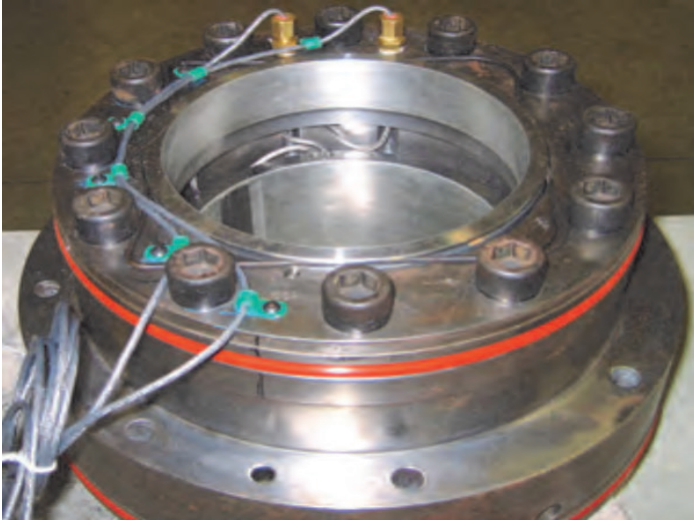


COOPER RF2B BEARINGS UPGRADE

By Tony Rubino



A mid-western utility company compressor station utilizes a Cooper RF2B-24 two stage compressor in a gas storage application. The compressor provides inlet pressure boost (supercharging) to 2 or more downstream reciprocating compressors. The RF2B compressor operates seasonally, usually only during winter months. During a 2008 inspection, it was discovered that the compressor end journal bearing had catastrophically failed. The majority of the babbitt had separated from the steel backing ring in what originally appeared to be a simple failure of the bond from the babbitt to the steel backing ring. Further investigation revealed that failure of the impeller end bearing had been a recurring event at this facility since 1993. At one time, the failure had been severe enough to damage the journal area of the rotor.

In September 2008, RMS provided a new bearing with anti-whirl features, larger clearance and increased oil flow. The bearing was not instrumented with either RTDs or thermocouples due to time constraints. A spare bearing was not ordered at that time pending validation of the new design. Subsequently, the new bearing was installed and appeared to have met design goals by reducing bearing operating temperature based on oil drain temperature measurements. However, compressor operation was still limited due to having to estimate bearing babbitt temperatures.

The bearing was returned to RMS in June of 2009 for inspection and installation of bearing temperature instrumentation. Installation of bearing temperature detectors is expected to provide increased operational control and compressor output. At inspection, the bearing looked as good as new with no signs of damage. RMS reworked the bearing and bearing housing to install two RTD's as well as fluid seal fittings. RMS also provided site installation drawings to address the necessary site rework to the compressor casing. The bearing has been installed and test run but the RTD's were not integrated into the control system at the time of the test. Operation is expected to begin in November with a spare bearing order to follow immediately after.

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