

rotork[®]

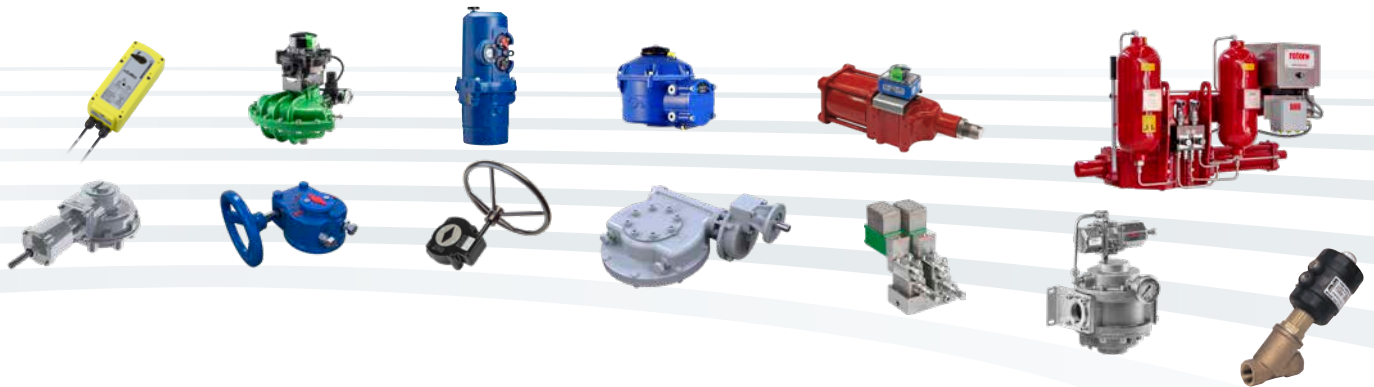
Keeping the World Flowing
for Future Generations

Intelligent Asset Management



Advanced analytics to improve reliability and availability of key assets

Reliability in critical flow control applications



› Reliable operation when it matters

Assured reliability for critical applications and environments. Whether used infrequently or continuously, Rotork products will operate reliably and efficiently.

› Quality-driven global manufacturing

We offer products that have been designed with over 60 years of industry and application knowledge.

Our research and development ensures cutting edge products are available for multiple applications across multiple industries.

› Customer focused service and worldwide support

Rotork solve customer challenges and develop new solutions that are tailored to the needs of our clients.

We offer dedicated, expert service and support from initial inquiry, to product installation, to long term after sales care.

› Low cost of ownership

Long-term reliability prolongs service life.

Rotork helps to reduce long term cost of ownership and provides greater efficiency to process and plant.

Intelligent Asset Management

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Comprehensive product range serving multiple industries

Rotork products offer improved efficiency, assured safety and environmental protection across sectors such as the Power, Oil & Gas, Water & Wastewater, HVAC, Marine, Mining, Pulp & Paper, Food & Beverage, Pharmaceutical and Chemical sectors.

Market leaders and technical innovators

We have been the recognised market leader in flow control for over 60 years.

Our customers rely upon Rotork for innovative solutions to safely manage the flow of liquids, gases and powders.

Global presence, local service

We are a global company with local support.

Manufacturing sites, service centres and sales offices throughout the world provide unrivalled customer services, fast delivery and ongoing, accessible support.

Corporate social responsibility is at the heart of our business

We are socially, ethically and environmentally responsible and committed to embedding CSR across all our processes and ways of working.

Introduction

Intelligent Asset Management is a cloud-based asset management system for intelligent actuators and the flow control equipment they operate. Failure of key equipment can result in poor performance, poor quality, reduced output yields and reputational damage. The solution is a planned maintenance strategy with advanced analytics, condition monitoring and anomaly detection.

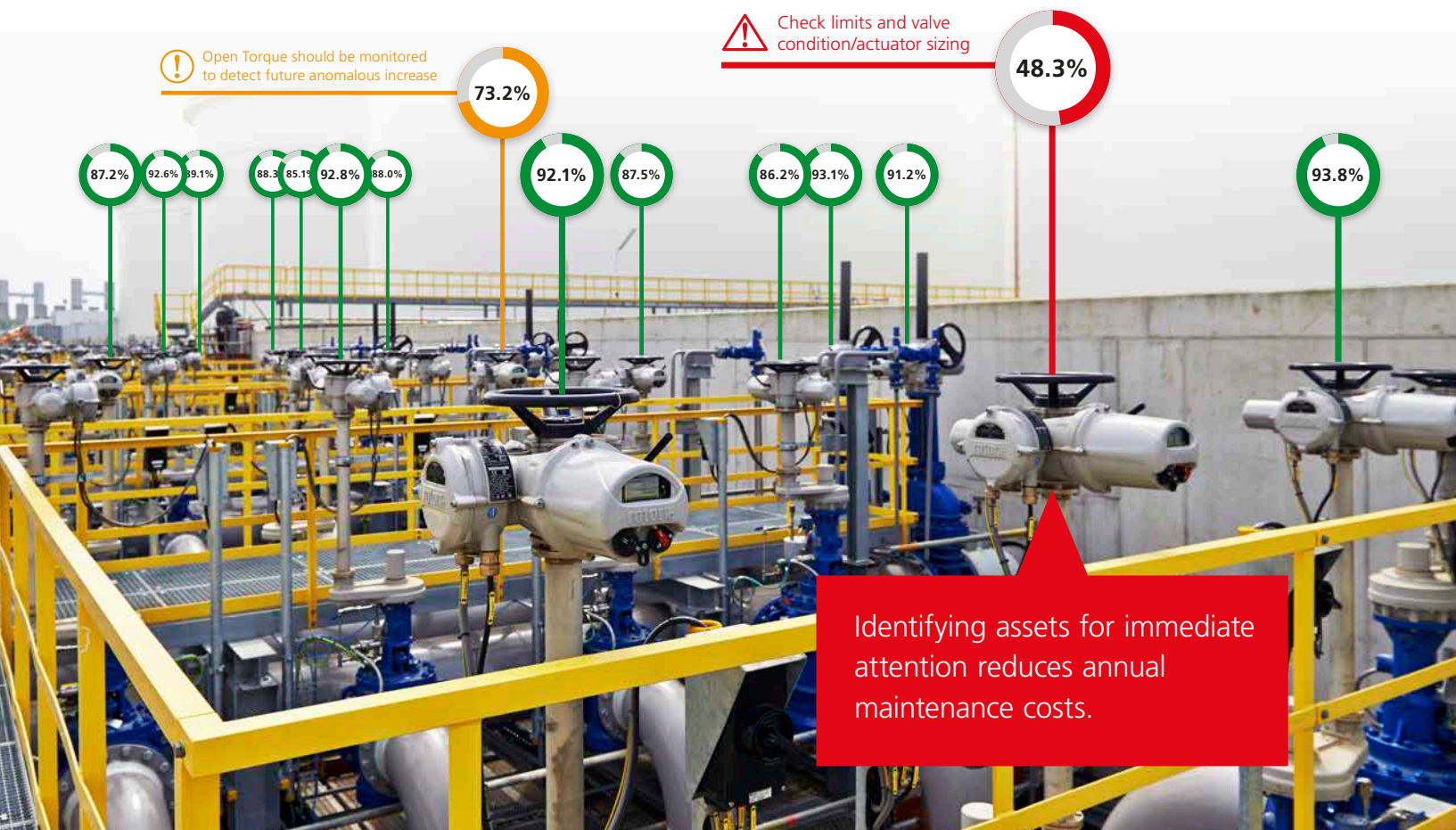
We know that downtime is costly for our customers. Supporting the continuous and reliable operation of a plant, by proactively managing and fixing key assets before they become problematic, allows for improved performance and increases in valuable uptime.

Through the collection of data and Rotork analytics, our innovative maintenance system improves long-term operational stability of all assets. Available both as a standalone offering and as part of a combined solution to meet individual needs, it is part of Rotork's Lifetime Management suite of services. Performance, process criticality, product and operational data are combined to assess asset condition and determine if intervention is required to prevent performance degradation or failure.

Smart maintenance powered by Intelligent Asset Management is based on data from the field, rather than periodic or limited maintenance based on guesswork – or no maintenance at all. Early detection of anomalies can save costly repairs and gain a holistic understanding of an entire site. Intelligent Asset Management removes the need to manually review data, saving time and reducing the likelihood of missing any problems.

There are flexible options for managing your flow control assets with Intelligent Asset Management:

- Different levels are available for a customised experience
- The data can either be reported to, controlled by and acted on by Rotork, or can be managed by the customer to make their own informed decisions
- Intelligent Asset Management is scalable, depending on customer requirement and budget



Intelligent Asset Management

As part of the Industrial Internet of Things (IIoT), Intelligent Asset Management is web based and easy to access. It provides easy and accurate reporting/monitoring of the condition of valves/flow control assets and anomaly detection, enabling proactive maintenance. Intelligent Asset Management can be accessed from any browser on any device, using any operating system.

The platform allows customers to see the health status of their valves and associated flow control equipment through the information gathered by the actuators' data loggers. A simple and intuitive user interface provides straightforward and easy to understand information. Live diagnostic actuator data is available for sites that use a Rotork *Master Station* (via our Gateway computer), such as alerts and actuator status.

What does **“good”** look like for you?

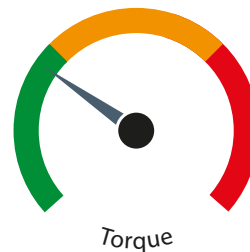
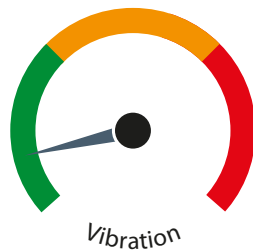
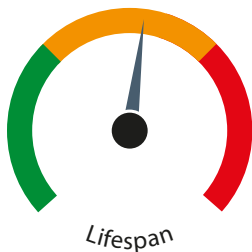
We work with each customer to understand what a healthy set of assets look like for an individual application.

Intelligent Asset Management platform

- Simple to use interface
- Clear indication of which assets are not performing optimally
- ‘Summary’ views simplify complex analytics into easy to interpret visuals
- Search for individual actuators in multiple ways e.g. by using serial number, tag or description
- Can be used even if third party software installation is prohibited
- Can be used on mobile devices, increasing user flexibility
- Web based and will work across multiple operating systems
- No updates or changes to operating system to interrupt your advanced analytics
- Colour coded statuses on map saves time in identifying problem assets

Intelligent Asset Management benefits

- Central platform to see the health of all assets on site
- Advanced analytics
- Clear view of individual asset condition, age and life cycle status
- Early detection of issues allows resolution before costly failure/repairs
- Reduced downtime via increased availability, reliability and operational stability
- Efficient targeted maintenance
- Removes need to manually review data, saving time
- Reveals trends over time
- Leads to operational stability
- Life cycle management, decision justification and traceability
- Robust, safe and secure online platform



Intelligent Asset Management provides summary views that simplify complex analytics of the health of assets into easy to interpret visuals

System Analysis and Reporting

Through Intelligent Asset Management, Rotork makes it easier to get data out of actuators – and act on it to improve performance. Multiple data points from intelligent actuators are used to capture a complete picture of how the assets on a site are performing.

The key areas of information that are taken from data loggers and uploaded to Intelligent Asset Management are torque, temperature, vibration and event log information, (such as open and close starts log, movement log and alarm log) as well other secondary metrics such as partial stroke profile, maximum starts per hour and motor run time. This wide-ranging view of multiple data sets allows for a holistic understanding of exactly what is occurring on site. “Acceptable” levels are automated and clearly indicated, enabling remedial action before failure.

Torque

- Critical torque level
- Opening/closing torque
- Average torque
- Torque deviation
- Open and close torque at full and partial stroke

Temperature

- Temperature is used as a factor when assessing overall condition
- Maximum level and good/warning/alert levels calculated and clearly shown
- Temperature is assessed over time, revealing trends

Vibration

- High vibration levels can cause serious faults so accurate monitoring is essential
- Excessive vibration levels
- Vibration trends analysed over time

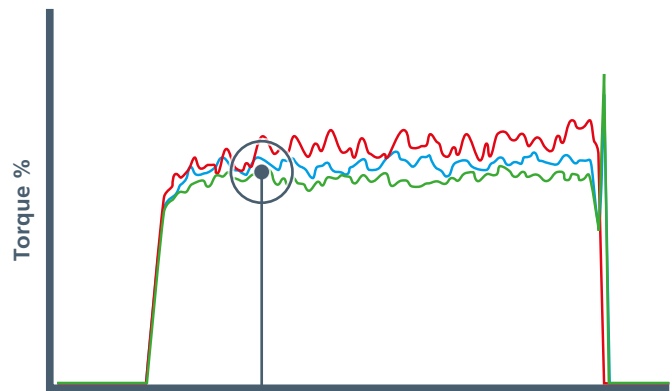
Event log

- Critical events are highlighted
- Colour coding shows event severity
- Multiple events counted, including alarms, open and close, movement and restarts

Detailed Printed Reports

- Customers can access detailed printed reports for summary of actions required, highlighted information and asset performance data

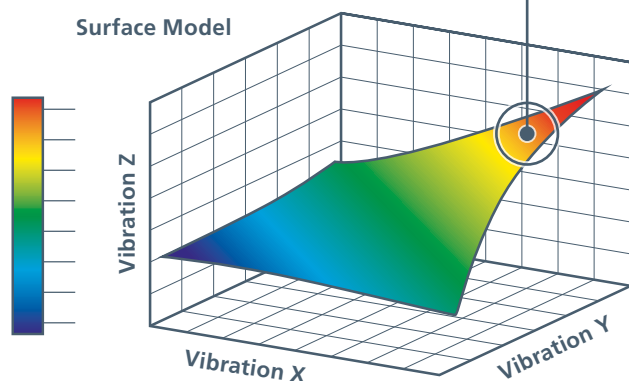
Opening Torque Analysis



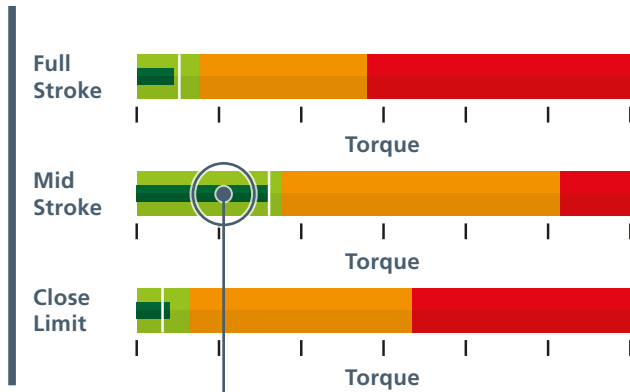
Valve seating, sealing and other mechanical issues can be detected from only subtle changes in torque.

Vibration outside specification can lead to premature failure, but this can be detected and rectified before long term damage and downtime occurs.

Vibration Analysis



Average Torque Analysis



Actuator drive bush, gearbox, motor, bearing and valve issues often appear as changes in average torque. Analysis takes several factors into account when detecting warning or alerts.

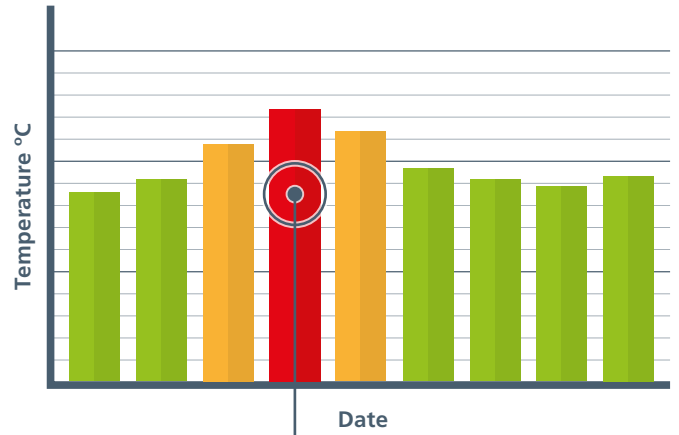
Summary of the operational events and alarms. Critical alarms are counted, colour coded and time stamped for last occurrence to quickly identify criticalities.

Event Log

Torque Trip Close 12 2021-01-18 15:38	Torque Trip Open 0 N/A	Motor Stalled 0 N/A	Motor Relay 46 2021-01-18 15:39
Thermostat Trip 0 N/A	Comms Loss 0 N/A	Main Restart 1 2021-01-14 13:07	Phase Loss 6 2021-01-14 13:04

Event Logs Summary

Temperature Analysis



Maximum temperature analytics allows operators to identify issues related to critical temperatures.

Detailed printed reports provide actionable insight, summary of actions required and individual asset performance data.

Detailed Printed Reports





Intelligent Asset Management is available both as a standalone offering and as part of a combined solution to meet individual customer's needs. Performance, process criticality, product and operational data are combined to assess asset condition and determine if any intervention is required to prevent performance degradation or failure. There are flexible options for managing your flow control assets with Intelligent Asset Management.

Actuator Analytics

The manual collection of data logs will generate printed reports for customers.

Offline analysis of actuator data logs

- Usage and condition report
- Predictive diagnostics
- Actionable insight
- Obsolescence report and recommendations
- Advanced Rotork analytics

Site activity includes

- Survey
- Asset register
- Asset criticality review
- Data log collection

Rotork Managed Solution

In addition to printed reports, a Rotork Managed Solution gives access to the Intelligent Asset Management system. Required remedial work can be managed by Rotork Site Services.

Selection of appropriate monitoring system

- Monitoring interval determined
- Actuator analytics benefits
- Expert review of reports
- Required maintenance determined
- Advanced Rotork analytics

Site activity includes

- Survey
- Asset register
- Asset criticality review
- Data log collection
- Completion of required work can be included

A full listing of the Rotork sales and service network is available on our website.

www.rotork.com

Corporate Headquarters
Rotork plc
tel +44 (0)1225 733200
email mail@rotork.com



Electric Actuators and Control Systems
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Gearboxes and Gear Operators
Precision Control and Indication
Projects, Services and Retrofit