# MAKING A PLAN

**Dave Godfrey, Rotork, UK,** outlines how an effective maintenance plan can reduce downtime, increase profitability and improve safety at tank farms.

Flow control is critical in allowing tanks and terminals to operate efficiently and safely. Effective flow control can reduce emissions, ensure safety, and improve efficiency and yield; irrespective of the application.

Poor flow control maintenance can lead to operational disruption, so keeping flow control equipment such as actuators in peak condition is critical. Inefficient equipment will increase the potential for faults that may incur disastrous environmental and financial costs. Failure of the key equipment that keeps a site running can result in reduced productivity, poor performance, and a drop in quality. Unintended downtime is the most serious consequence of ineffective maintenance.

For long-term reliability and viability, managing flow control equipment effectively is crucial. The ultimate aim is to increase uptime and optimise the required maintenance. Taking equipment out of operation is costly, in addition to the cost of parts and labour. Insufficient maintenance increases the risk of breakdowns, leading to yield loss, environmental damage, and potential health and safety hazards. One effective solution to preventing this is on-site maintenance. This approach allows crucial servicing to be performed without the need for a plant shutdown.

## Which maintenance plan to choose?

An effective and holistic site service programme increases the dependability of site assets. The programme must be accessible, provide value for money, and be customisable enough to cater to different business needs. A potential offering must ensure that the most appropriate response is provided based on the criticality of the application.

A tiered approach to maintenance, like Rotork's Reliability Services programme, provides a tailored package depending on the level of cover required for site assets. The customisable nature of a service programme like this helps customers balance the risk of downtime vs cost.

Additionally, it is important that there are a variety of optional extras to fit the customers' needs. Having this type of

flexibility can improve a site's overall performance. Service programmes of this kind provide a set cost to operators, allowing for the easy management of budgets. Preventative maintenance, such as regular check-ups, replacing consumable parts, and calibration, minimises the risks of sudden equipment breakdowns while prolonging its lifespan.

## Why select intelligent electric actuators?

Intelligent electric actuators are often the flow control equipment of choice because of their reliability, efficiency, precision, ease of use, and ability to capture historical data. They are often used in oil and gas applications like tank farms. In these environments, isolating actuators are used for routine flow control around the plant, fail-safe actuators for critical safety duties, and modulating actuators for process applications.

Intelligent electric actuators have many features that enable efficient operation as well as simplify installation and commissioning. Actuators of this kind mean actions like setting the torque levels, position limits, and configuration of the indication contacts can be carried out without removing any actuator covers with infrared, Bluetooth® or app interfaces.

Intelligent electric actuators with a watertight enclosure permanently protect internal electronic components from any ambient environment. This increases long-term reliability, durability and availability, even in the harshest climates. All sites require high levels of safety; this is especially highly regulated within oil and gas environments. Safety and reliability depend on the correct combination of explosion-proof certifications, such as ATEX. Any actuator installed in a tank farm must have the appropriate hazardous area certification.

## The value of data and diagnostics

Intelligently designed and well-maintained flow control systems will not only aid efficiency and increase profit but can also allow for compliance with environmental standards to ensure safety standards are met. Intelligent actuators ensure a plant operates smoothly and efficiently; with many sites operating 24/7, uptime is always critical to success.

**Figure 1.** Having the right support for your operation can significantly reduce downtime.

Analysing performance metrics from equipment allows for patterns to be identified that might indicate impending breakdowns. Predictive maintenance enables the early detection of anomalies or signs of wear, allowing for timely interventions before a critical failure occurs. By catching potential issues early, costly downtime and repairs can be avoided, ensuring continued smooth operation and optimal equipment lifespan.

Unplanned downtime caused by equipment failure or non-performing equipment has multiple damaging consequences, such as poor performance, poor product quality and reduced output yields, which can lead to reputational damage and loss of revenue.

An effective maintenance programme ensures that hardworking flow control assets operate at optimum performance levels, maintaining their availability to perform key duties and assist a site in working safely, efficiently and reliably. It can also provide insight into how equipment is performing, which is an important consideration for a site to work safely and efficiently.

Modern intelligent actuator technology can provide plant managers with a considerable amount of data, recording all the activity in detail, including the number of valve operations, alarms, failures to respond to events, valve torque profiles, unauthorised operation attempts and many other events. This data can be used for the accurate reporting and monitoring of the condition of actuators and flow control equipment. This information is used within asset management programmes to understand the health of actuators and valves as well as their ability to operate. Intelligent actuators facilitate the monitoring of the overall health of the process through data logs.

Using this data to manage technical and maintenance support increases plant availability and helps to avoid costly, unplanned downtime. The ongoing technical and maintenance support that an asset management system provides further contributes to increases in availability and reliability, leading to improvements in operational performance. Investment in an asset management strategy that looks at the maintenance and operability of actuated valves increases the productive life of the equipment. It moves beyond a 'break and fix' strategy to one that actively monitors the health of all equipment in the field, enabling action where necessary before costly and unnecessary breakdowns. The customer does not need to manually review data, saving time and reducing the likelihood of missing any problems. The early detection of anomalies allows for timely maintenance, which can reduce process downtime.

## Intelligent asset management keeps sites flowing

Prevention through sound asset management and maintenance is the key to site uptime. One of the ways to do this is through analytical insights from data. Regular, accurate information about site equipment will allow for lower maintenance costs in the long-term and grants a better idea of how the operation is performing holistically. Intelligent asset management is a key component of

operations, and it allows an organisation's coordinated activity to realise its equipment's true value.

A system such as Rotork's Intelligent Asset Management (iAM), which is cloud-based, can collect information from the data within the intelligent actuators. It is a reliable, secure, easy-to-use web platform that works with all operating systems and has a user-friendly, intuitive layout. Colour-coded maps and summary displays condense complicated statistics into simple images. The user may quickly and easily view a complete picture of the condition of the valves and related flow control equipment.

When predictive maintenance is combined with preventative maintenance, it offers operators a fixed cost, simplifying budget management. They also provide plans focusing on long-term maintenance and support rather than merely dispatching an engineer to repair a damaged or failing actuator. This strategy helps manage the long-term sustainability of a whole facility and boosts uptime while reducing unexpected repair expenses.

## Improving site uptime

One specific example of this can be found where a service programme helped improve a site's uptime and optimised its processes at a major petroleum terminal in Malaysia. The project involved the construction and maintenance of storage and distribution facilities needed to transport crude oil, petroleum, chemical and petrochemical products to the Refinery & Petrochemicals Integrated Development (RAPID) tank farm. The end user ordered more than 570 intelligent IQ3 multi-turn actuators, which were ideal due to their operational accuracy, the ability to download the data logs, and power supply options. IQ3 actuators are also ATEX-certified and suitable for Safety Integrity Level 2/3 applications. Rotork site services carried out extensive on-site commissioning. They provided field support for repairs, upgrades and maintenance through a global network of fully trained and experienced service engineers. This onsite support helped to reduce downtime and improve operational efficiency.

## Conclusion

An efficient and functional site service programme is essential and cannot be underestimated. Beyond financial and efficiency considerations, maintaining smooth operations at a site is crucial. The maintenance of site equipment through intelligent actuation is a robust and proven solution to potential unplanned downtime.

Understanding what a customer needs is essential; once understood, it is possible to create a plan to keep equipment continuously available to reduce downtime and improve performance. Asset management programmes should include bespoke spares programmes, site surveys, and maintenance options.

Combining customisable preventative maintenance with a predictive programme, like an intelligent asset management system, can reduce the chance of failure to near zero, reducing downtime, increasing profitability and improving a site's overall safety. T&T