PIVOTING BREEDS SUCCESS

Amiga Engineering has long been a beacon in the Australian manufacturing landscape for diversifying and meeting the needs of wider industry and remaining relevant. It is beginning to reap the rewards of this commitment.

Amiga Engineering is an Australian based manufacturing company known for its innovation and advancements in the industry.

Starting as a small business in 1988, Amiga has grown into a leading manufacturer in the country, providing advanced manufacturing services to a range of industries. Amiga has made significant investments in additive manufacturing, which has enabled it to create complex geometries and intricate designs with great precision.

This transition has allowed the organisation to bring its manufacturing expertise into this exciting new space.

The company has also established Australia's first metal powder atomising machine, allowing them to produce high-quality metal powders that are essential for its advanced manufacturing processes.

Despite its humble beginnings, Amiga's commitment to innovation and excellence has enabled it to become a leading player in the manufacturing industry. With its cutting-edge technologies and focus on customer satisfaction, Amiga continues to provide advanced manufacturing solutions to a range of industries, both in Australia and internationally.

Adjusting focus to stay relevant

The challenges Amiga Engineering faced back in the mid 2000's was one many manufacturers have had to contend with.

Founder and director Michael Bourchier explained how the company diversified operations to remain relevant in the Australian manufacturing landscape.

"We identified the additive space as one we could move into, we could bring our skills to that field and be one of the first in Australia to capitalise on this technology," he said.

"We invested strongly in additive equipment; we made the conscious decision to go for the top end of this technology and it has paid off."

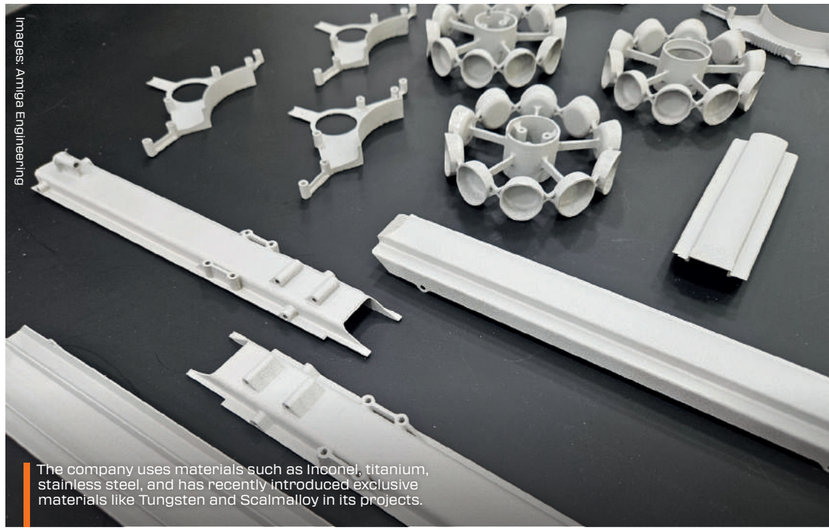
It took some time to find the space in the market that Amiga wanted to operate in but they have found the niche that suits them.

"The medical industry would approach us, but that would be for one-off components that were never going to be profitable for us," Bourchier said.

"We knew we had pulled the trigger at the right time going into this space, other companies had gone five or six years before us and struggled but the appetite was there in Australia.

"You look at it now, Europe was six years ahead and the US was four or so, and now everything that is going up on SpaceX, Blue Origin and other programs is 3D printed, Australia is starting to become like that," he said.

By investing in this technology when it did, Amiga ensured that as the appetite grew in Australia, it was ready to service that need.



Images: Amiga Engineering

The company uses materials such as Inconel, titanium, stainless steel, and has recently introduced exclusive materials like Tungsten and Scalmalloy in its projects.

As the oil and gas industry is slowly departing Australia, Bourchier felt the time was right to make the transition into additive.

"It seemed to work as soon as we got into it, whilst a lot of it started small, we have been slowly making the right connections," Bourchier said.

"We began working with the right designers and people who were thinking outside of the square and instead of going overseas they began to approach us.

"Working closely with universities has been key to our success, taking the research component into the real world has been imperative," he explained. We also had Andre (from the Additive Manufacturing Precinct at RMIT) join us and build the foundation of our Metal additive manufacturing lab with me from the start.

Amiga Engineering is currently operating at around 30 per cent capacity, ensuring it is prepared to meet the needs of Australia's additive manufacturing industry.

Additive Manufacturing

Amiga Engineering has several machines to meet its additive manufacturing needs, as some of them can run for several days working on a single project. It has the largest service bureau in Australia for metal and polymer additive manufacturing.

The company is currently operating 3D systems branded machines and has begun incorporating ways of closing the loop of materials to manufacturing into its process as Bourchier explained.

"The powder comes out of the machine and into the sieve where it is recycled which minimises our losses to around 3 per cent," Bourchier detailed.

"Some of our newer 3D systems machines have this recycling component built in which is helping us to minimise manual handling of the powder."

This type of forward thinking and technology integration has been key to Amiga Engineering's success. The company has been working with Inconel, titanium, stainless steel, and now exclusive Tungsten and Scalmalloy; and is beginning to ramp up its titanium usage for ballistic titanium protection. Amiga's newest arrival of its 4th 3D Systems metal printer (5th metal printer overall) will be focussed on ballistic titanium armour, full time; providing a new capability globally for shaped ballistic protection

"Scalmalloy is about to become one of our go-to materials, it is what industries such as Space and Aerospace can benefit from," Bourchier said. Raindance Systems has been Australia's first to implement Amiga's exclusive certified metal printing capability of Scalmalloy.

For the team at Amiga Engineering, it is about building trust within the industry that the company can meet the requirements of a range of sectors.

"When people come to us, they can trust that we will customise a solution for them, being a machining company and an additive manufacturer, we can deduce what is required," Bourchier explained.

"Some manufacturers will try to 3D print everything but if we identify cost savings utilising machining it is an integration of solutions, we will recommend that."

Working with major companies

Amiga Engineering have been working closely with a range of Australian start-ups including companies

Amiga Engineering utilises 3D Systems branded machines and has initiated the integration of methods aimed at closing the loop between materials and manufacturing within its processes.

like Hypersonix Launch Systems, and it has begun working with major international players, which poses new challenges.

"It does not matter what environment you are working in where there is engineering involved, third party validation is required," Bourchier said.

"Working with organisations requiring specific standards (such as NASA), they will usually ask you to provide test bars to be validated, once you have that validation, they will give you the space and freedom to do more work."

For the team at Amiga, they have identified learning from each and every job to ensure development continually occurs.

"For us it is basically like we are engineering each and every time we put something together, we will look at the component and understand what could be done and subtle improvements that can be made," Bourchier explained.

"By ensuring we have continual development, it allows us to remain competitive, particularly when going up against international companies."

Bourchier told the Manufacturers' Monthly team a project Amiga had worked on in which they had provided an item that was a consumable that needed to be replaced every couple of weeks. Six months later when Amiga reached out to see if they needed more, they were informed the product was far stronger and had not needed to be replaced, showing the strength of the metal 3D printing process (Laser powder bed fusion technology) coupled with the strong design processes.

Old world meets new world

Whilst Amiga Engineering made the shift to additive manufacturing, it never forgot its roots in the machining industry, fabrication and its gearbox division.

"The company began its life producing pipe flanges, fittings and special components for companies like Woodside, Worley Parsons and Esso and their gas lines," Bourchier said.

"Unfortunately for us they decided they wanted to source these components from overseas."

The company manufactures the only Australian made brand of industrial gearboxes, general fabrication and industrial maintenance all in a bespoke nature to suit the needs of clients.

The industrial gearboxes which are the Genat and Wood branded gearheads are known for longevity and durability, ideally suited to the Australian market.

Keeping these skills in house has not only allowed the company to remain relevant in these spaces, it complements its modern manufacturing processes.

As Bourchier explained, additive manufacturing will never 100 per cent complete a component so it will always require an extra step to be utilised.

"3D metal printed requirements will always need extra machining on tight tolerance areas, and that is where our expertise really comes in. With a fully versatile CNC machine shop that works with our metal 3D capabilities under one roof is unique," he said.

"We will ensure the components are printed to the highest quality and then machine them to the exact specifications the clients require."

Workforce

Bourchier explained that the company is looking to bring the right people into the company to ensure prolonged success.

"We do occasionally get some throughput when people enter the manufacturing industry and realise it isn't for them," he said.

"A lot of the people coming out of university have not had the opportunity for hands on learning, so when they come on board with us it is about giving them that experience and getting them to a point where they can work independently and for real-world applications.

"We are beginning to look at ways we can train newcomers, the AM space has so much information it definitely has the potential to burn people out, so we need to ensure we manage that effectively," Bourchier said.

A challenge facing Amiga Engineering currently as an SME, is finding skilled tradespersons. This is why Amiga have made the commitment and are investing in a minimum of 3 apprentice fitter and turners to help build back this skill set.

"We are aiming to keep talent long term, keeping them on sensitive but exciting projects using a range of technologies that is not available anywhere else under one roof, and then having them understand the sensitivity of their work," he said.

Whilst attending Amiga Engineering, the Manufacturers' Monthly team got to meet some of the young apprentices who have come on board at Amiga.

"The apprentices have been great, they have come in and really utilised their knowledge and skills and been keen to learn," Bourchier said.

"If we could continue getting people like this in the door we would be very happy."

Meeting Australian needs

During covid much of Australia began to face crippling supply chain issues, with much of the supply coming from offshore, many Australian companies could not meet their needs, as Bourchier explained.

"We definitely saw a pickup of work during covid, emergency works for oil and gas companies was something that really came to the fore, they knew we still had the capabilities so they turned to us" he said.

"As they came to us, they realised we have these capabilities locally still, and that work has lightly continued since then.

"We are currently doing some maintenance work for Esso which is great for us, just keeps the work diversified and not too many eggs in one basket," Bourchier explained.

When investing in additive manufacturing, Bourchier and the team made the conscious decision to not leave behind the work that had treated them so well.

By doing so they ensured an ability to meet the needs of Australia when the time came. As many companies begin to look back to Australia for products, Amiga is primed to address these needs head on.

Manufacturer of the year

Winning the manufacturer of the year at the Endeavour Awards for Amiga Engineering was truly a culmination of years of hard work for Bourchier, his wife Cecily Bourchier and daughter Dee Bourchier. He spoke about what it means for the company.

"We have been privileged to work with some really exciting companies like Hypersonix Launch Systems and Raindance Systems (first company in Australia to utilise the benefits of Amiga's Scalmalloy metal 3D printing capabilities) since we moved into this space," he said.

"It has allowed us to not only survive but thrive since we adjusted our direction, making this change was so critical."

"We honestly didn't even know we were up for the award," Bourchier laughed.

"Some impressive manufacturers were in attendance at the event and to go up against them we were proud to take home the award.

"It is nice to be recognised for the work we do and to celebrate alongside some of our closest partners such as Hypersonix Launch Systems.

"Awards like these are so important to celebrate the manufacturing industry and we were honoured to take home the main award," he said.

Bourchier acknowledged that the success of the company was not simply down to him but it was a true team effort for the growth and success of Amiga engineering.

"I wanted to take the time to thank my wife who has been along for the entire journey supporting me all the way and being a critical cog in our success," he said.

"My daughter Dee has been an immense help in really bringing our company into the 21st century, updating our website and improving our marketing strategy.

"The broader team has been critical to our success and without them the company would not exist." M

Amiga Engineering aims to recruit the right people into the company to ensure long-term success.