



**UNSW**  
SYDNEY



## Coupled-Coil Inductor Inverters

**Producing multi-level output voltage from just two fast-switching semiconductors by using a coupled inductor. This frees the inverter from dead-time and greatly reduces low-order harmonics.**

### Competitive advantage

- More reliable: coupled inductor lowers the risk of DC-link shoot-through
- Cost-effective: Fewer semiconductors are employed for three-level output
- Simpler control: no need to balance DC-link capacitors voltage under any condition

### Impact

- Improves efficiency and reliability
- Successful applications
- Inverter-based five-phase permanent-magnet synchronous machine-drive system

### Capabilities and facilities

- Advanced control platform with DSP and FPGA
- High bandwidth oscilloscope
- Multifunction test rig
- Four-quadrant 20 kW programmable power supply

### More Information

Professor John Fletcher

School of Electrical Engineering and  
Telecommunications

T: +61 (0) 2 9385 6007

E: [john.fletcher@unsw.edu.au](mailto:john.fletcher@unsw.edu.au)

UNSW Knowledge Exchange

[knowledge.exchange@unsw.edu.au](mailto:knowledge.exchange@unsw.edu.au)

[www.capabilities.unsw.edu.au](http://www.capabilities.unsw.edu.au)

+61 (2) 9385 5008