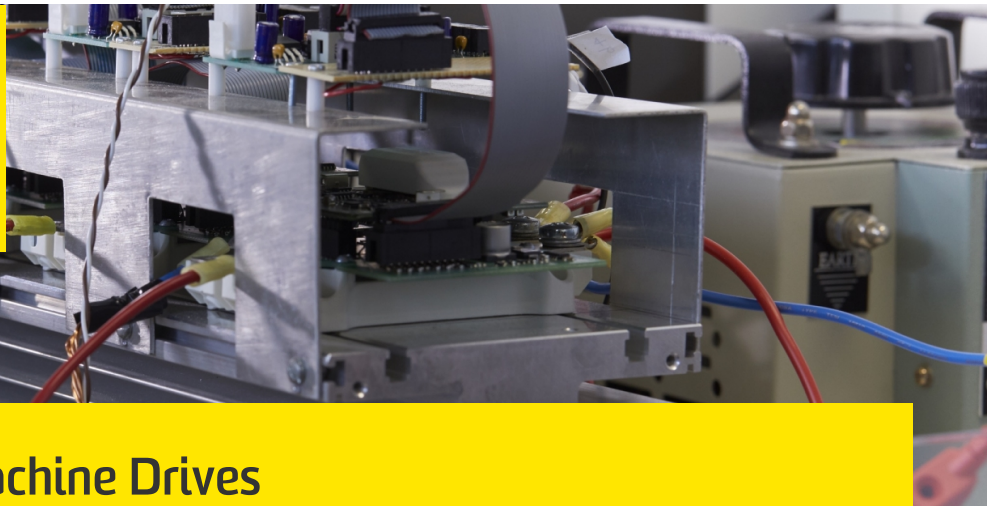




**UNSW**  
SYDNEY



## Linear Electrical Machine Drives

**Linear electrical machines are used in an ever-increasing number of applications. Recent areas that we have developed linear machine solutions for include down-hole pump applications and electrical launch systems. UNSW has also recently developed a new type of permanent magnet rotor that has its starting performance improved by including a conducting ladder-slot arrangement. This new type of rotor allows the machine to rapidly accelerate under the action of induction principles to the synchronous speed where the permanent magnet flux can then be used to increase the force. Development of linear machine solutions to support what is a rapidly growing market.**

### More Information

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### Competitive advantage

- Leading-edge rotor technologies developed for specific applications
- Experience in a wide range of conventional and advanced linear machine control techniques (vector and scalar controllers, sliding-mode control, model-predictive control)
- Ability to rapidly develop and prototype controllers
- Custom linear machine design and prototyping

### Impact

- Tuning improvements and robust control techniques improve the tracking and performance of controllers and yield faster responses.
- Successful applications
- The development of a down-hole pump for the pumping industry

### Capabilities and facilities

- Advanced machine control algorithms to improve force control, position and speed tracking
- Linear electrical machine design software
- Prototype controller ready for commercialisation

### Our partners

- Motorica