Telemetry systems, comprising sensors, transducers and management/reporting software continuously monitor key indicators of valve and operator performance over time and report these in both statistical and graphical formats for further analysis.

Valve failures are very often the result of ageing. Indicators of ageing that can be detected and trended over time using the V-MAP® system include, but are not limited to:

- Increasing times to operate.
- Increasing valve operating force or torque.
- Increasing actuator pressure or current.
- Increasing through seat leakage.
- Need for maintenance or break down repair.
- Failure to meet acceptance criteria.
- Experience of problems of ageing with similar critical valves of similar materials and/or design on similar duties.

For the most critical process valves, such as Emergency Shutdown Valves (ESDVs), where other failure modes and effects are important to monitor and trend, Score have developed a fully integrated, permanently installed system known as V-MAP®.

Main benefits of V-MAP®:

- V-MAP® is a passive, non-intrusive monitoring system that responds to every valve operation, planned or unplanned.
- It removes the need for operators/personnel intervention, unless alerted.
- It provides reports and audit records including the trending and comparison with performance benchmarks and safety criteria.
- V-MAP® reporting and analysis provides identification of maintenance requirements and reliability data for confirmation of Safety Integrity Levels (SILs).
- Remote access is available for valve expert analysis and support.

For more information, contact Score Group plc at:

Score Group plc
Glenugie Engineering Works
Peterhead, Aberdeenshire, Scotland
AB42 0YX
UK
Tel: +44 (0) 1779 480 000
Fax: +44 (0) 1779 481 100

Email: midas.enquiries@score-group.com
Website: www.score-group.com

MIDAS® and Midas Meter® are Registered Trademarks of Score Group plc.
Improve your valve population performance by implementing MIDAS® Valve Diagnostics

Valve Condition Monitoring is known to reduce risks, and maximise efficiency and reliability in all processes where it is deployed. It is increasingly being seen as the only safe way of managing valve populations.

To ensure the on-going safety integrity, environmental protection and efficiency of your process is correctly maintained at all times, it is of critical importance that you know the condition of your process valves. Put more simply, you need to know if your valves are leaking or not and if they are leaking, how bad is the leak? Additionally, on more critical valves you need to know if there is another “failure mode” developing in your valves or operators that will expose you to risks to people, processes or plant (for example, the event a valve fails to complete its design function such as closing or opening on demand).

Score’s 30+ years of experience of valve supply and Intelligent Valve Management™ tells us that all plant operators are facing the same recurring problems:

As a general rule, 90% of the problems experienced by process operators result from just 10% of the installed population of valves which are not performing to the required standard. The problem for operators result from just 10% of the installed population of valves which are not performing to the required standard. The problem for operators is that it’s not always obvious which are the “culprit valves.”

MIDAS® Valve Diagnostic products use proven acoustic emissions (AE) technology to identify through valve issues / leaks and then use proprietary algorithms to calculate and quantify any leaks found. Valve leakage represents major risks to plant operations.

The “entry level” product for through-valve loss / leak detection and quantification is the hand-held MIDAS Meter®.

Score Diagnostics Limited’s range of market-leading valve condition and performance monitoring products help you to troubleshoot problem valves, monitor valves, trend failures and move towards pro-active maintenance.

For more critical process valves, the MIDAS® Sensor (patent pending) has been developed to be installed on the valve and adjoining pipework, to give a continuous and permanent feedback indication of valve sealing performance in line.

The MIDAS® Sensor uses an acoustic emissions (AE) sensor to detect the high frequency sound signals emitted by leaks across the valve seat to seal interfaces. It is a non-invasive inspection technique which requires the operator to place the sensor directly onto the outside surface of the valve body. Once in position, it is possible to see within a few seconds if there is any leakage across the valve seat(s).

Furthermore, by completing a quick valve survey, where readings are sent from the handset, wirelessly by Bluetooth, to the Personal Digital Assistant (PDA) it is also possible to estimate the leak rate. This then allows the valve maintenance team to focus their efforts on addressing the worst performing valves first and to develop a preventative approach to valve maintenance.

Easy to understand output reports show valve condition and performance corresponding to it’s “allowable leak rate” in the form of a traffic light system.

The MIDAS® Meter® uses an acoustic emissions (AE) technology, for example, for quick and easy leak detection.

So, the good news is that risk can easily be managed through the intelligent monitoring of valves, based on their criticality, over their entire life cycle (and any subsequent life cycles following maintenance interventions). All we need is the correct and reliable monitoring equipment, systems and techniques.

MIDAS® Valve Diagnostic products use proven acoustic emissions (AE) technology to identify through valve issues / leaks and then use proprietary algorithms to calculate and quantify any leaks found. Valve leakage represents major risks to plant operations.

The easy to interpret visual indicators suggest the following logic:

- Valve Performing, Leave Alone.
- Leakage Detected, Monitor Deterioration Closely.
- Leakage Detected, Maintenance Required to avoid risks associated with in-service failure modes.

These risks include:

- Safety
  - Loss of containment of process fluids presents a major risk to personnel working on the plant.
- Environmental
  - Leaking valves / loss of fluid containment represents a potentially major risk to the environment.
- Efficiency
  - Lost production due to leakage and / or downtime due to poorly performing valves affects both plant efficiency and availability, which can result in both product and / or profit losses.

The MIDAS® Sensor’s output allows the operator back in the process control room to see the performance of the valve in real time. The software / graphic user interface (GUI) gives a visual indication of the condition of each valve being monitored for through-lead leakage.

Score Diagnostics Limited has developed a number of valve condition and performance monitoring products and services to address their existing customers’ and the wider market’s needs.

These products are now in wide-spread use throughout the Oil & Gas regions worldwide. The products offered are all intrinsically safe certified for use in explosive atmospheres.

Given that we know this, it is possible to use Acoustic Emissions (AE) technology, for example, for quick and easy leak detection.

The output from the unit’s acoustic emissions (AE) sensor (4-20mA electrical signal) is designed to tie in directly with all plant’s Digital Control Systems (DCS) or Supervisory Control And Data Acquisition (SCADA) Systems or Score’s own V-MAP® System. This makes the technology easy to install at the plant construction phase and also to retrofit to existing plants.

The MIDAS® Sensor’s output allows the operator back in the process control room to see the performance of the valve in real time. The software / graphic user interface (GUI) gives a visual indication of the condition of each valve being monitored for through-lead leakage.