

CONTAINERISED CHEMICAL-LOOPING- BASED OXYGEN PLANTS FOR FIELD HOSPITALS AND HOSPITAL SHIPS



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

Our project involves field trials and demonstrations of chemical-looping-based air separation technology developed by University of Newcastle researchers for tonnage oxygen production. The Chemical Looping Air Separation (CLAS) technology can be containerised to meet the oxygen demand of Australian Defence Force field hospitals and/or hospital ships.

COMPETITIVE ADVANTAGE

- Relies on chemical looping air separation as opposed to cryogenic air separation or membrane-based technology
- Its energy footprint is 0.04 kWh/m³, which is approximately 10 per cent of the energy footprint of the conventional cryogenic-based technologies
- Lightweight and compact design due to small energy footprints and the use of chemical loops
- Eliminates the need for transporting oxygen bottles

SUCCESSFUL APPLICATIONS OF RESEARCH

- Field trials of a containerised CLAS unit under realistic conditions
- Implementation of the project outcomes into the design of the future field equipment for Australian Defence Force medical units

PARTNERS

- Infratech Industries
- NSW Government

IMPACT

- The outcome of this project will enable the Australian Defence Force to overcome some of the logistical challenges associated with transporting large numbers of oxygen bottles to field hospitals or carrying them on hospital ships

CAPABILITIES AND FACILITIES

- Chemical looping research laboratories
- Several small-scale and pilot-scale CLAS prototypes
- Design capabilities and testing facilities
- An extensive array of instruments for reaction kinetics studies (e.g. thermalgravimetric analyser (TGA), pressurised thermogravimetric analyser (PTGA), two-stage combustion (TSC), drop tube furnace, multi-zone muffle furnaces)