

early warning let supervisors choose between online and offline washing. After the maintenance procedure, operating efficiency was recovered and availability increased – see Figure 2.

Following the success of the six month trial, performance monitoring was expanded to include the two heat recovery steam generators and the steam turbine. The historical trend line shown in Figure 3 highlights the true potential efficiency improvement possible with this technology.

TWO YEAR PAYBACK PERIOD

With the AMS Performance Monitor, the return on investment (ROI) is very fast; a single filter change paid for this service for two years. This technology has enabled us to assess the effectiveness and economic value of our maintenance activities, allowing us to determine, in a strategic and effective way, when maintenance work should be done to improve equipment performance. We have been able to forecast major events, focusing on results-based work.

This combination of software and analytical service has let Centro Energia Teverola optimize maintenance strategy, enabling an overall efficiency improvement of over 1%.

Without question, this is the best efficiency application in Italy. Proactivity is the secret to achieving maximum results.

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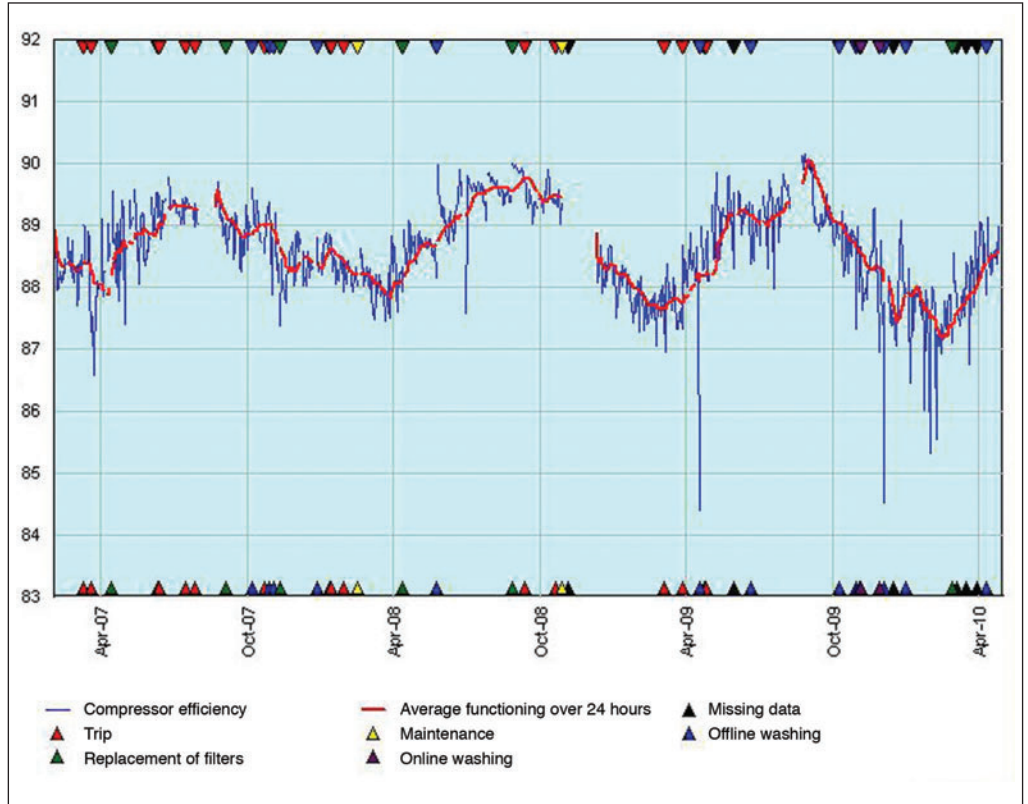


Figure 2. Monitoring compressor efficiency

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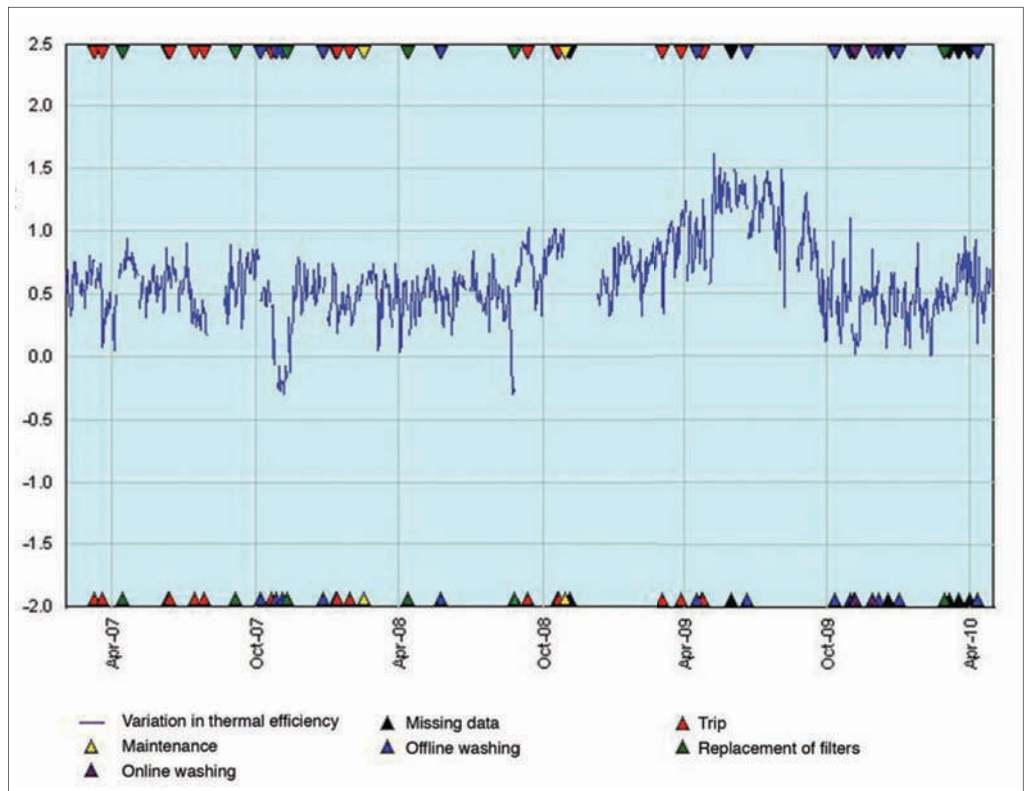


Figure 3. Thermal efficiency deviation

Device management

Using intelligent field devices in cogeneration plants goes well beyond basic measurement and control functionality. These instruments, with their embedded microprocessor chips, generate a vast amount of information about their own condition and the condition of equipment on which they are mounted.

That data can be accessed from the control system communications and processed with Emerson's AMS Suite predictive maintenance software. Detailed information on every instrument on the control network is maintained in a database for use in routine maintenance tasks such as loop checkout, configuration, calibration, troubleshooting, and accurate documentation of maintenance activities.

The Gainesville Regional Utility is saving more than 600 hours of technician time per year in configuration and calibration of about 150 field devices. The ongoing savings possible through the application of field-based data, are reported to be as much as \$997 per device per year.

Health management

The operating condition of critically important rotating machinery can be monitored continuously using permanently installed sensors that make it possible to communicate vibration information continuously. Vibration levels of support machinery can also be measured periodically in the field by plant personnel using portable equipment. In both cases, the data are processed by machinery health management software, providing in-plant vibration analysts with a complete picture of the operating condition of their machinery. The ability to overlay frequencies, and match fault frequencies to peaks allows trained personnel to efficiently analyze the data, and to determine the condition of a specific piece of machinery at the time the data was gathered. Alarm reports enable decision makers to quickly evaluate a situation and take appropriate action to prevent a breakdown.

Periodic sampling and analysis of machine lubricating oils is another important way to evaluate equipment health. By analyzing samples of lube oils, users can effectively determine the severity of mechanical wear and the root cause of problems. Special analytical software precisely computes oil contaminants by parts per million and size distribution, both of which are key characteristics that help analysts determine the type and severity of lubricant contamination and corrective action to be taken.

Asset optimization

In simple terms, focused asset management supports maximum output while incurring minimum costs. Output is maximized by fast, reliable startups, by adopting predictive maintenance strategies to assure reliability of essential production assets, and by utilizing field-based information and diagnostics to identify and avoid potential trouble. Careful planning and execution of plant turnarounds minimizes their duration and extend intervals between them.

A predictive maintenance programme can be expected to bring a 1% to 3% improvement in product throughput, generating enough additional revenue for payback in three to six months.

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