, the composites industry – or fibreglass industry as it was known – was on a collective learning curve. Krystyna

maintains that one of their early insights was that safety comes before productivity. Workplace health and safety became an early core organisational value, so too human resources – both of which require considerable resources to monitor legislation and ensure compliance.

In Krystyna's opinion, success and longevity in manufacturing rely on effective cash flow management and developing strategies for surviving the lean times.

At the heart of it all, Krystyna argues, is an efficient production system, with minimal waste, interruptions or unnecessary actions. "The economic viability of every process and all material inputs needs to be constantly tested. In recent years, we've aggressively adapted and finessed silicone vacuum bag technology which is achieving considerable production cost

Krystyna Nikolas,
Financial Controller,
Marky Industries
inspecting
composites part
production using
silicone vacuum bag
technology



"I often walk through the factory and notice things. The young ones look at me quizzically not realising that my understanding of what they are doing is first hand and that I've actually done their job at some point."

savings and efficiencies for the company. It is cleaner, reduces waste, has minimal exposure to VOCs, and can mould a part in six minutes,” advised Krystyna.

Two years ago, the team at Marky transitioned its entire production system from LRTM (Light Resin Transfer Moulding) to reusable silicone vacuum technology to produce the award winning fully fitted sleeper cab for client truck production lines. Another product where the reusable silicone bag system has proved itself is the iconic swimming starting blocks that Marky manufactures for the export market.

Marky’s transport customers include Mack Trucks, Volvo, Iveco, Ford, Western Star and Navistar branded trucks. The company’s production output also includes over 4,000 components for trains in the Perth Urban Rail System including cosmetic internal panels, as well as train driver dashboards and whole cab fronts for Queensland Rail; all made of fire-retardant resins and specialised composite materials to ensure compliance with ballistic and high impact requirements.

Marky Industries also manufactures composite

components for mobile, elevated work platforms (EWP) used on construction sites, in building maintenance and for utility services. Commonly known as cherry picker arms, the platforms require specialised materials and manufacturing procedures, and electrical testing to achieve the weight, strength and safety performance that make this an exceptional product in its market.

According to Krystyna, striving for excellence through quality certifications helps to entrench a quality culture. As far back as 1994, Marky achieved Ford Q1 Certification that recognised excellence in four critical areas: capable systems, continuous improvement, ongoing performance and customer satisfaction. Marky is also certified for AS/NZS ISO 9001:2015 for products and services.

After close to 45 years of managing the company with her husband, Krystyna Nikolas still wakes up with her senses tuned to the weather conditions. Instinct kicks in and her first thoughts are about the effect on productivity conditions and, if need be, she’ll be available to tie another ‘truckie’s knot’!

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Sharon Swan

Director, LSM Advanced Composites

Written by Kerry Caulfield, Executive Director, Composites Australia Inc.

Sharon Swan is competitive, in business as in life. She's a champion rally co-driver and had a career in the timber industry before founding Toowoomba-based LSM Advanced Composites with her husband and co-Director, Liam Mahoney. Twenty five years later, the adventure of making lightweight high-performance carbon fibre composites clearly hasn't waned.

For Sharon, their greatest achievement has been to build a unique business and being acknowledged and respected for their high quality of workmanship, after all, Sharon quips, in the beginning the only company doing pre-preg autoclave composite components was Boeing.

The couple are retired rallying enthusiasts and successfully competed in many National and State Championships. This passion for speed created a deep understanding of the performance characteristics of carbon fibre vehicle parts and their limitations in extreme conditions. As a result, since forming in 1996, the Toowoomba-based company has been making lightweight, structural and non-structural carbon fibre components for all manner of vehicles, from racing cars, mining equipment, drones, radar dishes and unique bespoke projects.

"The association is a means for us to connect with the wider composites industry and those with a shared passion for making things. For me, the Australian composites sector remains fascinating and we are all continually learning new things."

LSM Advanced Composites was founded on their unique knowledge of engineering and building autoclaves, and curing prepreg (pre-impregnated) carbon fibre structural and non-structural components. At the competition level, autoclave cured carbon fibre parts lighten the car and provide optimum protective strength. Sharon explained that when the pair was first driving, carbon fibre was hard to get and components had to be ordered and shipped from the UK with long lead times. "As an engineer, Liam specialised in autoclave technology, and I'd known it from my time in the timber industry. We put our knowledge to use and built our own autoclave as a proactive solution to getting the parts we needed," said Sharon.

LSM has worked with racing car designers on the composite specifications for Holden Commodores and the Chevrolet Camaro (due to debut in the Australian racing circuit in 2023).

Sharon explains "There is a lot of satisfaction in making components with unique properties particularly when they are used to protect people and assets. From a safety perspective, a weakness in a part is usually because of an air void which can lead to disastrous consequences. An autoclave consolidates the prepreg laminas through simulated elevated pressure and temperature which result in a uniform high-end material system. The high pressure compresses the part and prevents air voids from forming as well as ensuring a perfect surface quality of carbon fibre prepreg parts".

Another unique LSM product is its own 'occupant protective system' (OPS) for the mining industry, designed and manufactured exclusively by the company. "Mine sites are hazardous environments. Mining debris such as off-cuts, rock bolts and drill sets can be flung up by the vehicles' tyres and pierce the floor pan injuring the occupant. Vehicles need to be outfitted properly to manage these driving conditions. We developed an aftermarket composite flooring system that acts as a ballistic panel to protect occupants," explained Sharon.

LSM also manufactures the carbon fibre fuselages for Textron Systems Australia's drones (or Aerosonde Small Unmanned Aircraft System (SUAS)) that are contracted by the US Navy to fly in conditions too dangerous for manned aircraft. Armed with meteorological sensors and LSM components, the Aerosonde was the first unmanned aircraft to fly into the eye of a hurricane to measure the temperature, pressure, humidity and wind velocity.

In recent years, Sharon and Liam have expanded their manufacturing footprint by acquiring another Toowoomba company, Silicon Rubber Extrusion, that specialises in extruded profiles made from food grade peroxide and platinum cured polymers in a range of colours.

LSM became a financial member of Composites Australia in its first year of business and Sharon became a Board member in 2007 and served as President from 2008 until 2010. "The association is a means for us to connect with the wider composites

industry and those with a shared passion for making things. For me, the Australian composites sector remains fascinating and we are all continually learning new things,” advises Sharon.

LSM has three autoclaves that can manufacture very small complex items through to the very large. The largest autoclave, which Sharon affectionately calls the ‘Big Girl,’ has a useable diameter of 2.4 metres and

a working length of 8 metres, maximum operating temperatures of 250C and a maximum operating pressure of 200psi (14BAR). The production capability extends to a number of 3D printers, and 5 and 6 axis high precision CNC machines used for design and prototyping as well as machining and trimming. LSM’s component fabrication service is complemented with full assembly services.



Sharon Swan, Director of LSM Composites standing in front of the company's largest autoclave.

Nicola Stanistreet

Sales Director, Pacific Resins

Written by Kerryn Caulfield, Executive Director, Composites Australia Inc.

According to an analysis by The New York Times , daughters are 1.8 times as likely to have the same job as their mothers and 1.7 times as likely to have the same job as their fathers.

As the daughter of an industrial chemist and a biochemist, it is not surprising that Nicola Stanistreet found herself as Sales Director, Pacific Resins Pty Ltd.

The Stanistreet Family moved to NSW from the UK in 1982 after her father Keith Stanistreet was relocated by his then employer to commission and run an organic peroxide plant in Botany, NSW. The family subsequently founded Pacific Resins in 1999.

Based in Wollongong, NSW, Pacific Resins is a family owned company with stores in most state capitals. It is the exclusive distributor for Swancor, the Taiwanese manufacturer of specialty epoxy vinyl ester (VER) and epoxy (EPR) resin products, resin systems, and specialty additives in Australia, New Zealand and the Pacific Islands.

Nicola Stanistreet,
Sales Director, Pacific
resins inspecting a
recent delivery



"I came to Pacific Resins by the unlikely way of a Bachelor's Degree focused on History and Celtic Studies from the University of Sydney and subsequently worked with the Department of Veteran Affairs in public administration. Mum was a biochemist working in pharmaceuticals, as a scientific officer involved in research in the UK, and dad worked in the chemical industry. Our kitchen table conversations were about chemicals."

Nicola's customer base includes manufacturers that supply into critical sectors such as water and wastewater with piping, ducting and storage tanks, so too the chemical and petrochemical sector as well as military and defence. Her reach also includes companies that make components for the transport sector as well as for building and infrastructure and pools and spas. "I love the fact that vinyl ester resins are problem solvers. The properties exceed both polyester and epoxy in corrosion resistance, temperature resistance, and toughness and are typically used when high durability, thermal stability, and extremely high corrosion resistance are needed. These properties bring me into the most amazing manufacturing plants that engineer purpose and performance into products using our materials. There is great satisfaction knowing that I played a part in these industrial outcomes," enthuses Nicola.

Pacific Resins became a financial member of Composites Australia over 20 years ago and has been an ongoing sponsor since then. Following her father, Nicola joined the Board in 2016 and the company has had a presence at every Composites Australia conference since its first large scale event in 2003. "I believe the Association has an important role in providing a collective voice for individual businesses; a forum to share information and to discuss issues and technology. Pre-COVID, our regular events were an opportunity to showcase technology and to share strategic insight into a wide range of aspects associated with growing a composites business and collaborating with other companies," says Nicola.

Nicola, like most of us is hoping to travel to Paris in June to visit the JEC exhibition. "Teleconferencing has become our communications tool of choice during COVID, but there are limitations to its efficacy for building relationships. I'm ready for forums like JEC and the Composites Australia conference that bring people together to expand our horizons and to forge further relationships," says Nicola.

Outside her professional roles with Pacific Resins and Composites Australia, Nicola has also contributed

to her local community as a member of the Wollongong City Council citizens' panel.

When asked about her achievements, Nicola is typically humble about her impressive ability to balance a successful career that includes interstate and international travel, while co-parenting a blended family of eight including four of her own children.



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Kerryn Caulfield

Executive Director, Composites Australia Inc.

Written by Thomas Cameron, Intern

Most readers would know that Kerryn Caulfield has managed Composites Australia and published this magazine since 2004. The work involved with managing an association requires her to write about products, companies, research outcomes and industry issues.

However this edition features inspiring stories on women in composites and Kerryn's achievements warrant a story of her own.



"Our neighbours had jobs in factories. My grandfather had a printing works in Little Lonsdale Street and subsequently Fitzroy. We understood that things had to be made and that factories were productive places full of people who were proud to be making them."

Kerryn Caulfield
Executive Director,
Composites Australia
Inc.

Kerryn's 'Body of Work' is worthy of the description 'prodigious', meaning extraordinary in ability, output, or strength, as well as marvellous and amazing. In her career, Kerryn has not shied from adventure. She has dived into dumpsters to collect data on charitable donation waste; travelled into military zones in the UAE to assess opportunities for Australian manufactured defence apparel; and interviewed surfing legends about the success of Australian surfing brands. She has contributed to countless industry reviews from Free Trade Agreements to Technology Roadmaps and held a number of Ministerial appointments to advisory and funding committees. Kerryn has managed and headed over 50 offshore missions, 60 conferences and 250 industry technology workshops. She is particularly proud of raising close to \$20 million in government grants for industry projects. A personal best is the \$6 million Landfill Levy Relief Program she negotiated with the Victorian government to offset the cost of illegal

dumping imposed on charity op shops.

Kerryn has also published prodigiously. In her role as CA Executive Director, she has published 58 editions of this Connection magazine and written close to 300 articles on composites and other related topics. Kerryn has also researched and written a profusion of white papers on a range of subjects from industry training to international market development for Australian manufactured goods.

Kerryn grew up in the east of Melbourne, where manufacturing firms once gainfully employed thousands of Victorians, many of who were 'new' Australians. "Manufacturing was a worthy career option back then," recalls Kerryn. "Our neighbours had jobs in factories. My grandfather had a printing works in Little Lonsdale Street and subsequently Fitzroy. We understood that things had to be made and that factories were productive places full of people who were proud to be making them."

After graduating from RMIT, Kerryn commenced her professional life developing textile ranges which took her around the world many times to source trends and to work with specialised mills developing fabrics. She became an expert in fibres and the manufacturing processes and production options for apparel, interior and industrial textiles.

Then came the early-nineties. After decades of government assistance encouraging Australian firms to become internationally competitive, the Federal Government's tariff reduction policy came into effect. "Textiles was one of the industries the tariff reduction policy targeted. Under the new policy framework, many time-honoured manufacturing firms, large and small, were deemed to be inefficient and time-worn." Kerryn recalls. "It gave me an appreciation of the powerful effect of government policies and how deeply they can affect people's lives".

A defining career turn came when she was offered a Victorian Government position as a Senior Trade Counsellor at the Australian Chamber of Manufactures, to assist companies expand beyond the domestic market. The large, vertically integrated textile mill, Bradmill Textiles recognised Kerryn's talents and offered her the position of International Business Manager. During her Bradmill tenure, the company went on to develop an export portfolio of close to \$50 million across cotton yarn and denim fabric. The company was recognised as

the epitome of local manufacturing excellence and won state and national exports awards.

In 1995, Kerryn's achievements were recognised by the Australian Government Trade Organisation for contributions towards Australia's export earnings and she was listed in Reeds, Who's Who of Australian Contemporary Women (1998). She has served on a number of Boards, has mentored women in leadership and management positions and pursues gender equality at Board level.

Weary of travelling overseas, Kerryn subsequently founded her own company to specialise in association management across a number of related industry sectors that were characterised by change and innovation. Her company Apical International has been contracted to Composites Australia since 2005.

Kerryn is humble about her epic career journey and her impressive box seat view of the Australian manufacturing industry that few get to experience. She believes that the success and viability of the local textile and composites industries in the future is linked to innovation, including in technology, products and processes, as well as new business models and frameworks. Most importantly, there needs to be a renewed focus on training and education that ensures the next generation of skilled workers, managers and leaders have the competencies and knowledge to create and capitalise on future business opportunities.

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