

A photograph of two men at a construction site. The man on the left is wearing a red and black plaid shirt, a yellow safety vest, and an orange hard hat. He is pointing his right index finger towards the background. The man on the right is wearing a light blue dress shirt, a brown and white striped tie, and a white hard hat. He is holding a large white sheet of paper, likely blueprints. In the background, there are several tall yellow tower cranes and a construction site with various materials and structures. The sky is clear and blue.

**Keep maintenance events on track and within budget.**

## **Shutdowns, Turnarounds, and Outages**

Successful planning and execution of maintenance events for your valves, actuators, and regulators.



# Shutdowns, turnarounds, and outages present one of the largest maintenance and financial challenges for the process industry.

Shutdowns, turnarounds, and outages (STO) are unavoidable events that represent a tremendous cost and risk in terms of resource expenditure, system downtime, and lost production. You need an effective planning and execution strategy that minimizes risk and downtime—and stays within budget.

“I have difficulty knowing the status of my assets and keeping accurate records organized so i know what needs to be fixed and what doesn’t.”



“I have difficulty finding the time and resources to analyze the data I collect in advance of major maintenance events.”



“I have difficulty meeting time, budget, and quality goals.”





Instead of going over budget and extending your outage timeline, what if you could build an effective work list, efficiently execute repairs, and get back online safely in a timely manner?

**Partner with a proven expert for maximum, long-term profitability.**



You're equipped to manage every aspect of the automation scope of your STO and bring your production system back up and running in minimal time when you turn to Emerson to help plan and execute the work. Emerson's trained and experienced experts help you assess your plant-wide automation needs and provide the necessary tools and knowledge for determining your STO work scope. With our digital tools portfolio, asset health data is easily captured and analyzed to help predict potential failures to proactively prevent costly situations before they happen. You can benchmark the current condition of your assets and prioritize the items on your work list while tracking and logging the history of the work performed for better asset management.



## **Define your scope and take the guesswork out of your work list with digitally-enabled processes.**

Trained Emerson experts provide the expertise and digital tools to accurately and effectively determine scope and prioritize your work list.

► p5

## **Analyze asset data to build an effective work list for execution.**

With Emerson, you'll benefit from factory-trained expertise to help with monitoring to gauge equipment condition, review data gathered, and effectively facilitate your repair planning.

► p7

## **Achieve your outage schedule and budget goals with direct access to parts and resources.**

Emerson's proven procedures and services help you avoid budget overruns and costly delays from undiscovered work and a lack of parts or manpower.

► p9

## **A proven shutdown, turnaround and outage process leads to consistent outcomes.**

You need a partner who can help define the necessary scope of work, while planning and executing a program that meets your budgetary requirements, and getting production systems back up and running in the shortest possible time.

► p11



## DEFINE your scope and take the guesswork out of your work list with digitally-enabled processes.

Lacking information on your plant's assets makes planning your STO a game of chance that leads to more downtime, unnecessary work, and budget overruns. Not knowing what you have, or what you need, means unrepaired issues could be missed once you execute your project. This can lead to unexpected equipment failure and potential health, safety, and environmental incidents that cost you money down the line. You need to efficiently collect and analyze accurate asset information to better define your work list.

### What's your challenge?



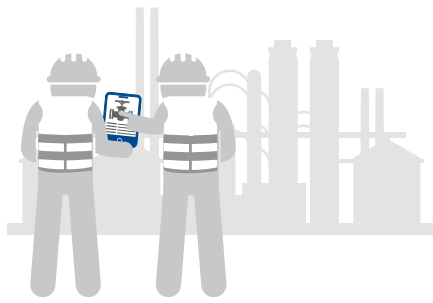
"I have difficulty knowing the status of my assets and keeping accurate records organized so I know what needs to be fixed and what doesn't."

### What's your opportunity?

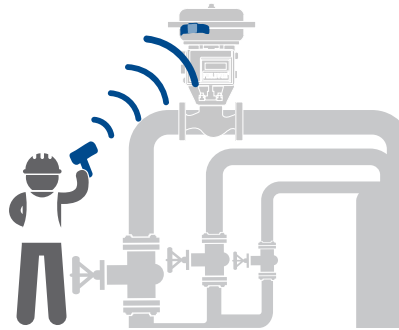


Trained Emerson experts provide the expertise and digital tools to accurately and effectively determine scope and prioritize your work list.

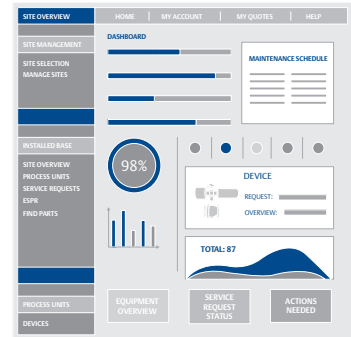
## Complete your asset picture



**Digital Walkdown.** Digitally identify and collect equipment information that is securely exported into an easy-to-use report to assist with budget creation, spares inventory considerations, and maintenance planning. ▶ [Learn More](#)

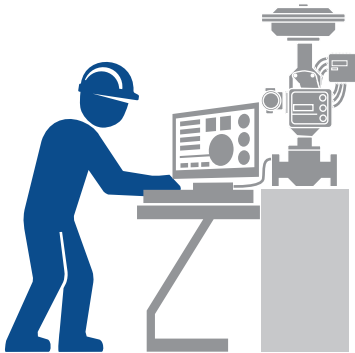


**Asset Management Tag.** Store and retrieve critical information about an asset's construction, repair history, replacement parts and diagnostic data on a tag that stays on the valve assembly. ▶ [Learn More](#)

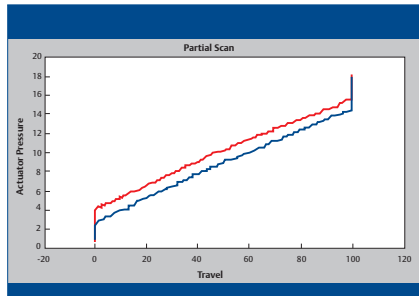


**Installed Base Information.** When you have complete equipment information, it enables data analytics across a broader enterprise for improved decision support on forecasting and repair opportunities.

## Know what equipment needs attention and what doesn't



**Preventive Diagnostics.** Understand how your assets are performing. We can gather data offline with the FlowScanner™ valve diagnostic system and our valve seat leak detection tool.



**Predictive Diagnostics.** Check degradation of asset performance and view trends over time with online or offline diagnostic using ValveLink™ diagnostic system or AMS device manager.



**Condition Monitoring.** Non-intrusive health monitoring, provided by our expert analysts, helps to prioritize scope development by delivering focused, predictive analysis of assets. ▶ [Learn More](#)

## Gauge and interpret your valve health

**Comprehensive Valve Assessment.** Failing to detect poor valve health can adversely impact your future loop performance and increase your energy consumption. But we can help you identify trends and changes in your valves early in the STO process with comprehensive valve assessment. Online or offline diagnostic testing coupled with expert recommendations from our OEM trained service personnel on valve maintenance and repair enable you to correct minor valve calibrations or actuations prior to launching your STO. You'll be able to limit your work to the valves that are most in need of attention through a condition-based maintenance program that helps you meet your time and budget parameters by defining your work list more acutely.



To learn more about Lifecycle Services for Valves, Actuators, and Regulators, visit [Emerson.com/LifecycleServices](https://www.emerson.com/LifecycleServices)



## ANALYZE asset data to build an effective work list for execution.

Lacking the ability to interpret equipment health data throws off your entire STO process in terms of budgeting, scheduling, and obtaining parts and manpower. You have your work list, but you don't have the "know how" to plan what has to be done next. Delaying your STO due to having the wrong skill set heavily increases your safety and production risks. But, moving forward without knowledge for proper planning means you don't get the right quotes because you don't know what parts or services you need.

### What's your challenge?



"I have difficult finding the time and resources to analyze the data I collect in advance of major maintenance events."

### What's your opportunity?



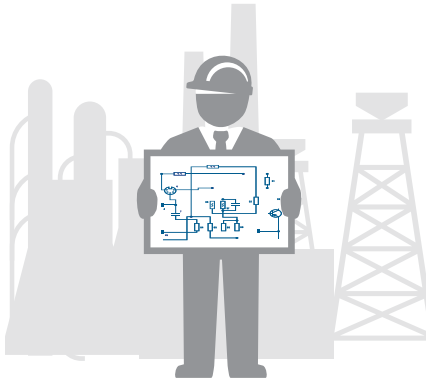
With Emerson, you'll benefit from factory-trained expertise to help with monitoring to gauge equipment condition, review data gathered, and effectively facilitate your repair planning.



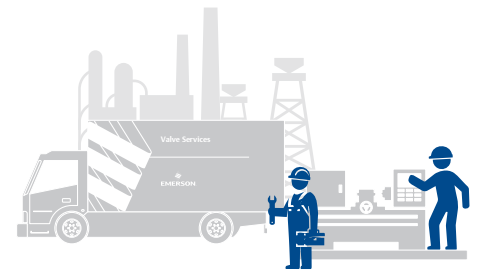
## Get the resources you need to interpret your data



**Condition Monitoring Analysts.** Experts offer continuous monitoring of your assets to provide health and control data that help you realize loop performance improvements.



**Resident Engineer.** A long-term, onsite expert will supervise the planning, coordination, and implementation of the STO. They will connect you with the sales and service teams to ensure alignment.



**Onsite Engineers and Technicians.** Trained personnel will gather equipment diagnostics and help you interpret the asset data gathered to help with data-driven decisions on the work list.

## Get comprehensive solutions for understanding your asset data

**Walkdown Report**

**Visual Health Rating** Yellow

**Tag #** 1-FV-1160

**Serial #** b:F0000869149

**Model** V250

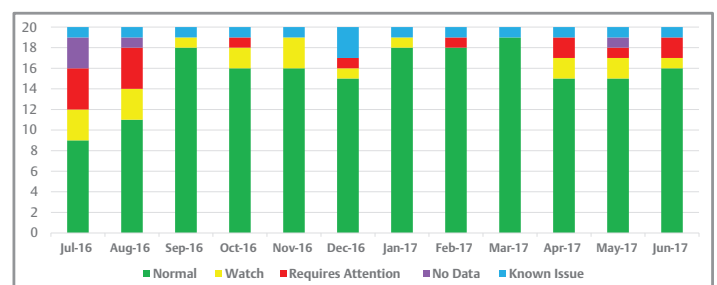
**Description** 8'-V250-1061

**Recommendation** Open/Inspect

**Image**

**Walkdown Summary Assessment.** The digital walkdown assessment delivers a summary report of the condition of your assets from data gathered. This easy-to-understand report lists condition of the asset, the repair criticality, repair history, serial information, and a parts list to help you simplify the planning process.

MONTHLY VALVE STATUS



**Condition Monitoring Report.** Our condition monitoring approach enables diagnostic data from multiple sources to be visualized and aggregated, and allows team members located around the world to look and work on the same data in a collaborative manner. Analysts can view valve health data and look at valve condition history to determine trends and predict impending valve deterioration, which means maintenance can be scheduled and performed well before an operator alarm is triggered.



To learn more about Lifecycle Services for Valves, Actuators, and Regulators, visit [Emerson.com/LifecycleServices](http://Emerson.com/LifecycleServices)



## ACHIEVE your outage schedule and budget goals with direct access to parts and resources.

You've determined your STO scope with a plan to address your most critical actions and keep within your budget and scheduling parameters, but how do you ensure that your STO execution follows that plan? Unforeseen contingencies, new problems discovered during repairs, and unpredictable third parties are just a few things that derail your project and extend the amount of time your plant remains offline.



### What's your challenge?

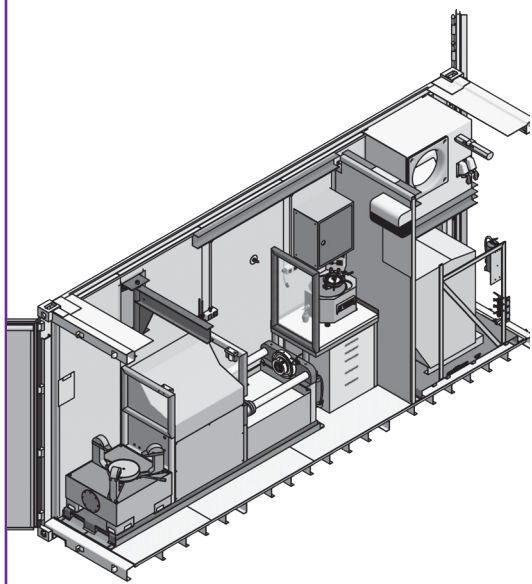
"I have difficulty meeting time, budget and quality goals."



### What's your opportunity?

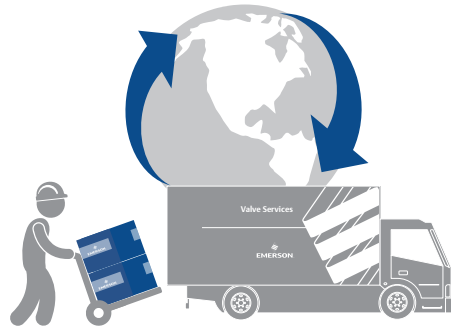
Emerson's proven procedures and services help you avoid budget overruns and costly delays from undiscovered work and a lack of parts or manpower.

## Be equipped for items that escape your work list



**Mobile Service Center.** We can support remote locations or large maintenance projects with a mobile, onsite service center. Mobile capabilities include product testing, equipment machining, tooling, and parts and assembly inventory.

► [Watch Video](#)



**QuickShip Program.** Get the critical parts and spares you need, when you need them, so you can minimize costly down time. Genuine parts and products are kept stocked for urgent delivery with 24/7, online ordering, enabling you to select your parts with prices and lead-times of less than three days for most items.

► [Learn More](#)



### **On-Demand Certified Technicians.**

When you need immediate solutions, conveniently-located service centers give you access to Emerson certified, factory-trained technicians to help you find the answers to your toughest issues as soon as they arise. Also, with our Remote Assistance support, augmented reality technology allows our service technicians to efficiently and effectively collaborate with expert valve support in real-time.

## Ensure maintenance reliability with expert skill



**Skilled Resource Network Access.** Our network of support spans the globe with over 200 service centers and more than 80 mobile service centers to ensure we can be close to you when you need us most. Our factory-trained technicians can help you with commissioning, calibration, repair, troubleshooting, and monitoring on all your valves, actuators, regulators, and related equipment. Plus, we can keep you on schedule with diagnostics, machining, and repair capabilities the instant your needs arise.



To learn more about Lifecycle Services for Valves, Actuators, and Regulators, visit [Emerson.com/LifecycleServices](https://www.emerson.com/LifecycleServices)

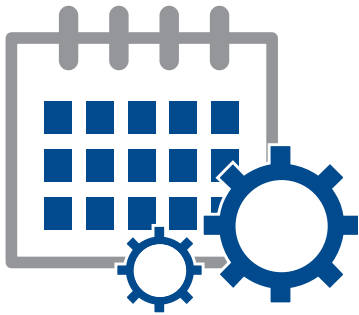
## A proven STO process leads to consistent outcomes.



You may struggle to execute successful STOs due to budget constraints, a lack of necessary skills and resources, and insufficient asset health data and interpretation. You need a partner who can help define the necessary scope of work, while planning and executing a program that meets your budgetary requirements, and getting production systems back up and running in the shortest possible time.

## Scoping

### Operational Planning



The sales channel and service leader start engaging with your teams 24-60 months prior to execution. Preliminary scope development, asset criticality ranking, and key performance indicators are identified.

### Alignment



The initial scope is generated and preliminary schedule milestones and budgets are defined 12-24 months prior to execution. A plant walkdown is completed to validate final scope and a kickoff meeting is prepared.

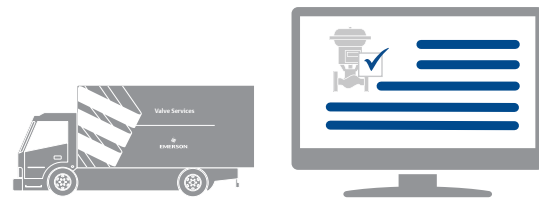
## Planning

### Work Scope Definition



Work lists are refined based on a kickoff meeting between sales and service teams 12-18 months prior to execution. Diagnostic tools are used to validate the final STO scope proposal.

### Detailed Planning



All plans are set in motion 4-12 months prior to execution. Parts are ordered and labor and mobile service centers are booked.

## Execution

### Pre-STO Planning



Prepare for execution and risk reduction through contingency planning 2-6 months prior to execution. All is positioned and readied for execution.

### STO Execution



The unit is shutdown, cooled, and cleaned. Once safe, the work begins. Daily meetings and shift hand-overs continue. Punch lists are formed and prioritized.

### Post-STO Evaluation



Capture the performance of the execution, measure effectiveness, and benchmark for maintenance and reliability comparisons 2-4 months after startup.

## Emerson Service Centers Supporting Valves, Actuators, and Regulators



### Regional and Mobile Service Center Benefits

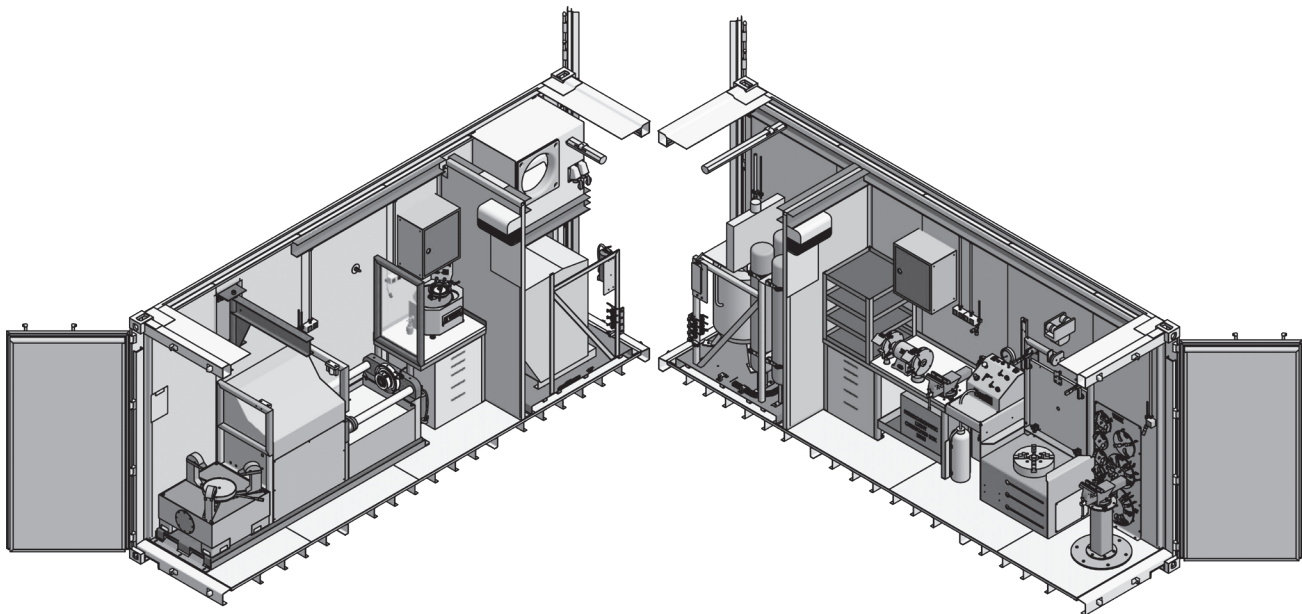
- Reduces downtime with OEM onsite parts and spares
- Promotes safety through certified procedures
- Improves STO efficiency and responsiveness
- Save money with direct access to Emerson products
- Harmonized services for all valve assets
- Eases pain of discovery or emergent work
- Direct contact with Emerson experts
- Wi-Fi dedicated, secure network to support digital tools

## Regional service centers located near you



With over 200 service centers worldwide, you can count on Emerson's service network to provide you local support. With 24/7/365 after hours service coverage and factory trained and certified technicians, Emerson is equipped to provide maintenance, reliability, and performance services to keep your plant up and running.

## Mobile service centers for remote locations or long-term projects



### Pressure Relief Valves Unit Features

- Software-controlled test benches for valve popping and tightness testing.
- Test certificates can be printed immediately.
- Complete overhauling capacity, including fully equipped workshop and lapping machine.
- Pressure relief valve test stand allows for re-certification and validation of valves to OEM standards.
- Easy adjustable work schedule and/or service rescheduling to meet last minute changes.
- Office area supports digital tools reporting to help you make data-driven decisions quicker to reduce downtime.
- Designed to be fully compliant with environmental, safety, and health regulations per country.

### Combination Unit Features

- Field tooling to service any brand of control valves, pressure relief valves, and isolation valves.
- High-pressure air compressors for test stands and pneumatic tools.
- Seat leak and hydro testing of control valves and pressure relief valve test stand allows for re-certification and validation of valves to OEM standards.
- Machine shop units with lathe, milling machine, drill press, and sand blaster for machining in remote locations.
- Office area supports digital tools reporting to help you make data-driven decisions quicker to reduce downtime.
- Designed to be fully compliant with environmental, safety, and health regulations per country.

# Proven processes, digital tools, and trusted expertise are key to executing a successful STO.



**Emerson Electric Co.**  
**Global Headquarters**  
8000 West Florissant Avenue  
St. Louis, Missouri, 63136  
United States  
T +1 314 679 8984  
ContactUs@Emerson.com  
Emerson.com/FinalControl

 [Emerson.com](https://www.emerson.com)

 [Facebook.com/EmersonAutomationSolutions](https://www.facebook.com/EmersonAutomationSolutions)

 [LinkedIn.com/company/Emerson-Automation-Solutions](https://www.linkedin.com/company/Emerson-Automation-Solutions)

 [Twitter.com/EMR\\_Automation](https://twitter.com/EMR_Automation)

© 2020 Emerson Electric Co. All rights reserved.

FlowScanner and ValveLink are marks owned by one of the companies in the Emerson Automation Solutions business unit of Emerson Electric Co. The Emerson logo is a trade mark and service mark of Emerson Electric Co. All other marks are property of their respective owners.

The contents of this publication are presented for information purposes only, and while effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice. Responsibility for proper selection, use and maintenance of any product or service remains solely with the purchaser and end user. D353110X012, July 2020



**CONSIDER IT SOLVED™**