Over the last 18 years, the Maintenance Technology Institute (MTI) has provided innovative research services which have improved the performance and reliability of large equipment, particularly in the mining industry. MTI is the preferred supplier and the leading R&D supplier on continuous remote monitoring of large equipment and use of the data for operational, productivity and maintenance improvements.

Focus areas

- Operational and maintenance improvements
- Monitoring of large equipment
- Improving operator performance
- Condition assessments
- Capacity improvements
- Life extension of aging equipment
- Replacement strategies
- Catastrophic failure investigations
- New designs and design reviews

MTI’s Remote Monitoring Centre

MTI is currently monitoring more than 50 draglines, 15 excavators, one reclaimer and two stackers, some of which are operating overseas. All data is streamed to Monash Clayton for detailed processing and safe storage. Embedded algorithms provide instant feedback to operators to ensure safe and optimum operation of the machine. Monthly reports provide detailed assessment of each operator’s performance and information for overall management of the machine including maintenance planning.
CASE STUDY

Increasing capacity and financial benefits for an iron ore mine

As a result of MTI’s research-based investigations, the capacity of a large machine operating in an iron ore mine in Western Australia has been increased by 24%. The mine engaged MTI to investigate the possibilities of increasing the safe operating capacity of the bucket wheel reclaimer that loads iron ore into their train load out bin. The overall financial benefit from this change is estimated to be several tens of millions of dollars per year. The mine engaged MTI and the team undertook a detailed investigation that explored the possibilities of increasing the OEM-specified capacity of 14,500 tonnes per hour to 18,000 tonnes per hour. MTI reviewed the design against Australian standards, analysed the structural system, designed and installed a monitoring system, monitored the machine, made a complete assessment and identified the changes required to operate at the increased capacity. On this basis, the mine is now proceeding to modify the machine to operate at 18,000 tonnes per hour, in compliance with Australian standards.

Industry involvement

MTI has completed over 300 studies and repeatedly delivered significant returns on investment in providing superior economic and technical solutions for a broad range of industry clients, including:

- BHP Billiton
- Rio Tinto
- Glencore
- Anglo Coal
- Wesfarmers
- Dalrymple Bay Coal Terminal
- Abbot Point Coal Terminal
- Caterpillar
- Komatsu

Monash Infrastructure

Monash Infrastructure (MI) is a virtual institute that facilitates industry and government engagement with Monash University’s extensive capabilities in infrastructure research.

MI coordinates interdisciplinary teams from engineering, information technologies, business, design and social sciences. Our researchers provide the expertise, resources and access to international knowledge networks to solve infrastructure problems, develop new technologies, build industry capacity and inform government policy and planning.

monash.edu/infrastructure