

# Otago Energy Research Centre Seminar Series 2021



Wednesday 20<sup>th</sup> October 12-1pm

Zoom: <https://otago.zoom.us/j/511405452>

Password: 582894

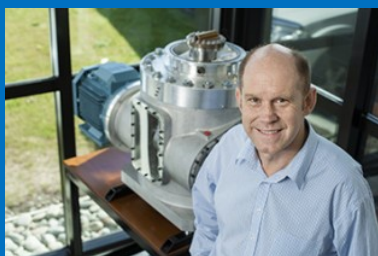


## Otago Energy Research Centre Energy Transitions Research

The OERC creates opportunities for high-impact and internationally recognised energy-related research via an interdisciplinary network of University of Otago researchers and their external collaborators

## Power Transition of energy systems: The move to electric aviation

Significant technical change is needed to reduce the environmental impact of aviation. Electrification of the power train in aircraft is seen as a way that can increase the efficiency of propulsion and enable use of non-carbon fuels such as liquid hydrogen or battery electrics. The Robinson Research Institute, a part of Victoria University, has recently started a 7 year programme under the MBIE Advanced Energy Technology Platforms (AETP) programme “High power electric motors for large-scale transport” to contribute their experience in superconductivity to the international effort towards electric aircraft and grow a research and capability platform in New Zealand to ready our country for when superconducting machines become commonplace in aviation and heavy transport. This presentation is a summary of the case for electric aircraft and the AETP programme.



### Dr Alan Caughley

Alan’s 30-year career has centred around computer aided engineering, fluid related machinery and manufacturing. His first position was as an R&D engineer at Hamilton Jet, which involved design and manufacture of master blades, hull-speed prediction, free surface flow calculations to balance forces in reversing ducts, hydraulics, and production engineering.

His next position was as a plastic injection mould designer and NC programmer for a small manufacturer serving the motor trade, again focused on fluids and 3D surfacing. Three years of working with an industrial designer honed Alan’s consultancy skills and exposed him to a wide variety of New Zealand manufacturers and products. This led to a position at Industrial Research Ltd (IRL), in product and technology development consultancy, followed by 12 years of leading a major research programme in cryogenic refrigeration, developing, and commercialising a novel refrigerator technology. Alan also provided key mechanical engineering input into ocean wave power generation and hydrogen electrolyser development projects. Since the successful transfer of the cryogenic refrigeration technology to industry, Alan has continued to provide CFD and computational engineering services to New Zealand firms as part of Callaghan Innovation’s Engineering team. Lately Alan has become involved in the High-power electric motors for large-scale transport project run by the Robinson Research Institute.

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