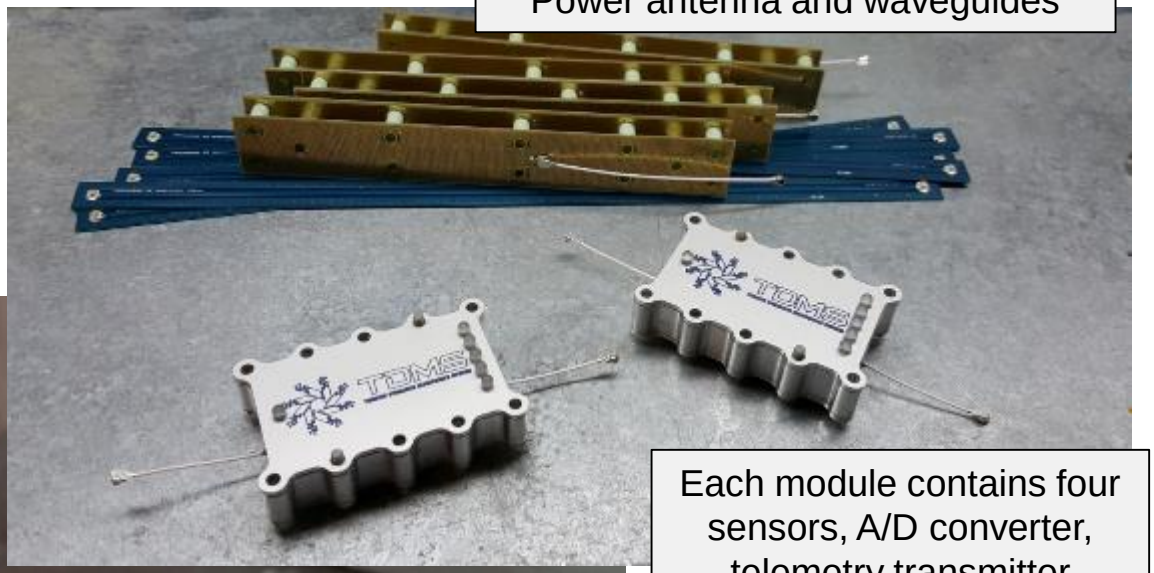
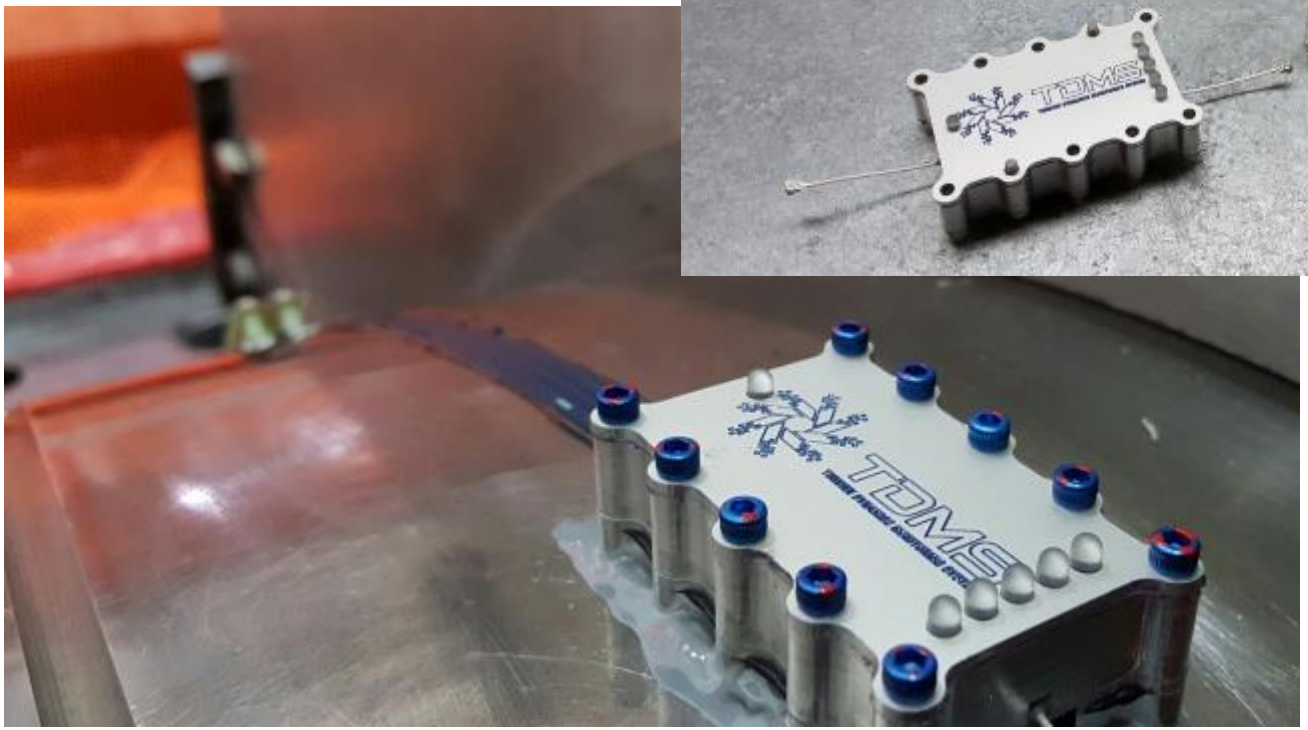
EPRI Turbine Dynamics Monitoring System (TDMS)

- Shaft-mounted sensor system designed to provide direct torsional and lateral vibration data via telemetry
- Commercialized in 2016
- Applications:
  - Verification of shaft torsional mode separation from 2x grid frequency
  - Monitoring of changes in shaft dynamic properties (health)
  - Potential future role in integrated generator condition monitoring
- Improved dynamic range, time-resolution, and reduced noise floor will enable new insight into turbine-generator health
- Rapid installation demonstrated, inside FME boundaries
- Applications to date on coal, nuclear, and hydro

Turbine Dynamics Monitoring System (TDMS) Components

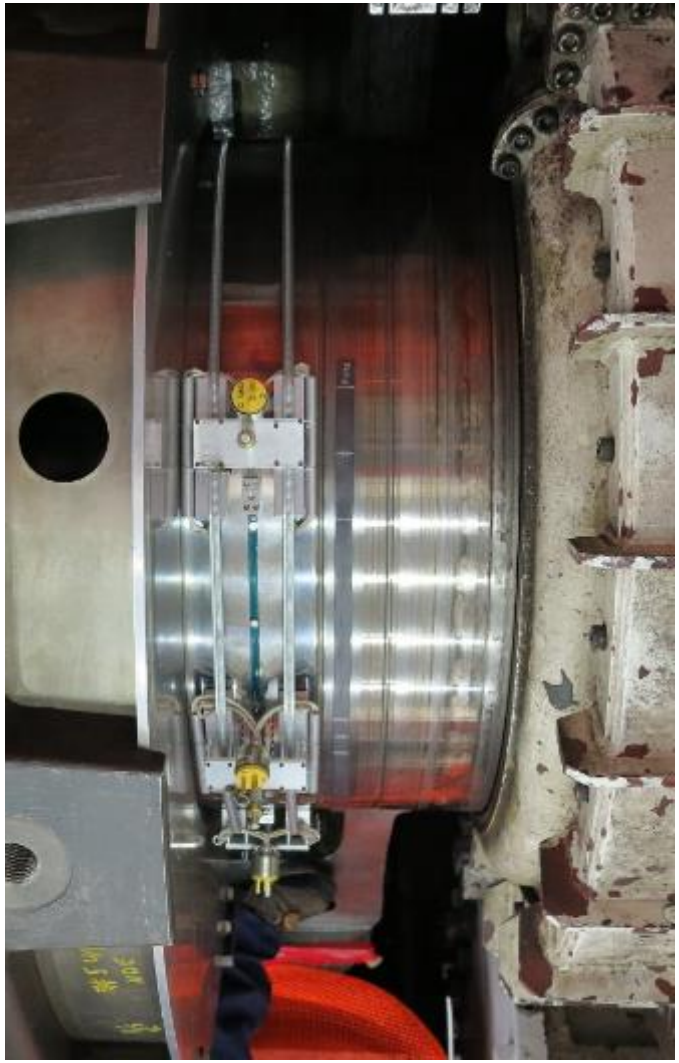
Two complete TDMS assemblies, to be installed at a single shaft location



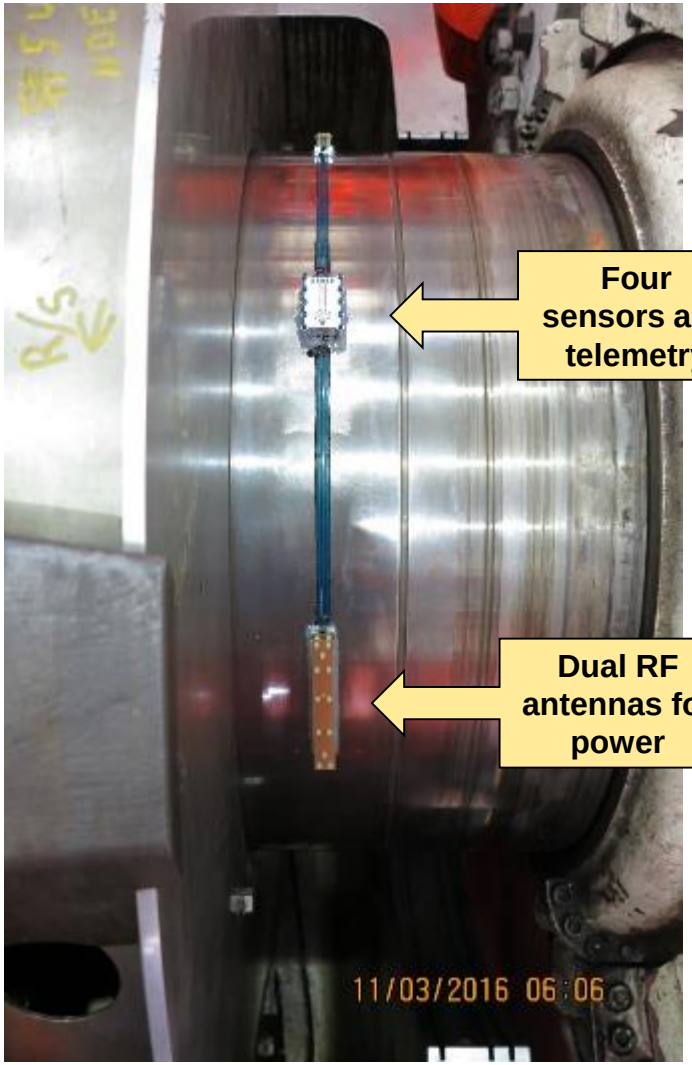


Installed telemetry module with shaft antennas and waveguides

Photos of Recent Commercial TDMS Installation

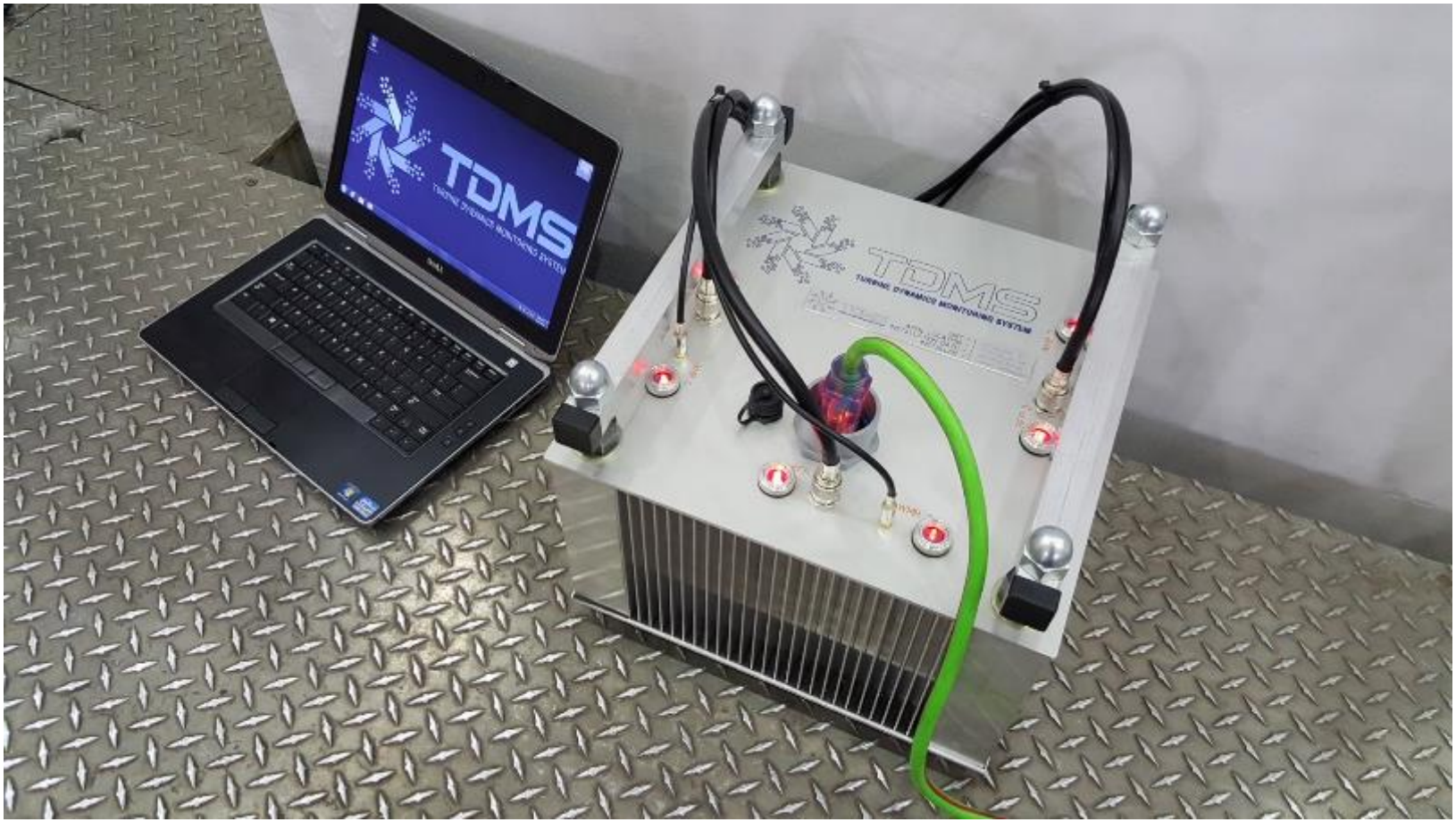


Shaft installation process



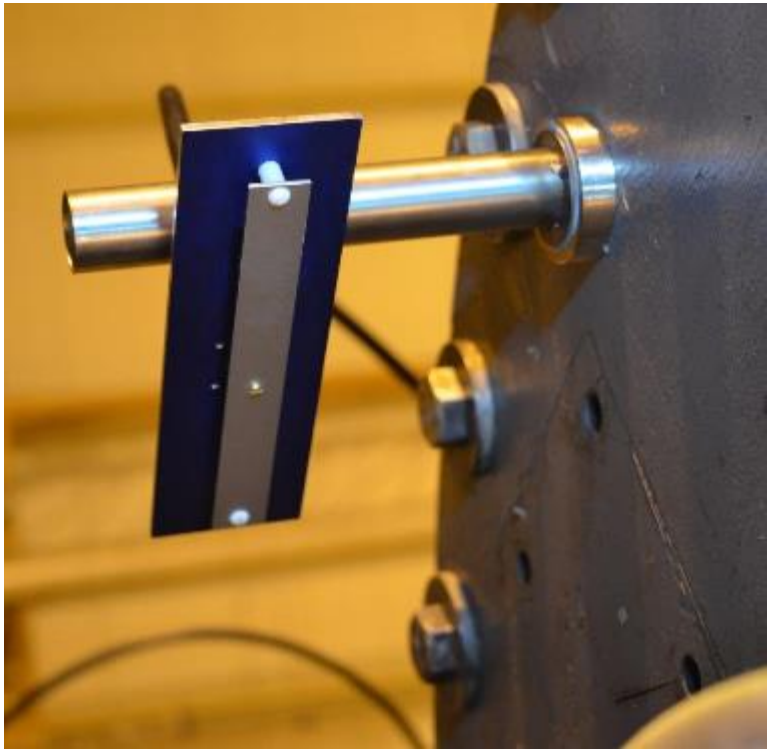
Completed installation

TDMS Stationary Equipment and Control



Stationary RF power supply for multiple antennas; system control computer

Options for TDMS Installation



Antenna design used for exposed shaft TDMS installations

RF antenna systems attached inside bearing cover

Example TDMS Data

Torsional Sensor Data at 70% Load