

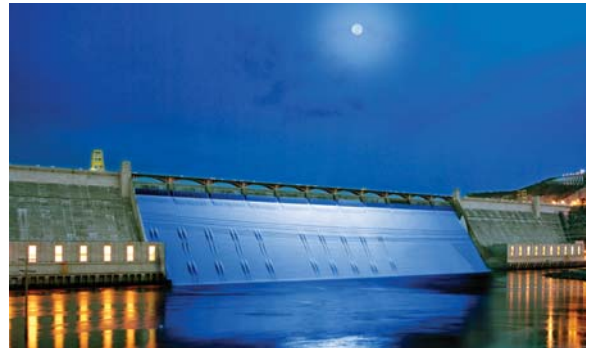
3500/46M Hydro Monitor

Now enhanced with Multi-Mode Capabilities

Hydro machinery, such as units that operate in pump-storage applications, exhibit distinctly different vibration characteristics depending upon whether the unit is operating as a motor-pump or a turbine-generator. Other units may operate as only turbine-generators, but varying flow, head, and load conditions can likewise yield distinctly different vibration characteristics. To address such machinery, a monitoring system capable of recognizing these distinct operating states is necessary, providing unique alarm setpoints for each characteristic operating mode.

While the 3500/46M Hydro Monitor Module is specifically designed to address hydro machinery, it did not previously support the multiple machine states needed by many hydro applications. The monitor has recently been enhanced to provide this important functionality, giving users eight configurable machine states for which independent alarm setpoints and time delays can be programmed. The result is a fully parametric monitoring strategy that is tailored to the individual operating modes of your hydro assets. This allows the 3500/46M to now address pump-storage applications in addition to conventional generation-only applications.

The addition of multi-mode functionality to the existing air gap and hydro radial vibration measurement capabilities in the 3500/46M monitor provides users with improved ability to protect and manage their hydro assets. By defining alarm levels for each relevant operating state, both spurious and missed alarms can be reduced because there is no longer a need to define an “average” machine state for which all alarms apply. Users can manually switch between operating states, or a signal (digital interface or contact closure) from



the unit control system can be used to automatically switch the monitor between states, providing seamlessly coordinated control and monitoring. Operating states can be configured for virtually any user-defined set of conditions, alone or in combination, such as the following:

- machine speed
- machine load
- direction of rotation
- environmental conditions
- process variable levels

We have also introduced two new channel types to the 3500/46M, thrust position and acceleration, simplifying many installations by allowing a single module type to be used for all hydro measurements — air gap, radial vibration, seismic vibration (velocity and acceleration), and thrust position. The module allows any of these measurements to be used with or without multi-mode functionality, providing backward compatibility and allowing it to be used for spare parts requirements in existing installations. Learn more about the 3500/46M and our comprehensive portfolio of condition monitoring solutions for hydropower by contacting your local sales engineer, or by going online to www.ge.com/energy and entering “Hydro Condition Monitoring” in our search engine.