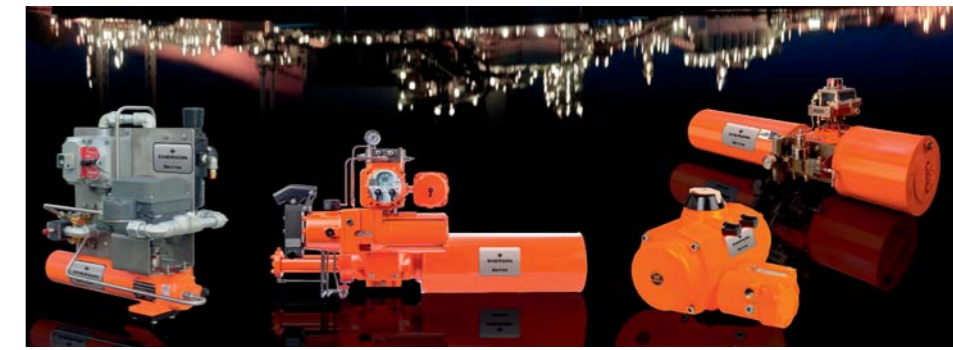


Emerson improving operational reliability and safety



VOS is only available from Emerson as a complete system engineered, built and backed by Bettis.

Technologies. "Recognizing the need for a better solution, we created the Bettis™ Valve Operating System™(VOS)." Engineering a valve automation system that provides reliable execution under extreme conditions in the most remote locations is no simple task. Today, automating valves requires a lengthy and costly engineering and procurement process to determine, acquire, test and finally commission the best valve control assemblies for the application. The Bettis VOS is a turnkey solution that includes an actuator, air filter regulators, relief valves, solenoid valves, limit switches, positioners, as well as the piping and engineering. It includes all related documentation from installation manuals, quick service guides, drawings to warranty certificate and maintenance schedules. Everything the end-user needs to maintain and operate their actuation package. Scalable in price, specifications, features, and functionality, our assemblies can be adjusted to meet any unique set of needs, Emerson delivers a turnkey Valve Operating Solution.

independently adjust open and close times during electric and fail-safe operation. An Emerson customer needed a more reliable fail-safe electric valve solution for oil/gas well kill high pressure ball valves. Well kills may be planned or unintended making safety and reliability a major factor. This customer, a global Fortune 100 oil and gas producer with numerous unmanned, remote oil and gas wells throughout North America, needed a more reliable actuator solution for small remotely operated well kill ball valves with proven safety and fail-safe reliability without need to manually re-set actuators after fail-safe operation (ESD on loss of power, loss of control signal, remote shutdown and spills). Remote locations do not have instrument air, process gas or utility electric power. The only power is from a 24 VDC solar power system. Actuated valves must operate at line pressures up to 6,000 psig. The existing actuators that the oil producer is currently using for this application have integral battery back-ups which recharge time after fail-safe operation. Recharging takes time.

Fail-safe shutdown

Plants seek improved operational reliability and less maintenance, fail-safe operation that is mechanical with no batteries, no super capacitors, no air or hydraulics dependency, no reset/recharge time after fail-safe operation, and the ability to

Safety and fail-safe reliability

Well control in general is an extremely expensive and dangerous operation. This oil producer needed a proven and more reliable electric actuator solution with fail-safe capability to protect well heads



RTS FQ fail-safe electric actuator with mechanical spring return.

Emerson is a leader in helping businesses automate their production, processes and distribution capabilities to improve plant reliability, extend the life of costly assets, improve safety compliance, lower costs, and increase overall productivity. With every Emerson innovation or technology, safety is at the forefront.

As plants are being continually asked to increase their production runs, improve reliability, reduce variability, and maximize uptime the question of safety always comes up. Operating under tight budget constraints forces plants into reactive. Emerson supports proactive improvements for operational reliability and safety.

By Terri Melle-Johnson, Global Communications Manager, Emerson Actuation Technologies

Turnkey solution

Emerson's Actuation Technologies business feels the impact of their customer's budgetary woes and the need to meet safety compliance. "Our customers no longer inquire just about actuators but rather seek complete valve operating solutions that help them improve their overall business results," states Terri Melle-Johnson, Global Marketing Communications Manager for Emerson's Actuation



the customer said, "For safety systems, the fundamental requirement is reliability, so cost is not the only driver in our decision process." Local sales and local service support with backup inventory from the Emerson Automation Solutions LBP was an important consideration.

RTS Fail-Safe actuators offer selectable fail modes such as fail-safe open or close direction; fail-safe on loss of power; fail-safe on loss of control signal, or fail-safe on control signal.

RTS standard features:

- Brushless DC motor, frequency converter controlled, provides configurable speed control
- Low power consumption
- Absolute position detection
- Padlock capable manual handwheel
- LCD display with Hall-Effect (contactless) local control station with open-stop-close and local-remote selector knobs, and continuous position indication
- Non-intrusive setup and actuator parameters displayed
- 5+1 binary inputs (24 VDC, 48 VDC and 60 VDC)
- 8 Configurable Digital Outputs - ESD ready, open and close positions, running close and running open directions, over torque, selector switch in local or remote position
- Continuous microprocessor monitoring of all mechanical drive train components in powered and fail-safe modes with local display alarm locally and remote signal
- PST auto test mode to close valve 5% with remote open and close capability still active
- Adjustable fail-safe time uses an eddy current brake with no friction devices (no wear) to protect valves

and pipelines. Unmanned well-heads must safely shut down on detection of a dangerous condition to protect people, equipment, and the environment. Actuators need hazardous area certification.

Remote operation

Valves are located in remote, unmanned locations. Actuators must operate from discrete control signals to open or close valves from the customer's remote DCS/SCADA system. Actuators must report valve position even if power is lost.

Simple Manual Operation

Technicians needed a simple way to operate actuators or valves during service events. To prevent unauthorized manual operation, actuators must be lockable.

Fail-safe solution

The customer chose the Emerson RTS Fail-Safe electric actuator solution because of its proven reliability, performance, technology, standard 24 VDC input power and fast-acting spring based mechanical energy storage for fail-safe operation. Even though the RTS Fail-Safe solution cost more than the currently installed actuators,

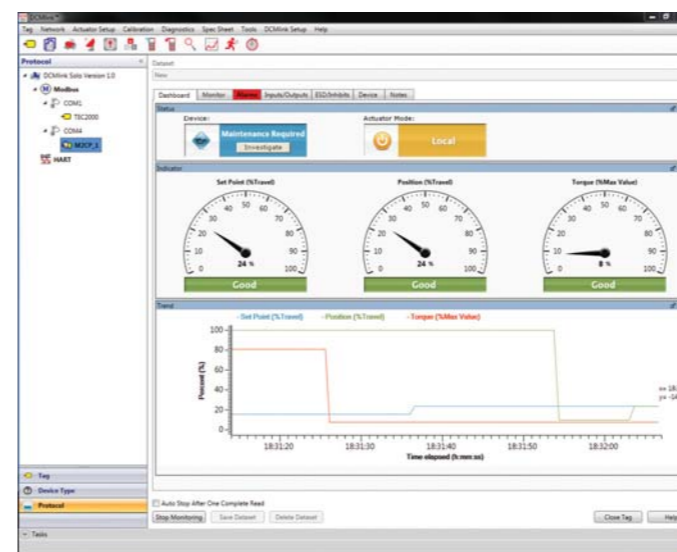
- Separate terminal chamber for field wiring prevents exposing electronics to environment
- UL, CSA, ATEX and IECEx certification
- Long maintenance intervals – 10,000 to 20,000 operating hours (5 years), and 10 years after delivery by Emerson
- Two-year warranty

The RTS Fail-Safe solution is easy to install and setup. Configuration parameters can be easily downloaded from one actuator using the Bluetooth interface and uploaded to other RTS actuator. Operation and configuration data can easily be sent to Emerson for online diagnosis to ease preventative maintenance and quickly remedy malfunction. RTS Fail-Safe actuators can also be upgraded with a SD (secure digital) card for downloading software updates or for importing or exporting data. The RTS LCD local display with Smartcon technology provides different user level information (user, service engineer, expert) for setup, operation, diagnostics and preventative maintenance. Menu screens display power on cycles, operating hours, power on time, motor runtime and number of torque warnings/failures.

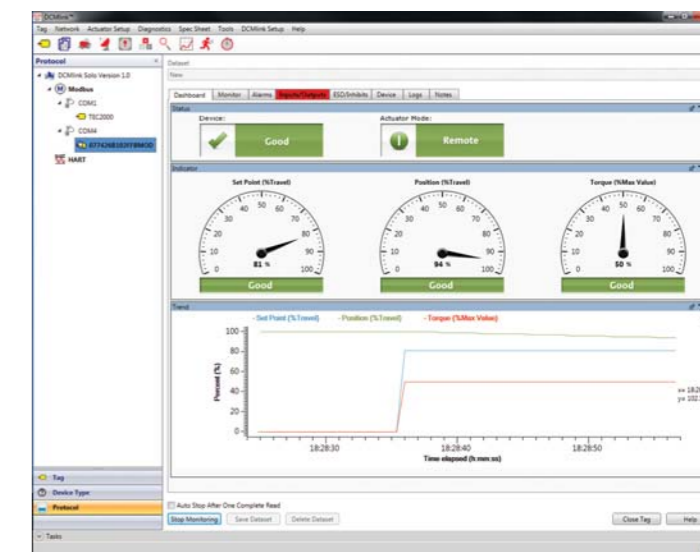
For this major Fortune 100 oil producing company, overall the RTS Fail-Safe solution will provide utmost reliability, safety and less maintenance/cost than the currently installed actuators. Reliable – Trusted – Safe.

Drive better plant productivity and safety

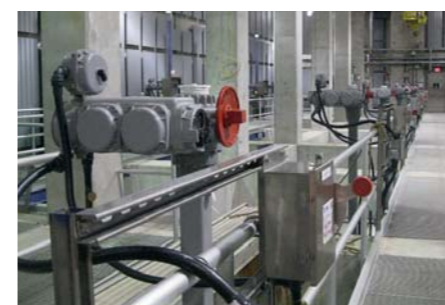
The 2017 global market forecast for industrial valves was about US\$65 billion. About 80% of those valves are being manually operated without any remote monitoring or diagnostic capabilities. Addressing the ever growing need for



DCMLink M2CP with caution alert.



DCMLink live monitoring the TEC 2000.



DCMLink ideal for monitoring electric actuators in difficult, remote locations.

more efficient diagnostics, calibrating and monitoring tools, especially in remote, harsh environments, Emerson continually develops actuation solutions to optimize plant process, reduce downtime, and improve safety and productivity.

The **NEW Emerson DCMLink™ 2.0 Unified Actuator Software** is the command and control software for Emerson's electric

actuators that allows users to diagnose, configure, control, and monitor actuators from a central location independent of the protocol. Emerson's wireless technology, enterprise level DCS systems are a key enabling factor for the DCMLink technology.

Status data in real-time

By enhancing plant productivity by unifying all electric actuators on a common platform, DCMLink gives plant technicians greater insight into the health of their actuator and valves. Using advanced diagnostics, including torque profile curves, Partial Stroke Test (PST), valve control and status, the software is easy to use configure and calibrate. DCMLink is very timely and relevant to the process industry as a productivity tool for plant asset management operators. DCMLink also fits into the industrial internet of things (IIoT) strategy by collecting data from electric actuators, providing wireless

connectivity to enterprise or plant level systems, interpreting data and providing actionable insights to operators.

Ease of use

DCMLink™ offers a uniform and consistent user interface (UI) for seamless and easy integration.

- Same user interface controls as other Emerson Dashboards: DD, DTM, and SW
- Increases maintenance effectiveness through access to real-time actuator status and diagnostic data
- Easy to read dashboard to instantly evaluate status of actuator at a glance
- Real time actionable alarms and diagnostics to prevent plant downtime - up to 53 alarms are reported
- Easy to read icons like Green and Good status means No Active Alarms
- Active Alarms categorized into four types per NE-107

New release plan

DCMLink Release 2, planned for May 2017, will support connectivity with Delta V and AMS SNAP-ON communicating over WirelessHART and MTL Multiplexer or P&F Multiplexer. In addition, it will support operator mobility through the use of Bluetooth enabled Windows based handheld devices and provides database management for drive user productivity.

No comparison

Competitive products to the DCMLink allow users to configure and monitor actuators but lack the comprehensive approach of tying all actuators into a single platform and providing wired / wireless connectivity with enterprise level systems for monitoring and diagnostics.



Hard to reach and remote locations are typical for Emerson's EIM electric actuators.



Emerson's EIM electric actuators installed over 40 years ago require little maintenance.



Mahesh Gade, Emerson Software Engineering Manager DCMLink Training Session at Crossridge, Houston Facility.