

Media release

Australian team design a safe, rapidly manufactured ventilator system that meets the needs of ICU clinicians

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In just ten days, a team of engineers have designed and prototyped a mechanical ventilator as a life-saving response to global ventilator shortage caused by the COVID-19 pandemic. It is currently undergoing functional testing at Prince Charles Hospital laboratory in Brisbane.

OzVader is a high featured *air actuated* mechanical ventilator as opposed to the *mechanical actuated* open source ventilator designs commonly seen in the media/press. This is an important distinction, as air actuation gives OzVader precise control over patient side variables such as pressure, breath rate, air flow rate and tidal volume delivery.

OzVader project founder, **Tony Sprague** said it literally began with a text message to a mate out of frustration at the climbing COVID-19 statistics: “What if we could do something here?”

“We want to provide a functional & safe mechanical ventilator to anyone who needs it, wherever they are on the globe. So, our design philosophy was to keep it simple, functional, manufacturable and above all – safe for the patient” said Tony.

In order to build a mechanical ventilator that delivers specific functionality required by ICU clinicians treating critical COVID-19 patients, expert medical advice was needed. A medical panel was established early in the project which includes some of Australia’s leading intensive care specialists, anesthetic, respiratory and medical researchers. These doctors represent leading Australian hospitals including The Prince Charles Hospital in Brisbane; and Austin Hospital and Epworth hospitals in Melbourne.

Once armed with this specialist on-call medical advisory team, the OzVader engineers have worked around the clock rapidly prototyping, testing, revising and prototyping again.

The team behind OzVader is a group of Brisbane companies that have come together over the last ten days to deliver this life saving solution. Headed by Olitek, other specialty partners have come on-board including micro-electronics provider Elexon Electronics and rubber manufacture Narm Rubber. This is a true collaboration of Australian medical, engineering and specialty manufacturers.

James Oliver, Managing Director of mining robotics manufacturer Olitek, said the impetus for the round-the-clock effort was a desire to solve the ventilator crisis. “Even though we have moved fast, we have listened to every input from the ICU clinicians and pushed ourselves to get it into our system. For me, I need to know we are delivering a ventilator that I would be comfortable putting my own child on” said James.

The suite of pressure sensors incorporated into OzVader’s onboard micro-processor constantly monitor and respond to patient side feedback. The computer-controlled electronic air valves can instantly respond to patient triggered alarms if required to ensure patient safety.

While OzVader is a sophisticated rapidly manufactured ventilating system, it is also built tough. Using robust and proven technology and minimal moving parts, the OzVader is designed to work anywhere its needed from Tier 1 ICU wards to remote field hospitals with flexible power & air input options.

“Pandemic doesn’t give license to build suboptimal things, and rapid doesn’t mean it can’t be elegant and clever” said Tony.

Notes:

- The OzVader ventilator couples with the ubiquitous hospital Bag-Valve-Mask (BVM) respirator bag that exists in every hospital around the world. The unique design means it is BVM supplier agnostic and will work with all BVM bag manufacturers globally.
- Production of the ventilator is scalable and a secure supply chain in place of raw materials. Fall back options are provisioned in the design.
- Fast tracked medical testing is currently in progress.
- Initial discussions with the Federal Health Ministry have commenced.
- A Go-Fund-Me campaign is in place seeking to raise AUD\$500,000 for the manufacture of the first 100 ventilators while TGA approval and government funding support is secured.

Inquiries

Tony Sprague - OzVader Founder

Mobile: +61 402 235 291

Email: tony.sprague@ozvader.com

www.ozvader.com

OzVader Mechanical Ventilator









