Manual Valves and Your Plant: The Case for Wireless Valve Automation.

Introduction

Manual Valves cause plant owners difficulties through low visibility, high operational costs, and lack of flexibility for process control. These challenges may often times not be observable, and the resulting costs go unquantified. Additionally, project managers and engineers know that automation and control project approval faces barriers due to capital investments, and wiring and installation costs.

When financial analysis suggests that a project's cost is still too high, engineers usually compromise further by not automating the operation of valves, an inexpensive solution but leaving the valve "blind" when it comes to knowing the valve position. These limitations can lead to more difficult operations, increasing the risk of spills, possibility of exposing personnel to plant hazards and, faulty batches and discharges which compromise the environment. So how many manual valves are being used in a facility?

The average plant contains 5000 valves:

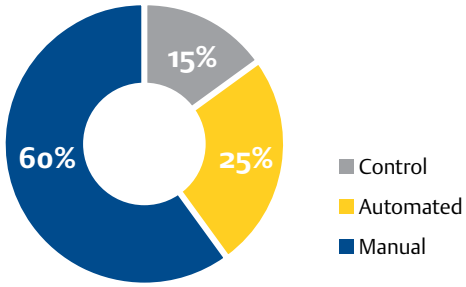


Figure 1. Typical Plant Valve Distribution

- Most of the valves in a plant will be quarter-turn valves- this includes automated valves.
- On average, 1-2% of manually-operated valves are automated every year, mostly because of the limitations of manually-operated valves.*

**The information stated on this material is the result of a recent independent industry survey and is presented for informational purposes only.*

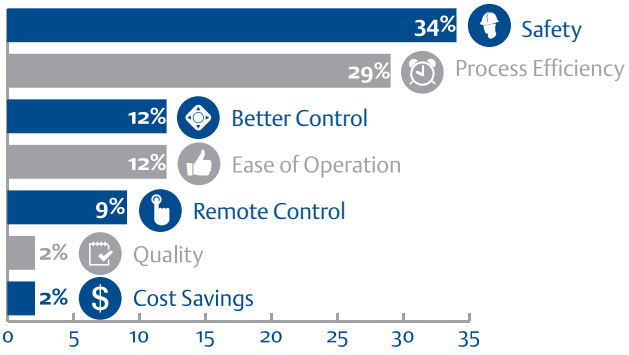


Figure 2. Key Drivers for Automation

In addition to cost, plant owners looking to automate valves also have to deal with the complexity of the procurement process which involves numerous manufacturers and installation and commissioning contractors, delaying the automation process.

The Challenges of Manual Valves

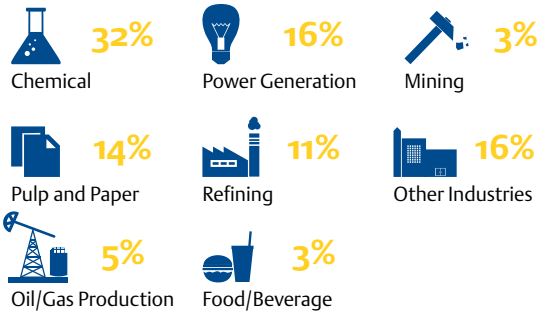


Figure 3. Respondents by industry, who reported problems with manual valves.

FILL: The use of manual valves, with no monitoring can lead to overflows and bad process batches when valves are not shut down on time. The lack of monitoring in manual valves can also mean process variables can compromise the quality of a batch when it is not operated in time.

The Advantage of Wireless

- Wireless monitoring, control, and automation can offset the operational challenges without added costs to wiring and installation.

Wireless - Valve Operating System™

- Access to real-time monitoring and feedback can provide a valve's specific position in relationship to the process' fill activity.
- Control room and batch operators can use integrated control logic to automate process and attain batch accuracy.

FLUSH: Spills can result from manual flush valves left in the open position or drain valves not set properly, leading to various process or environmental issues. Discrete valves controlled with a solenoid alone is not as effective as integrating continuous feedback of the valve position.

Increase Plant and Environmental Safety with Wireless

- Wireless enables fast operation and status feedback.
- Determination of valve status in real time allows plant operators to make critical decisions to avoid environmental spills before they occur.

DRAIN: Delays in processing caused by waiting for your plant personnel to manually operate or report the status of your drain valves can be cumulative.

Improve Plant Efficiency with Wireless

- Wireless automation cuts back on lost time and costs by monitoring and implementing your operations from the safety and convenience of your control room.
- Wireless reduces the time and cost associated with sending an operator to manually operate a valve.

TRANSFER or DUMP: Unwanted variables in the process caused by lack of automation feedback and mechanical switch issues reduce quality and compromise operations and batches. When timing is critical, the risks are even higher. Reduce uncontrolled variables caused by manual operation delays and unreported faulty mechanical operation without increasing installation and maintenance costs with wireless valve automation.

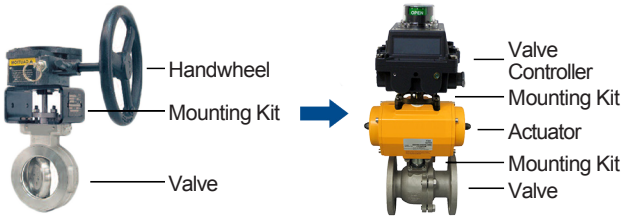
Improve Product Consistency and Batch Quality with Wireless

- Valve operations can be executed with precise timing reducing variables and increasing batch quality
- Determine faulty valves immediately before critical process operations are executed.

Traditional Approach

To fully automate a valve and actuator package, one requires a solenoid, limit switches, input/output points, wiring, labor, and engineering and procurement capabilities.

Lack of standardization arising from multiple vendor components leads to future maintenance issues from ownership of parts replacements, to multiple operation and maintenance standards.



Emerson's wireless solution for valve automation essentially combines solenoid functionality with limit switch feedback into an integrated wireless package further minimizing automation component requirements.

Benefits Derived from a Wireless Package

Worker Safety – Wireless control means no more climbing ladders or accessing difficult locations on-site during bad weather or difficult situations.

Improve Worker Efficiency – Plant personnel will spend less time moving around operating and monitoring valves.

Higher Production Efficiency – Better response time, less downtime, spills and clean up means more time focused on production efficiencies.

Reduce Lost Batches – Closed loop control means no human error or lapses from open loop control.

Protect the Environment – Incidents that harm the environment cost money and harm a plant's reputation.

Emerson's wireless Valve Operating System™ (VOS) and Automated Valve Package (AVP) address these challenges. By combining a 4300 series wireless controller, actuator, accessories (for VOS) and valve (for AVP) as a complete kit, Emerson creates value by simplifying the entire procurement process. VOS and AVP assemblies can be installed on-site as a complete unit, fully documented and ready for use.

Make the most out of your plant operations today. Visit our VOS and AVP Solutions here.

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