

Viva Energy Enhances Plant Safety and Environmental Protection through improved Asset Management

RESULTS

- Data sampling increased by up to 700 times
- Measurement precision improved by a factor of 100
- Safety improved by automating sample collection from pipes operating at 600 °C



APPLICATION

Monitoring of corrosion and erosion in pipes and vessels of the plant to ensure that there are no hydrocarbon leaks.

CUSTOMER

Viva Energy's Geelong Refinery, a major manufacturer of petrol, diesel and aviation fuel.

CHALLENGE

Viva Energy's HSSE commitment is to pursue the goals of personnel safety, and to protect the environment. A key part of this commitment is to ensure the integrity of every pipe and vessel in the plant so there are no hydrocarbon leaks. Testing every metal vessel for signs of erosion or corrosion takes considerable time, and there is a risk that a process change can accelerate the loss of metal faster than it can be detected using existing monitoring methods.

Viva Energy challenged its integrity team to find ways to take more measurements, more often to improve the ability to detect and track excessive wear and tear, and plan appropriate repairs.

SOLUTION

Rosemount™ Wireless Permasense transmitters from Emerson™ automatically measure metal loss twice daily on the inner surface of pipes, unlike manual measurements that are usually taken monthly, annually, or at even more infrequent intervals. These new sensors are also able to withstand temperatures of up to 600 °C, making them ideal for continuous use in areas where manual measurements cannot be performed while the plant is operational.

Like all WirelessHART® devices, Rosemount Wireless Permasense transmitters can be installed anywhere they are needed, without

“Installation was straightforward and the devices have proven to be robust.”

Lead Integrity Engineer

REFINING

instrument cables and without power cables. Viva Energy already has an established WirelessHART network covering most of the plant, making it easy to add and trial the Rosemount Wireless Permasense technology.

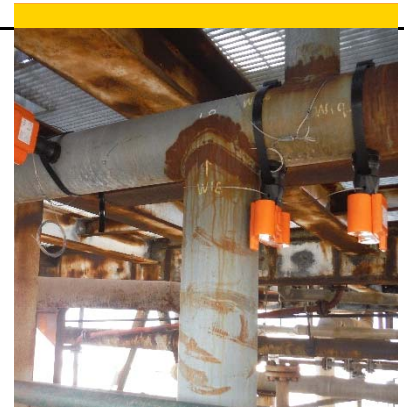
Ten sensors were installed in locations where standard manual measurements had already been taken and where some corrosion had been noted previously. The areas included both low and high temperature parts of the process, allowing testing of both low and high temperature probes. Data was collected for a period of approximately 12 months to test the integrity of collected data, the integration of the data analysis with existing processes, and any issues with data sampling and collections.

RESULTS

Each device was easy to install and, over the testing period, proved to be robust. During the year, approximately 730 data samples were collected, per point, compared to a manual system that could gather as few as one sample over the same period.

The analysis software includes a trending function that enables metal loss to be identified and presented as an annual loss rate. The normal response to a small loss of metal is to adjust the process and protect the metal. After preventative measures are put in place, the trends can be checked again to validate the work performed. Fortunately, during the trial period, no significant metal loss was detected.

Regular reviews of the data were conducted with Emerson staff and identified locations where the installation could be improved. There was also the ability for parameters in the database to be fine-tuned, improving data integrity.



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