

Compressor Monitoring with Acoustic Emission Technology

Improving the reliability of reciprocating compressors requires improving the reliability of all critical parts that provide a potential point of failure. The reciprocating compressor valve is widely acknowledged to be the part that is responsible for more unscheduled shut downs than any other part. With many active parts, damage to a reciprocating compressor valve can result in more costly secondary damage to other parts of the compressor. Identifying and monitoring these critical components can pay huge dividends in increased reliability and reduced maintenance.



Condition Monitoring aims to provide tools to give users advance information to manage and reduce the length of scheduled shut downs and make unscheduled shutdowns obsolete. Numerous monitoring systems are available to the compressor industry that are either costly to install and maintain or require specialist manpower to collect, process and analyze the data.

Compressor Products International's (CPI) **ValveAlert™** provides a total solution that encompasses data collection & analysis, alert detection & triggering and report generation with the operation of reciprocating compressors. **ValveAlert™** is a technology that records an acoustic emission (AE) and temperature fingerprint for the operation of each valve (baseline). Data is analyzed against the baselines to determine whether anomalies with the operation of the compressor are present. The **ValveAlert™** system is able to detect changes in the timing and nature of valve opening & closing events and detect the presence of leakage when valves should be closed.

The VA3 handheld unit records data non-intrusively from quick fit connectors that are bonded to the surface of each valve plate cover. The data is uploaded to a PC or laptop where the data is automatically analyzed and the necessary alerts are triggered. This provides a very versatile and flexible way of monitoring compressors.

The generic **ValveAlert™** software presents the state of a compressor through the use of simple graphical displays. Each valve within the system has its own associated traffic light to allow anomalies to be pinpointed. The **ValveAlert™** software allows each valve's acoustic signature to be displayed against the baselines to clearly identify anomalies with the operation of valves. Additionally the **ValveAlert™** software allows the user to view a snap shot of a single valve or a whole cylinder. The **ValveAlert™** software provides a suite of trending and diagnostic utilities to monitor the deterioration of the operation of valves over a period of time.