

Australian Industry **ozWELD**

WINS!

WTIA National Diffusion Networks
Project (NDNP) funded by the
Federal and State and Territory
Governments and industry



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SUCCESS STORY NUMBER 09: Laser Welding plays a critical role in creating 'artificial hearts' – ANSTO technology helps Australian manufacturer with world-leading titanium welding

Leading Australian Company

Ventracor Ltd, based in Chatswood NSW is an international medical device company focused on commercialising the world's leading 'artificial heart' device, the VentrAssist™ Left Ventricular Assist System (LVAS) pictured below.



Ventracor are one of the leading biotechnology companies in Sydney which the NSW Department of State and Regional Development (a sponsor of the WTIA's NDNP) estimates is home to 40 per cent of Australia's biotechnology industry.

The Need for Implantable Hearts

VentrAssist™ is a new third generation implantable heart device which weighs just 298 grams and measures 60mm in diameter. It is primarily designed as an alternative to heart transplantation for people with cardiac failure.

Ventracor estimates there are 11.2 million sufferers of congestive heart failure worldwide, which is increasing by 10 per cent each year. Of these people, an estimated one million have a life expectancy of less than one year.

Each year, only about 3,000 people receive a heart transplant as the only current definitive long-term treatment for end-stage congestive heart failure. At the same time, organ donations are decreasing. Clearly there is a critical need for an effective artificial alternative.

ANSTO Supports Welding Applications

The Australian Nuclear Science and Technology Organisation (ANSTO), a Member of the WTIA's NDNP Medical Devices and Sensors sector, is providing metallographic services to Ventracor as they analyse the laser welds used in their VentrAssist™ heart pump.

The purpose of the investigation is to assist Ventracor as they complete their inhouse manufacturing program.. The metallographic examination of the laser welds enables Ventracor to optimise and refine their process parameters.



VentrAssist™ has only one moving part - a hydrodynamically suspended impeller. It has been designed to have no parts that wear or cause blood damage.

The implanted parts of the VentrAssist™ device use materials which are fully biocompatible including titanium alloys. Its components are light, strong, non-toxic and highly resistant to degradation within the body.

Titanium Alloy Welds

ANSTO is providing metallographic examination of the titanium alloy welds to validate the weld penetration depth. The microstructure of the heat affected zone is also examined. The laser welds, which are performed in an inert atmosphere glove-box, provide a hermetic seal for the implantable pump components.

The marriage of Ventracor's experience and ANSTO'S technology will help thousands of people to extend their life expectancy and improve their quality of life.

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