

Asset management “pays for itself”



Fig 1 - The IQ actuator provides a 'window into the conditions' at the valve.

At a plant in Spain where Rotork has the asset management contract, actuators are installed in a particularly arduous process where they are operated so frequently that they would use up their design life after only eight months. However, these actuators have now been working for over five years, prompting the operator to comment: “An asset management programme is a must – it pays for itself.” Asset management standards are defined in ISO 55000, which states: ‘Asset management involves balancing the costs, opportunities and risks against desired objectives.’

The Client Support Programme provided by Rotork follows the recently introduced ISO 55000:2014 guidelines. Aimed at new and existing installations alike, the programme recognises that asset management is an important consideration for long term reliability from the very start of the purchasing process. Defining an asset strategy allows for true asset life to be determined and the asset life cycle management to be performed. This can significantly reduce the long term cost of ownership by not only demonstrating the overall value of the purchase in terms of capital and operational expenditure, but also in plant reliability and meeting product specifications.

There are many factors that must be assessed in order to ensure that actuated valve installations and systems are as efficient and future-proof as possible. Firstly, the design of the equipment itself must be capable of performing in challenging environmental and operating conditions, often experiencing long periods of inactivity or conversely frequent

operation, extreme temperatures, vibration, submersion and other influences which may affect its ability to operate with total reliability. Actuator design features such as double-sealing and non-intrusive IP68 enclosures offer reassurance in these areas, but the quality of the valve is equally important. If requiring repair or replacement, the valve

is far more disruptive than the actuator, so compromising on an initial investment is usually a false economy in the long term.

Defining the strategy

Working with the end-user to gain a full understanding of the process enables the best actuation solutions to be achieved in terms of product suitability, accurate sizing and automation options. Using product-trained and qualified engineers for installation and commissioning then ensures that the equipment is correctly set up and operating within specified parameters. Following on from commissioning, the continuing partnership with the end-user provided by the Client Support Programme facilitates efficient maintenance and long term support for the installed assets. Identifying the initial status of the equipment involved, which can encompass electric and fluid power actuators manufactured by Rotork and those from other manufacturers, it is possible to establish the type and scope of the data that can be obtained. Decisions can then be made as to which parts of the information are important or essential to achieve the objectives of the programme.



Fig 2 - Using the setting tool, information stored in the dataloggers of up to ten IQ actuators can be downloaded and transferred to a PC for analysis and diagnostic purposes.

Obtaining the information

In recent years the development of intelligent actuators with diagnostic capabilities has greatly increased the ability to seamlessly include actuators in the asset management strategy for reliable plant operations. Rotork has pioneered the development of intelligent, non-intrusive IQ actuators with advanced integral dataloggers and diagnostic software programmes which contribute to reduced maintenance, reduced downtime and asset management data. The IQ actuator provides a 'window into the conditions' at the valve, showing valve torque, usage profiles and service logs to facilitate real-time asset management at the actuator indication window. IQ actuators also offer the greatest flexibility in collecting this information, beginning with the hand-held non-intrusive setting tool, which is used locally at each actuator. Using the setting tool, information stored in the dataloggers of up to ten IQ actuators can be downloaded and transferred to a PC for analysis and diagnostic purposes. Data can also be collected through control networks. For example, Foundation Fieldbus and Profibus both have some capabilities with these functions. Designed specifically for valve actuators, Pakscan has more

comprehensive capabilities, whilst the recently introduced wireless Pakscan version has the ability to capture all the data stored in the actuator. Data downloaded over the wireless Pakscan network can also be saved for future reference in the network master station, providing complete visibility of the operating history of every field device on the network. In some cases it may be worthwhile weighing up the cost and advantage benefits of installing new networks for the data gathering function, especially if consideration is given to the reduced installation costs and operational benefits facilitated by the wireless option. The Client Support Programme utilises this asset management data irrespective of how it is collected to ensure effective maintenance is deployed efficiently to maintain the reliability of the process operations.

Deciding how the information will be used

The ability to objectively analyse data from the plant and pinpoint the areas that are important for individual site's specific requirements is essential for effective asset management that is provided as an integral part of the Client Support Programme. At one end of the asset

management spectrum, the equipment can be run without maintenance until it breaks down, when it is replaced. At the other end, preventative maintenance can be used to keep the equipment in peak condition and eliminate unexpected process interruptions. Both options, and anything in-between is viable as a strategy, but modern maintenance techniques indicate that the costs of maintenance in an operate-to-fail condition are greater than twenty times that of a condition monitoring approach when process downtime is considered. To achieve the benefits of condition monitoring regular gathering of data and analysis is required. Further savings can be achieved by adopting the right maintenance approach relative to the criticality to the process of the device being monitored. To meet these challenges, the Client Support Programme is available in a range of levels that are structured for flexibility and individual customer requirements. Three progressive levels of cover meet differing demands and are designed to seamlessly integrate with existing maintenance procedures and strategies. Different levels of cover can be selected for equipment on the same plant, depending on its criticality to the running of the process.



Fig 3 - A typical programme will create a detailed register of the assets involved and establish the objectives in line with the Asset Management Strategy.

Putting it into practice

Beginning with a review of current operational schedules and maintenance procedures, a typical programme will create a detailed register of the assets involved and establish the objectives in line with the Asset Management Strategy. The Asset Register includes such information

as the description, status and frequency of operation of all actuators, description of valves, device management history, power supply, cabling, communication systems and networks.

This is followed by an operational review, which enables the programme plan to fit collaboratively into existing maintenance

schedules without interruption to production. Vulnerable or critical devices are identified, a maintenance plan is undertaken and objectives and key performance indicators are identified and set.

Following on, planned preventative maintenance schedules will confirm the condition of assets, check the performance against specification, produce a health check summary that identifies urgent and non-urgent maintenance requirements and carry out corrective action. Urgent maintenance will be immediately actioned and non-urgent maintenance reported and included in the performance review for future scheduling.

Activity is quantified through a reporting mechanism, generated at agreed frequencies; details of the work carried out, their impact on production, net savings achieved and the performance of the programme compared to objectives. Analysis of this data enables recommendations to be identified and fed into the operations review for subsequent action. This is measured back against the key performance indicators.

Supporting the operation

The success of the programme depends on the scope and level of support that



Fig 4 - Rotork engineers provide predictive or reactive maintenance within agreed response times.

is provided. Organisation, expertise and flexibility is required to ensure that the customers' requirements are satisfied on time and without inconvenience. Rotork engineers provide predictive or reactive maintenance within agreed response times and offer functional training for development, operational and maintenance staff. Priority technical assistance is another key area, enabling the customer to discuss any situation, either on site or with a support centre, find the best solution and agree the plan of action to implement the changes. In support of this and other functions, a management system is created to record the status of equipment so nothing is forgotten, track each item, build its history and set optimised maintenance timetables. For intelligent equipment, the use of built-in diagnostics enables every event to be monitored and performance data to be collected. The ability to achieve this remotely, which can be implemented as a part of the programme, optimises the diagnostic functionality of intelligent and smart equipment. Additional reassurance is provided by embedded parts management, which ensures that parts are available for immediate delivery whenever needed. As well as eliminating the costly tasks of

spare parts management for the operator, the system also avoids any costs for obsolescence or unnecessary stock. In the longer term, a lifecycle management programme provides the information on all product developments, helping to keep equipment up to date, plan future upgrades with predictable costs and future-proof the plant. The sum total of all activity is then available for further site development, helping the operator to plan the way ahead, whether for increased throughput, increased efficiencies, improved availability and reliability or reduced waste.

Conclusion

Increased plant availability through managed technical support improves product reliability over time and helps to avoid costly unpredicted downtime. Ongoing technical support further contributes to increases in availability and reliability, leading to improvements in operational performance. Less time spent on maintenance enables employees to spend more time on productive activity. Investment in an asset management strategy governing the maintenance and operability of process control devices increases the productive life of equipment, thereby

retaining its value as an asset rather than a liability. As equipment lifecycles are optimised, the overall costs of maintenance should reduce as reliability increases. Improvements in reliability will ensure that the commitments made to customers are maintained.

About the author

Phil Burness is Rotork's Director of Site Services, responsible for Rotork's worldwide after sales and engineering projects business. Phil has



over thirty years' experience in process industry service and maintenance activities, including instrument and control system design, implementation and maintenance responsibilities for the chemical, plastics and power generation industries. As Rotork Site Services Director, he works with Rotork's worldwide sales and service network to continue the development of after sales support, engineering projects and life of plant services.