

# GEKKO SYSTEMS MAKES SWITCH FROM MINING EQUIPMENT TO LIFE-SAVING VENTILATORS

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When Ballarat-based Gekko Systems heard the local medical community was worried about access to ventilators needed to respond to the COVID-19 crisis, the company sprang into action. Through a combination of business agility, vast community support and state government funding, the METS company is now weeks away from manufacturing up to 1,000 ventilators for distribution across Victoria, Australia and beyond.

Co-founded in 1996 by Sandy Gray and Elizabeth Lewis-Gray, Gekko Systems is a mining equipment, technology and services company (METS) specialising in mineral processing equipment. The Ballarat-based business offers testing and mineral analysis services, conducts engineering studies, and designs, constructs, commissions and supports mineral processing equipment and modular plants.

'We are very much an agile innovator – we do a lot of design development work for our local and international clients to customise their processing plants for the minerals they process,' says Lewis-Gray, Gekko's Managing Director. 'This requires us to think outside the box and innovate quickly.'

Gekko's innovation capability was why Michael Poulton, the CEO of the Committee of Ballarat, turned to the company for an unusual – and urgent – request. The Committee is responsible for guiding and progressing projects and programs that benefit the city and region.

Poulton had heard local hospitals were worried that as a regional city, Ballarat might miss out on the opportunity to procure ventilators, and that even if



Gekko Systems Co-founder and Technical Director Sandy Gray with the GeVentor ventilator in the Gekko bio lab. Image courtesy: Adam Trafford/The Courier.

**'Australia's METS industry is among the top two or three in the world. If you're looking for Australian capability and innovation, it's likely to come out of this sector – and we are proud to take on the challenge and show what we're capable of. The opportunity to work for the good of the country and its people, and to be part of something that's bigger than us is motivating and inspiring.'**

Elizabeth Lewis-Gray, Co-founder and Managing Director, Gekko Systems

they managed to buy some units, it might not be enough for their needs.

'When Mike asked if we could manufacture ventilators, Sandy said "yes, I reckon we can",' says Lewis-Gray. 'One of the unique things about Gekko is that we have design, prototyping and manufacturing under the one roof.'

'Our areas of specialty include hydraulics, pneumatics and control systems – the core technologies in a ventilator.'



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## A true community effort

A successful inventor, Clunies Ross Science award winner, International Mining Hall of Fame inductee and Gekko's Technical Director, Sandy Gray is highly recognised for his creative and technical skills. What he lacked was an understanding of how ventilators worked in a clinical setting.

Poulton introduced Gray to two intensive care anaesthetists from the Anaesthetic Group Ballarat, Doug Paxton and Michael Whitehead. The two men helped Gray understand how the ventilator would need to connect to the patient and provided input into the ventilator's design.

Based on their advice and using manufacturing guidelines from the UK Government as a starting point, Gray designed a working prototype in five days.

The Gekko ventilator – called the GeVentor – was designed using parts that would not tap into the supply chains of companies building more traditional units.

'Sandy was adamant about not interrupting existing supply chains so we spent a lot of time researching and looking for alternative components for our ventilator,' says Lewis-Gray.

Once again, the Ballarat community stepped up. Ian Firms, the founder of a tech company called Eurekaive that works with local accelerator Runway, offered to make 3D printed components for Gray's prototype following an introduction from Poulton.

'Suppliers in Ballarat, Victoria and across Australia have also been absolutely incredible in offering us support and helping us resolve some of the supply issues,' says Lewis-Gray.

The generosity from the Ballarat region continued to flow, with local businesses and community providing critical funds towards the project. Lewis-Gray says without this support, Gekko would not have been able to attract \$200,000 in co-funding from the Victorian Government.

'The funding was a great boost because it meant we could throw resources into the project and get ourselves ready for manufacturing,' she says.

The Committee for Ballarat also put Gekko in touch with a local research group called the Ballarat Innovation Research Collaboration for Health (BIRCH), who are assisting with the research and clinical evaluation required for approval from the Therapeutics Goods Administration (TGA).

## Getting ready for production

At the time of writing, Gekko is sourcing components for 10 prototypes that will be used for testing. The company is working with the TGA to make sure the process it's following fulfils regulatory standards. Testing will take approximately three weeks.

If the TGA approves Gekko's prototype, Lewis-Gray says Gekko will start manufacturing straight away.

'Our agreement with the Victorian Government is that we will be ready to manufacture by the end of May but our intention is to do it faster if we can,' says Lewis-Gray. 'We're aiming to manufacture around 1,000 ventilators in the first run and to scale up in the future.'

Gekko is still completing business-as-usual work albeit at a reduced volume and will set up a separate production line for the ventilators.

'We've got a terrific team of cross-functional engineers and outstanding capabilities in lean manufacturing so I don't think we will have any issues. It's more about the workflow – how we package the componentry and put it together.'

Lewis-Gray says Gekko's staff are thrilled to be working on the ventilator project.

'Australia's METS industry is among the top two or three in the world,' she says. 'If you're looking for Australian capability and innovation, it's likely to come out of this sector – and we are proud to take on the challenge and show what we're capable of.'

'Like other companies, the COVID-19 crisis has impacted us and there are parts of the business that are underutilised. The ventilator project means we can keep our people and systems working.'

'The opportunity to work for the good of the country and its people, and to be part of something that's bigger than us is motivating and inspiring.'

## Potential for export

Gekko's work has already attracted enquiries from the international business and medical communities.

'Obviously our priority is to supply Australian hospitals and medical facilities first, but export is an option in the event that Australia's ventilator needs are fulfilled. We would love to help countries that don't have the technology,' says Lewis-Gray.

'It has been challenging but I am very excited about the project,' she says. 'It's so good to see people across the country come together and to experience it within our own supply chain and our community. There's a greater sense of connection and goodness and that's very inspirational.'

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