

**Application: 3000 RPM Torque Ripple Monitoring of 540mm (21.3" OD) Variable Frequency Drive Shaft**

**High frequency strain gage monitoring of torque ripple on one of the largest Variable Frequency Drive systems ever produced.**

**Industry:** Power

**Product:** AT-4400 16 bit digital telemetry

**Parameters measured:** Torque (torsional vibration)

Accumetrics was chosen to supply two torque telemetry systems for monitoring torsional vibration in a large shaft of a new design of Variable Frequency Drive (one of the largest ever produced). The AT-4400's 16 bit digitizing (sampling at 26485 samples per second) was used to analyze small strain levels with great accuracy and repeatability. The systems were mounted via use of glass laminate collars specially designed for the 3000 RPM large diameter requirements, one at 330mm diameter, the other on a 540mm diameter section of the shaft. The AT-4400 system provided anti-alias filtering on the rotor allowing DC to 10 kHz bandwidth digital to analog signal response from the Receiver.

The use of digital telemetry provided high quality signal integrity, without any EMI interference from the nearby 60 MW generator.





AT-4400 Receiver showing gain, offset, symmetry, gain range, zero/added offset, and output filtering controls



The reddish brown assembly is the induction power/data Pickup coil. The cream colored collar is a two-piece clamp collar holding the rotating Transmitter electronics. The systems used an innovative design to maintain mechanical integrity under significantly large G-force conditions. The first picture shows more detail of this high precision 16 bit system. The top-left picture above shows the 330mm (13") diameter system at Accumetrix' facility before delivery. A coaxial cable (not shown) connects the Pickup coil to the remote Receiver. The top-right shows the two systems operating nearby each other without interference.

The AT-4400 16 bit digital telemetry system is the most advanced telemetry system available today.

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