NSW GOVERNMENT

VENTILATOR RAPID INNOVATION PROJECT

CASE STUDY: August 2020

REVIEW OF VENTILATOR MACHINES AT UNSW

Valuable training experiences gained

NSW Health, led by Health Infrastructure (HI), has been working with universities and industry partners to rapidly progress the NSW-based manufacture of back-up ventilator solutions, should they be required in the response to the COVID-19 pandemic.

Following a call to academics, clinicians and engineers, NSW Health selected two prototypes for further development, to address the global challenge of supplying much-needed ventilation equipment to support frontline workers.

These two ventilator solutions are part of a multi-pronged approach, to rapidly manufacture ventilator systems and source existing, available ventilators.

The two prototype ventilators have been designed, built and tested in simulation suites in Sydney and Newcastle in April and May 2020 – ***CoVida*** led by the University of Sydney in conjunction with clinicians at Westmead and Royal North Shore Hospitals, and Project Anemoi – ***Ventasys*** developed by Ampcontrol with clinicians at the John Hunter Hospital.

Biomedical students from the University of Sydney examined tried and tested ventilator technology and rapidly designed a simple, low cost ventilator. The CoVida emergency ventilator can be manufactured in NSW without competing for components with current model ventilators.

Biomedical and medical students from the University of NSW (UNSW) also played a crucial role in sourcing existing available ventilators and piloting the process of preparing them for deployment in NSW public hospitals.

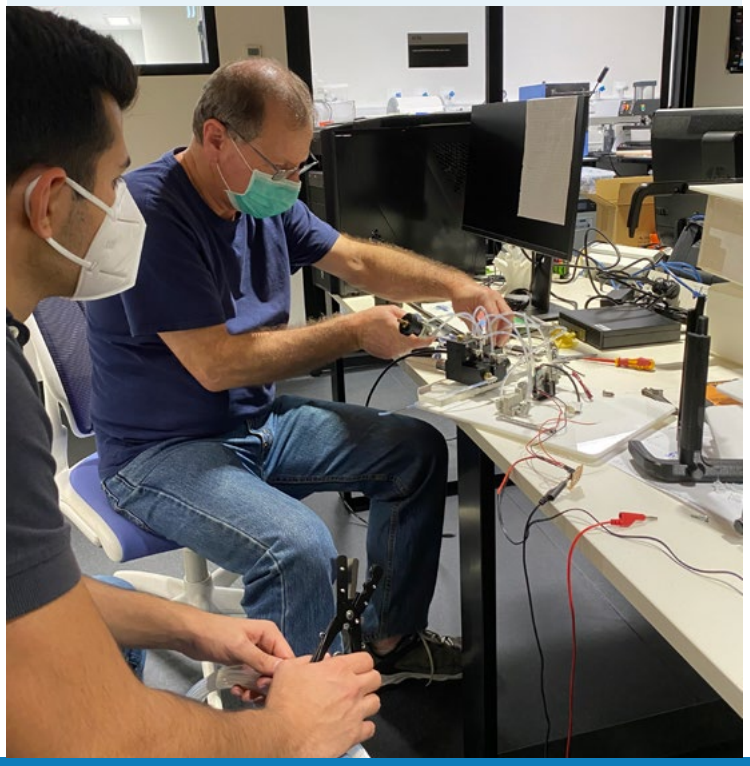
The first prototypes were successfully built in April 2020 and further models have been manufactured and are undergoing clinical assessment and testing.

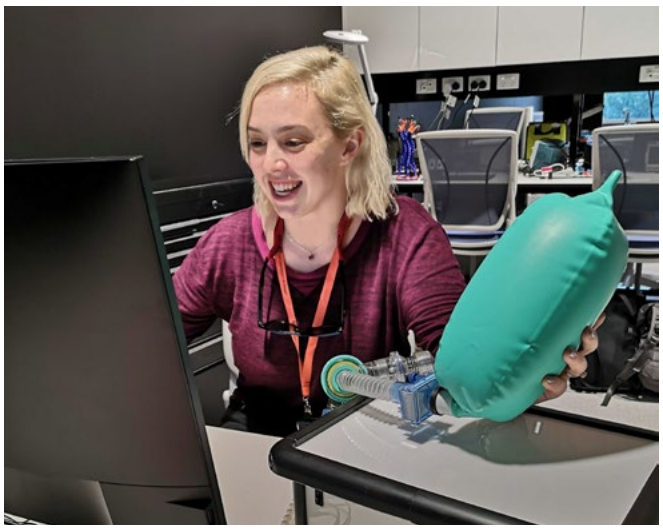
MEET DANIEL LANDRO

Bachelor of Engineering Honours (Biomedical) and Bachelor of Medical Science, University of Sydney

Daniel Landro, a final year Biomedical Engineering and Medical Science student responded to this "call to arms" because he knew it was time to do his part and make a difference. Daniel worked closely with the team to coordinate the mechanical engineering component of the project. Daniel acknowledged that this was a team effort in every sense, "This project was a deep dive into a real, urgent public health problem that tested every lesson I had learned throughout my five years at university."

"It challenged and developed my capacity for project management, leadership and problem solving, yet reaffirmed my desire to make a difference as a biomedical engineer. I am proud of the work that our team has produced in response to the crisis and have learned a lot from the experience."





CoVida Partners

Lead innovation partners

THE UNIVERSITY OF SYDNEY

NSW GOVERNMENT

R&D Partners

VESTECH

Tantau

EIM MEDICAL

UNSW SYDNEY

Other contributers to prototyping

CROSS PRECISION MACHINING

HEARTLAND Enterprises, Ltd.

SMC

GENESYS ELECTRONICS DESIGN

JUBILEE SPRING CO

GASCON SYSTEMS

REAL ENGINEERING

This project showcases the incredible work that is enabled by university, industry and government partnerships. It provides real-life training opportunities for our students in the midst of a global pandemic.

MEET AVA DEL TUFO

Medical Student, University of NSW

Ava Del Tufo, a current third year medical student at UNSW was chosen from many applicants, to participate in this project.

When Ava got the phone call to join the project she was chainsawing fallen trees on an access trail on her parent's property on the south coast that was devastated by the New Year's Eve bushfires. With many parallels to the work that she carried out on the project, Ava said "the experience has given me skills that will benefit me throughout my future medical career and I am very grateful for the opportunity and that I was able to work with such an amazing team."

"I was desperately hoping they would utilise medical students on the public health front line. All I wanted to do was help with COVID-19 in any way possible. I have always had an interest in public health and I was so excited when the phone call came through. This incredible opportunity not only meant I was able to help but also re-affirmed my interest in public health. It provided me with opportunities that I otherwise would not have had access to, giving me real life experience."

"I learned that I am really resilient and can keep my cool, I delegated and had to think forward about the next steps in the project and prioritise to keep the elements of the project on track."

MEET MICHAEL COTTON

Electrical Apprentice based at Ampcontrol's Electronics Division at Cameron Park, NSW

Seizing the opportunity to broaden the skills of its team of apprentices, Ampcontrol has involved a number of its apprentices in Project Ventasys. Electrical Apprentice Michael Cotton is based at Ampcontrol's Electronics Division at Cameron Park NSW, where development and manufacture of the ventilator prototypes took place.

Working within an experienced team, Michael has been able to get immediate experience in laying out and assembling the electrical circuitry for the pre-production units. Michael said, "I have been tasked with devising the layout of the electrical circuits on the control pan of the ventilator. It's awesome to provide design input into such an important project even though I'm still only in my final year of my apprenticeship. I can't wait to help build the 10 pre-production units."

Ventasys Partners

Lead innovation partners

AMPCONTROL

NSW GOVERNMENT

R&D Partners

ResTech

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

NEWIE VENTURES

safearth

Other contributers to prototyping

BECKHOFF

SIEMENS

LINTEK

ifm

bürkert FLUID CONTROL SYSTEMS

FOR MORE INFORMATION:

www.hinfra.health.nsw.gov.au