



**UNSW**  
SYDNEY



## Monitoring and Predicting Anomalies in Complex Processes

**Monitoring complex processes and predicting anomalies in their operation by combining state-of-the-art data with flow-level numerical techniques.**

### Competitive advantage

- Enabling online monitoring of the internal state of a reactor
- Making online predictions of operational anomalies
- Ability to make online decisions using trial conditions

### Impact

- Many modern industries are unable to measure the operation of complex processes. The ability to do so would bring:
- A real-time understanding of the internal state of reactors
- Lower cost and lower energy consumption by being able to make real-time adjustments to operational conditions and parameters
- Enhanced operation efficiency, stability and environmental-friendliness in food industries

### Successful applications

- Worked with several steel companies to implement online monitoring of the complex in-furnace phenomena in a commercial high-temperature industry furnace. It is estimated that this saves \$200M in cost per year
- Applications in future-food systems, including regional and indoor cropping systems, and value-adding solutions for customised food

### Capabilities and facilities

- State-of-the-art computational techniques and skills, including data processing, soft sensing, system theory
- Advanced computational facilities and massive computing resources from NCI (National Computational Infrastructure)
- Lab-scale test rigs equipped with sensors, including fluidised bed and ribbon mixers

### Our partners

- BlueScope
- BHP
- Visy
- Baosteel
- COFCO
- Rio Tinto
- Cleantech Energy Australia

### More Information

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