



# **HYDRO POWER TURBINE GENERATOR ROTOR MONITORING**

**KEEPING A WATCHFUL EYE ON HYDRO GENERATOR TEMPERATURES**

## Application: Hydro Power Turbine Generator Rotor Monitoring

### Keeping a Watchful Eye on Hydro Generator Temperatures

**Industry:** Power

**Product:** [AT-7000](#) Motor Monitor

**Parameters measured:** Temperature

When a major hydro power producer needed to monitor the temperature of its generator's rotor poles and amortisseurs, Accumetrics provided multiple eight channel telemetry systems, each providing telemetry for eight installed RTD's. Although operating in close conjunction to large magnetic fields, Accumetrics digital telemetry was immune to EMI, and furthermore was able to provide proprietary sampling techniques to successfully and accurately capture all of the RTD data, providing clean, dependable analog temperature information from the Receiver. A robust transmitter was mounted onto the 43" diameter rotor shaft. This transmitter provided the excitation to the RTD's, and provided the signal conditioning and on-shaft high speed sampling (to properly capture the signal and noise components) needed for this application. The power and data were transferred through use of an induction coil set. The rotating coil was fabricated from four glass laminate 1/4-arc segments, while the 44" stationary pickup was of copper tubing segment construction. The digital data was converted to both current loop and voltage analog outputs at the Receiver, where output filtering eliminated the noise and presented clean, live temperature signals.



The above left picture shows the rotating Transmitter for the 8 RTD's (cover removed to show connections for the RTD's), the induction power/data coils (during testing in Schenectady) in the center, and the Receiver (digital to analog output device) on the right. The Receiver is equipped with optional panel meters providing  $y=mx+b$  unit translation (analog voltage to scaled temperature outputs).

The AT-7000/ Motor Monitor can also be configured to additionally measure rotor voltages and currents, detect ground faults, and monitor shaft torque and torsional vibration. The Motor Monitor is a variation of the AT-7000 product line.



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Accumetrics, Inc. provides digital telemetry systems used in a variety of applications such as aerospace, marine, defense, agriculture, transportation, milling operations, energy, and power generation. Systems transmit sensor data from rotating structures using wireless techniques, preserving the integrity of the data even in environments with high levels of electromagnetic interference. Measurement solutions range from single channel products, such as strain gage torque measurements, to advanced custom multichannel systems. Accumetrics, Inc. is a subsidiary of PCB Piezotronics, Inc., and PCB® is a wholly owned subsidiary of MTS Systems Corporations.

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