

A Real-Time Hydro Advisory Tool (HAT) for Mighty River Power

Client:
Mighty River Power
(MRP)

Location:
New Zealand

Project Year:
2006, 2007



Customer Environment

MRP is located in Hamilton, New Zealand, and own and operate 1056-MW of hydro generation. This consists of 39 generating units in nine station within on one closely coupled cascade on the Waikato (Mighty) River.

MRP operates within the New Zealand electricity market, which is a 100% real time spot market. The market trades in 30-minute time slots but has more frequent real-time adjustments to balance supply and demand. MRP also participates in the ancillary service markets for spinning reserve and regulation reserve (frequency keeping).

Challenge

Quite often, MRP is the marginal power provider, which implies that they must respond to frequent "Notices" from the System Operator (on the average every 5 minutes) to adjust total power supply to balance supply and demand. This requires frequent unit commitment and unit loading changes, which were manually assigned to individual plants on a real-time basis.

This provided an opportunity and challenge to derive the optimum strategy in terms of unit commitment and loading to maximize efficiency. These decisions are very complex and cannot be made without the aid of advanced optimization methods, especially considering the complexity of the hydroelectric resources.

Solution

In July 2006, MRP contracted Synexus Global to implement RT *Vista*, the real-time dispatch module of the *Vista* Decision Support System (DSS) to meet the needs of the HAT project. *Vista* has been implemented at the Hamilton office of MRP.

The application will access information directly from the ISO, regarding power Notices, from the PI Historian™ database, regarding historic operations data, and from the MRP Supervisory and Data Acquisition System (SCADA). It will also send information to PI for audit purposes, and to SCADA for unit control purposes.

The plant dispatch algorithms consider generating unit issues as follows.

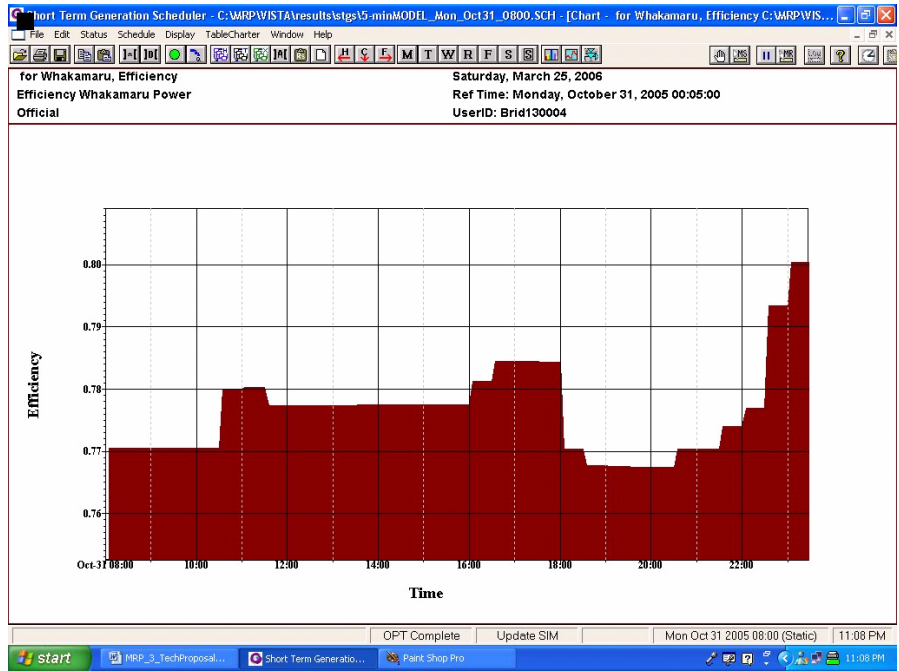
- Efficiency
- Power output
- Spinning reserve
- Reactive power output
- start costs
- overload operations
- dynamic trashrack losses



Client Benefits

Vista assists MRP to optimally dispatch hydro units in real-time, thereby maximizing the efficiency in meeting prescribed power supply to the market.

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Call Us to Learn More

Tel: 905-357-6973

E-Mail: sales@synexusglobal.com

