

USER CASE STUDY

Baseload Power



Video Borescopes Offer Cost-Effective Solution

Inspecting the internal condition of a turbine generator is an important maintenance activity, but tearing a unit apart is a long and expensive process. Borescope inspections offer one way to minimize work while still getting the information needed to evaluate operability.

Major gas turbine and generator inspections can be very time consuming and costly. Equipment can be out of service for weeks and often inspections reveal that the machine is in fine working condition. If even a handful of steps can be completed just as effectively but in a shorter period of time, it can shave days off an outage and save owners many thousands of dollars.

That's what Baseload Power aimed to do at San Diego Gas and Electric's Calpeak facility. Baseload Power—founded by Richard Lowrance and his business partner Robert Walshe in 2013—is a power generation parts and services company that provides on-site OEM level generator maintenance services. Lowrance and Walshe gained experience working at Brush Electrical Machines and General Electric but now provide minor inspections, major overhauls, electrical testing, training, and emergency outage services, as well as parts required to complete repairs, to customer around the world.

Baseload brought in a crew of nine workers to conduct a major inspection overhaul of the Calpeak generator. The team extracted the rotor from the generator and conducted a series of borescopic visual inspections inside the rotor, saving time because visual inspections can be completed less intrusively. "We're looking to see if there are any abnormalities," Lowrance said. "We want to be able to definitively point those things out to our client."

"Using flexible, articulating video borescopes to conduct the required inspections eliminates literally days of labour"

Richard Lowrance

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The documentation capability of borescopes is key to the monitoring process, which can take place over a long period of time. Once the generator has operated for a predetermined number of hours, possibly in the hundreds or thousands depending on the finding, the team would go back in and look at the areas of concern to see if problems have mitigated or worsened. "Using flexible, articulating video borescopes to conduct the required inspections eliminates literally days of labour that it would otherwise take to tear down a system like this," Lowrance said.

In years past, flexible fibre-optic scopes were the industry standard. However, image quality was not nearly as good as today's video borescopes. After testing and leasing a number of borescope options, the Baseload Power group now uses Hawkeye video borescopes. Lowrance said the Hawkeye scopes are very cost-effective, especially in light of the savings in labour. "Borescopic inspection allows us to quickly inspect, deep inside the rotor, and capture photos and video which becomes part of our full report to our client. Every time we inspect, we keep those still pictures and they are added to the report," he said.

Where a machine has suffered accidental damage, borescopes save the time required to disassemble panels to get a look inside, meaning that the scale of the damage can be quickly assessed and a repair plan formulated, backed by photos and video.

As an example, Lowrance recalled a New York plant overhaul. There had been some oil and foreign material sucked into the generator intake. Using the borescope, Lowrance was able to see what appeared to be various metallic and semi-metallic particles inside the generator.

"For the initial inspection, I went in with the borescope, saw what was going on, took some photographs, and was able to put all of that into a report to give to the customer and say, 'Here is what is inside your generator,'" Lowrance said. "So the customer was able to see the issues first-hand, and that, of course, helped them to make the decision to spend the money to pull the rotor before the situation became a much bigger problem."

Referring back to the Calpeak plant, Lowrance continued, "we were able to give our client some very good news about the very good condition of their system." Ten years from now, when it is time to conduct another major inspection, the team performing the work will be able to look back at Baseload Power's documentation with confidence. Either they will find that the system aged well or that conditions deteriorated over time. Whichever the case, the borescopic inspection will have served a vital role in the assessment.

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