

# CSI 6500 Machinery Health™ Monitor Protects Rebuilt Steam Turbine in Australia

## RESULTS

- Achieved startup and production goals through fast commissioning
- Gained predictive alerts from vibration monitoring
- Implemented high-integrity protection for high performance turbine
- Archives diagnostic data in single chassis for easy recovery

## APPLICATION

The Hazelwood Power Station in Victoria, Australia, has eight power generating units with a nominal capacity of 1600 MW. The 200 MW Unit 2 steam turbine, which was originally commissioned in the mid-1960s, was recently rebuilt to be more efficient with a potential increase in power output of 20 MW. Turbine manufacturer, Alstom, carried out the comprehensive efficiency upgrade project, including installation of a new turbine rotor, bearings, and controls. The old turbine vibration monitoring system was replaced, as well.

## CUSTOMER

International Power Australia is the country's largest private generator of electricity, owning and operating about 3,723MW of renewable gas-fired and coal-fired generating plants in Victoria, South Australia, and Western Australia. International Power Hazelwood (IPRH) produces up to 25 percent of Victoria's power, using locally-mined brown coal for steam production.

## CHALLENGE

IPRH engineers realized that a very high integrity protection system was needed to protect the higher tolerance turbine scheduled for commissioning late in 2009. Given the size and complexity of the reconstruction project, the protection system had to be flexible enough to adapt to last-minute design changes. It was also important that expertise in turbine monitoring and protection be available on short notice, because well over one million people depend on Hazelwood for reliable baseload electricity.



*“We were impressed with the on-board data capture functionality of the CSI 6500, which is quite unique”*

**Don Epps, Asset Manager, Control and Instrumentation, International Power Hazelwood**

For more information:  
[www.assetweb.com](http://www.assetweb.com)

### SOLUTION

Emerson's CSI 6500 was perfectly suited for the Hazelwood Unit 2 project. Combining prediction and protection in a single chassis, this online vibration monitor is fully compliant with the requirements of API 670.

International Power Hazelwood selected the CSI 6500 system because it integrates real-time prediction monitoring with the turbine control system. Based on a well-established technology, it provides flexible and powerful machinery protection. On-board data capture functionality ensures the security of the diagnostic data it generates, yet it is readily accessible if needed.

The support provided by Alstom MSc, Emerson's Local Business Partner in Melbourne, was equally important in the selection of the CSI 6500 system. Located only two hours away from the Hazelwood power station, Alstom MSc provided the necessary engineering expertise to utilize the powerful software configurability of the CSI 6500 system. These engineers were able to adapt the vibration monitoring and protection strategy to Hazelwood's requirements and be responsive during the system design, installation, configuration, and commissioning process.

Matthew Bourne of Alstom MSc said, "Due to the complexity of the project, much of the detail we needed to configure the system was not available until quite late. The flexibility of this system and the ease of software configuration enabled us to do a good deal of the programming at the last minute. In fact, most of our work was done in December 2009, and we were ready to participate in a startup on the day after Christmas."

Fast, smooth commissioning and startup were two immediate benefits enjoyed by the power station operators. Now, in everyday operation, the system provides real-time feedback on the condition of the turbine, including warnings of significant operating changes. Continuous data recording, live data viewing, playback capability, and ongoing local support all contribute to the confidence station personnel have in the rebuilt turbine.

International Power Hazelwood management was very pleased with the success of the Unit 2 project, and a similar efficiency upgrade project was performed on Unit 1 in mid-2010. This involved the installation of another CSI 6500 system for online vibration monitoring and predictive diagnostics.

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