

# FAN Workstream 4

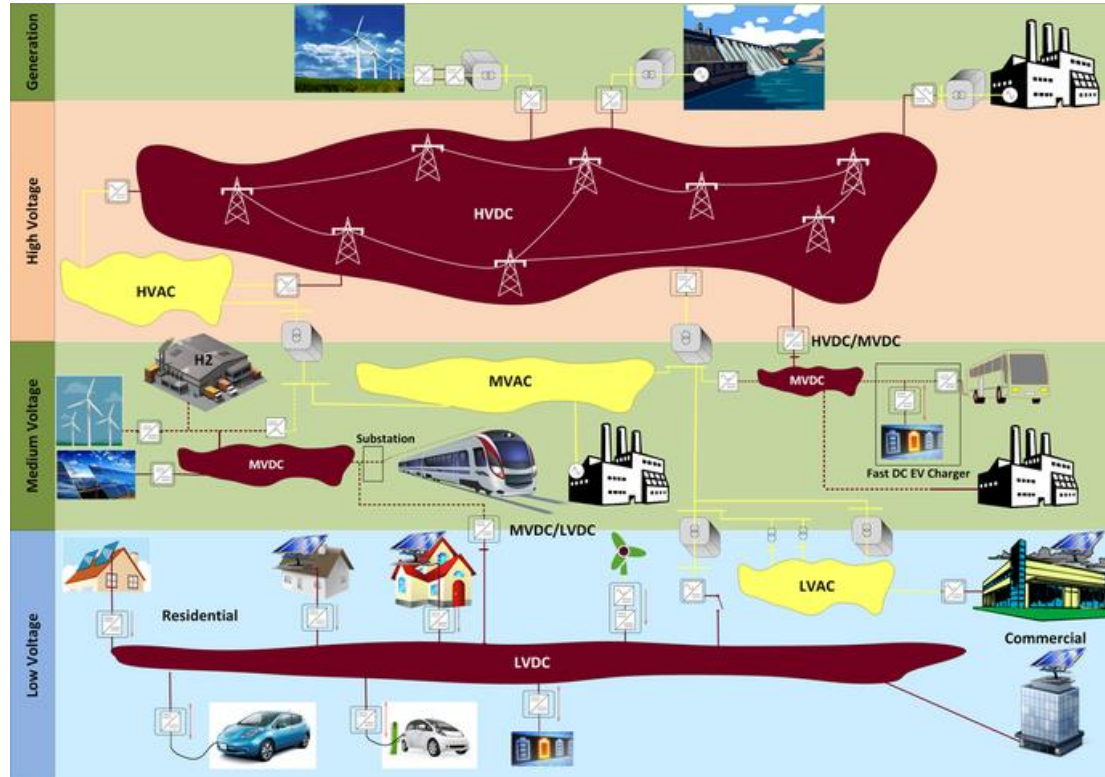
## Transition from AC to DC

Master of Engineering Projects



# About FAN

*Future Architecture of the Network (FAN) - The Whatunga Hiko*



# Why do a Master of Engineering Degree with FAN?

- Faster than a PhD
- Working with top researchers from around New Zealand and the World on a large government funded project
- Engaging with industry on cutting edge projects
- Scholarship covering fees and a generous stipend



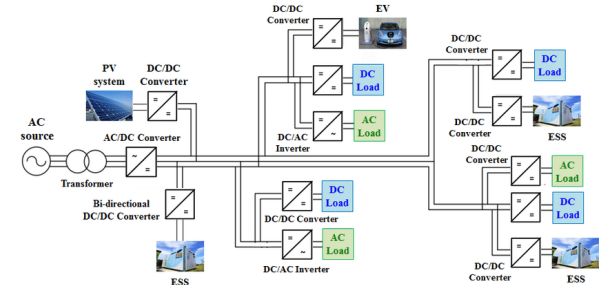
# Master of Engineering - Research Projects

## Potential of Low Voltage Direct Current in New Zealand

Low Voltage Direct Current (LVDC) distribution is a next generation technology that promises to be cost effective and efficient as most loads utilise LVDC. This project will investigate different options and stages for optimal transition to LVDC distribution system from the present LVAC system. Through simulation studies (and consultation with industry partners), this project will address the following questions:

- What is the present experience in implementing LVDC distribution systems in the world?
- What are the benefits/challenges of moving the present LVAC system to LVDC?
- How can we transition from the current situation to LVDC in the future?

Based at Victoria University of Wellington

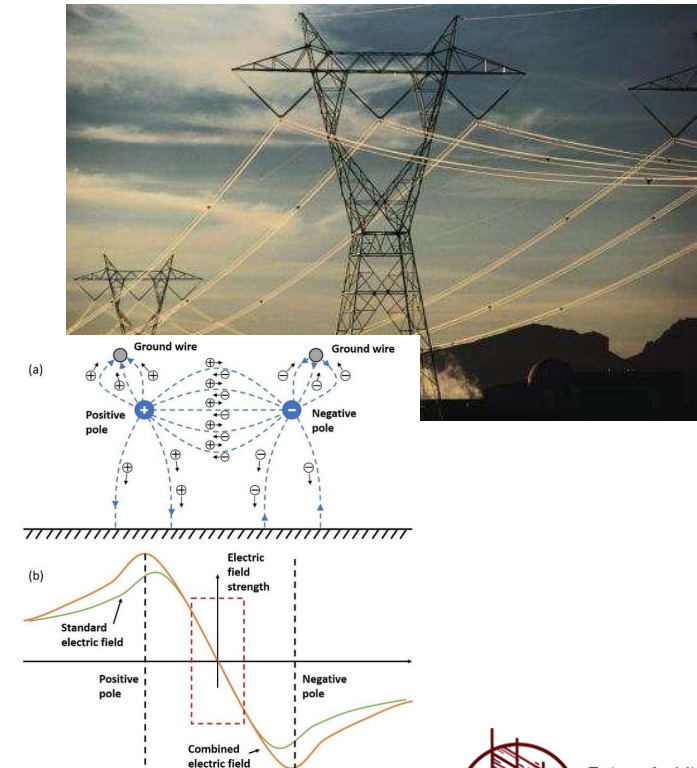


# Master of Engineering - Research Projects

## Conversion of Overhead Lines from AC to DC

As part of the transition from an AC transmission and distribution grid to a DC grid it is likely that existing overhead AC lines will need to be repurposed to DC. This conversion process includes several aspects that are new to many utilities, such as DC insulator dimensioning, as well as DC corona and field effects. Through simulation studies and experimental work, this Masters research project will determine the possibilities and constraints of AC to DC overhead line conversion with respect to the New Zealand context.

Based at University of Canterbury



# Master of Engineering - Research Projects

## A VSC Tap on the HVDC link at Canterbury

A 1400MW HVDC Bipole link connects the North and South Island transmission networks. The power transfer is limited to 1000MW in balanced bipole mode by the Pole 2 cable capacity and 1200MW in unbalanced bipole mode. Transpower's 2018 Transmission Planning Report considers an HVDC tap-off from the existing HVDC line north of Christchurch to meet the forecast upper South Island loads beyond the planning horizon (2033).

This Masters research project will assess the possibility of a Voltage Sourced Converter tap on the existing HVDC scheme. The research will address the operational challenges of such a topology in the New Zealand context and propose a circuit solution including special control and protection functions to ensure stable operation of such a topology.

Based at University of Canterbury



All these projects are fully funded.

To find out more go to

<http://www.fan.ac.nz/work-with-us.html>



# FAN Research Partners

## New Zealand



## Overseas

