



**Brüel & Kjær Vibro**

A member of the NSK Group



## Application Note

**Case study – Accurate machine diagnostics improved the reliability of compressor stations**



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# Case study – Accurate machine diagnostics improved the reliability of compressor stations

Mark Hullinger, an experienced rotating engineer at Williams, worries about the aging legacy monitoring systems for his 15 compressor stations. If just one of his gas-fired engines or reciprocating compressors goes down unexpectedly, there will be severe consequences for delivering gas. Therefore, Mark's team made an important decision to replace the obsolete systems with a cost-effective solution that actually brought additional benefits.

### End-user's vast energy infrastructure

Mark is working at Williams (NYSE:WMB), which owns and operates an extensive energy infrastructure for natural gas, natural gas liquids and olefins. This includes pipeline, processing stations and olefin production facilities throughout North America. The 3,900-mile-long Northwest natural gas pipeline is one critical part of that infrastructure. A lot of industry, power plants, hospitals, schools and residences depend on natural gas in the region, so there is no tolerance for unplanned interruptions.

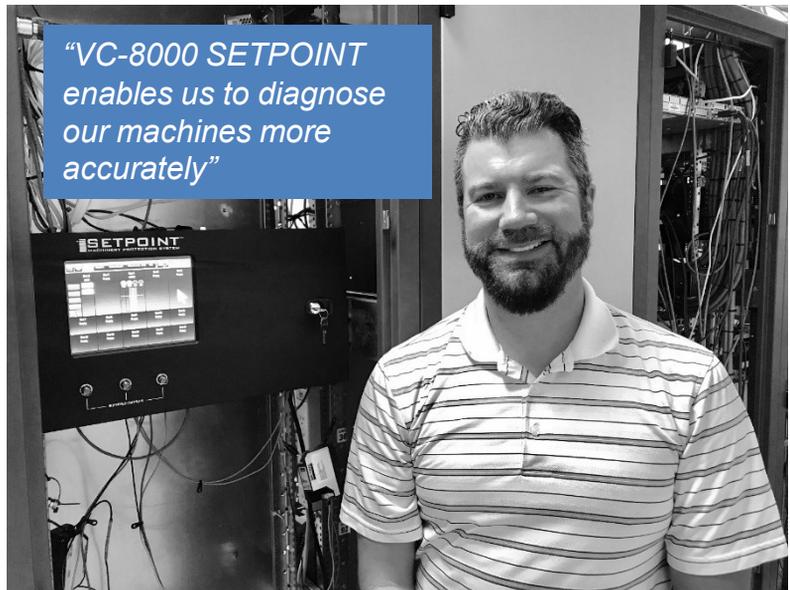


Figure 1. Mark Hullinger with his Brüel & Kjær Vibro SETPOINT® system

### Challenge

It is vitally important to monitor the health of the compressor drive trains at each compressor station along the pipeline in order to protect them from catastrophic failures. Several of the compressors had aging monitoring systems. "Our monitoring equipment was obsolete, and we couldn't get the optimal support we needed". Says Mark. "Consequently, we didn't have confidence in the data provided by the legacy systems."

### Solution

Williams selected the VC-8000 SETPOINT® protection and condition monitoring system from Brüel & Kjær Vibro (B&K Vibro) to replace their legacy machine monitoring systems at several compressor stations. This cost-effective decision was based in part on the VC-8000's advanced monitoring capabilities, which don't require separate server hardware or software license fees.



The system not only provides complete, reliable protection of the machines, but also provides advanced diagnostic capability without requiring a separate condition monitoring server.

“With regards to monitoring systems; anyone can monitor vibration amplitudes” Says Mark. “The VC-8000 actually gives us vibration spectrum plots and other diagnostic functions, which is a big difference for people who want to diagnose their machines more accurately. A hand-held analyzer could provide spectrum plots, but then you aren’t getting the real-time data that the VC-8000 provides. Moreover, the vibration data is duly synchronized with changing process parameters”.

## Results

The VC-8000 has detected and diagnosed several faults since it was installed, thus confirming the VC-8000’s effectiveness:

- Damaged thrust bearing on an engine turbocharger
- Crosshead looseness on a compressor
- Worn valves on a compressor

B&K Vibro works closely with Williams, helping them to increase reliability and reduce life cycle operating and maintenance costs of their critical machines. Up to now, B&K Vibro installed the VC-8000 system on seven Northwest Pipeline compressor stations to monitor each gas-fired engine and reciprocating compressor unit. In addition to machine protection, Williams currently takes advantage of the VC-8000’s on-board condition monitoring capabilities

at three of these stations. And there are already plans to extend this to the other four stations. In addition to this, B&K Vibro systems are already monitoring machines at two of Williams gas processing plants; Opal and Ignacio.

Mark summarizes: Before, we had two or three different systems. Now, we can standardize on one system.”

Want to learn more?  
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