Breakthrough in Automated Valve Main

You Are Here.

We have all seen the location maps in a shopping mall that show us how to get to our favorite shops or, maybe, just the food court. But, what if it was missing the most vital part of the entire map: the You Are Here sticker? Without a starting point, orienting yourself and choosing which direction will help you reach your goal could be a frustrating exercise.

That is exactly what the team at MRC Global realized was missing from the automated valve engineering process – a starting point. A benchmark or set of baseline operating characteristics to compare changes in performance over time. A starting point that also makes facility digitalization and testing initiative work for critical valves. The solution was to design and develop new automated valve test equipment and verification processes that establish the true starting point for certain automated valve packages that MRC Global provides.

MRC Global's new ValidTorque™ certification process:

- *verifies the entire automated valve assembly before delivery,*
- *quantifies the as-built safety factor,*
- *provides a technical basis and acceptance criteria for in-service testing and*
- *makes the complete automated valve "digital ready."*

The result is:

- *lower overall cost associated with valve maintenance and testing,*
- *higher proof test coverage,*
- *lower probability of failure on demand and*
- *confidence in the safety system performance associated with automated valves.*

We sat down with MRC Global's John Bowhay, Senior VP – Supply Chain Management, Valve & Technical Product Sales, and Stan Hale, Senior Director – Valve Technologies & Services, to learn more about this industry-first solution.

John Bowhay (left) and Stan Hale (right) discuss the implications of MRC Global's new ValidTorque™ certification for automated valves.

Hello gentlemen, thanks for sitting down with me. I hear you have a new offering for the industry. What is ValidTorque™ certification for automated valves and what does it do for your customers?

John: ValidTorque™ certification is a testing process that we employ for automated valves bound for critical or safety-related service. ValidTorque™ certification provides our customers with a precise starting point, that, when combined with real-time valve monitoring, can make your facility safer and more reliable. Maintenance planning based on the initial and ongoing performance metrics, through ValidTorque™ and ValveWatch®, can extend the life of the facility, reduce unnecessary maintenance, improve safety and ultimately improve business results. That's the bottom line.

That's a pretty bold statement. Why are you so confident?

Stan: It's not that bold when you consider that it is something the nuclear power industry has done for a long time – test and qualify valve actuators, test and qualify valves, know the engineering has been validated and what valve performance margins really are… at all times. That's why valves don't fail to operate on demand in nuclear plants. This is the way things should be done in all process industries, and all process industries can achieve the same results achieved in nuclear.

John: Right now, automated valve packages are sized and put together based on performance data the valve and actuator manufacturers provide. A safety factor is applied to ensure there is spare actuator capacity, so the valve will operate when required. Everyone does it that way in the process industry. After assembly, you perform a function test that may or may not be under pressure in an attempt to replicate the installed environment as close as you can. If the actuated valve operates open/closed, then it is assumed that the test is a success and also that the safety factor is the same as calculated during sizing. Every supplier in the industry relies on a similar process to assure themselves that a valve will operate when needed, but these tests do not actually prove that. The difference between the torque requirement of the valve and output from the actuator might not match the safety factor assumed.

Then, if there are problems in the field, it's difficult to solve because you don't know what your true starting point was. Is the valve taking more torque than expected? Is the actuator not delivering the torque we expected? Is there a problem with the controls? Did the coupling introduce an unassumed torque load? We just don't know, and efficiently diagnosing the problem is not easy without enhanced baseline data and field measurements. That's what ValidTorque™ certification will do for you—provide an accurate starting point.

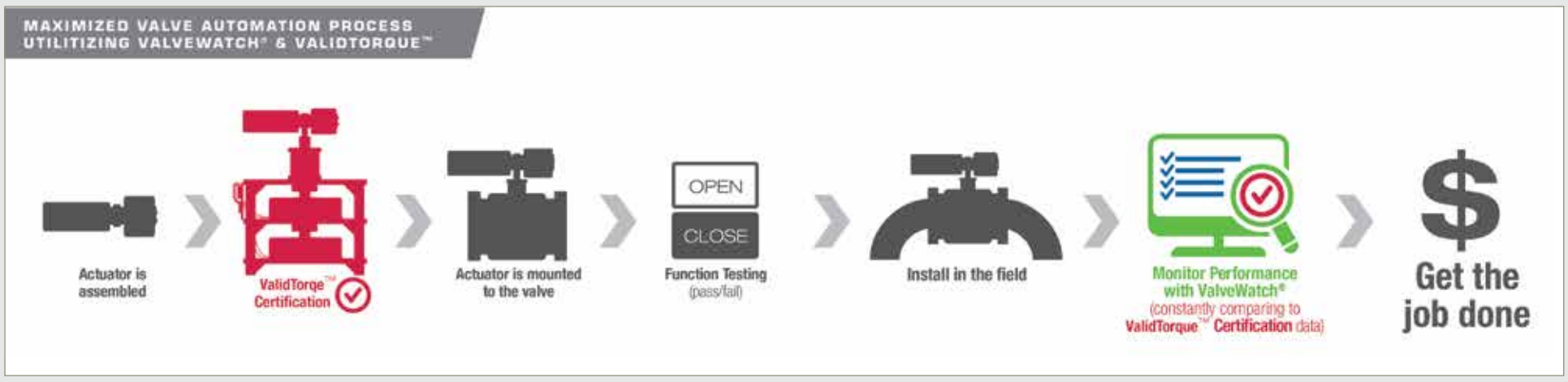
Stan: Not only that, but when an automated package is assembled, there are many small variations that are a result of manufacturing tolerances and the assembly process. There are never two identical automated valves because there are so many places where tolerances can affect performance. But now, ValidTorque™ certification validates that the assembly was performed correctly and performance results fall in an expected range before it ever leaves our Valve & Engineering Center.

Your customers must be excited. What are the biggest benefits for them?

John: Absolutely. It's about safety. It's about efficiency. It's about delivering on the digital promise. It is about enabling our customers to improve their operations by knowing where their automated valve performance actually is, and how to evaluate changes from that starting point.

Stan: And, every one of our major customers have embarked on digitization initiatives to help them manage their facilities safer and more efficiently through technology. They must have this data to make that work. Since critical valves are one of the biggest bang-for-the-buck targets in the digitalization age, they really need a starting point.

John: ValidTorque™ Certification combined with technology products, such as ValveWatch®, can deliver the results our customers are seeking through their plant digitalization initiatives.



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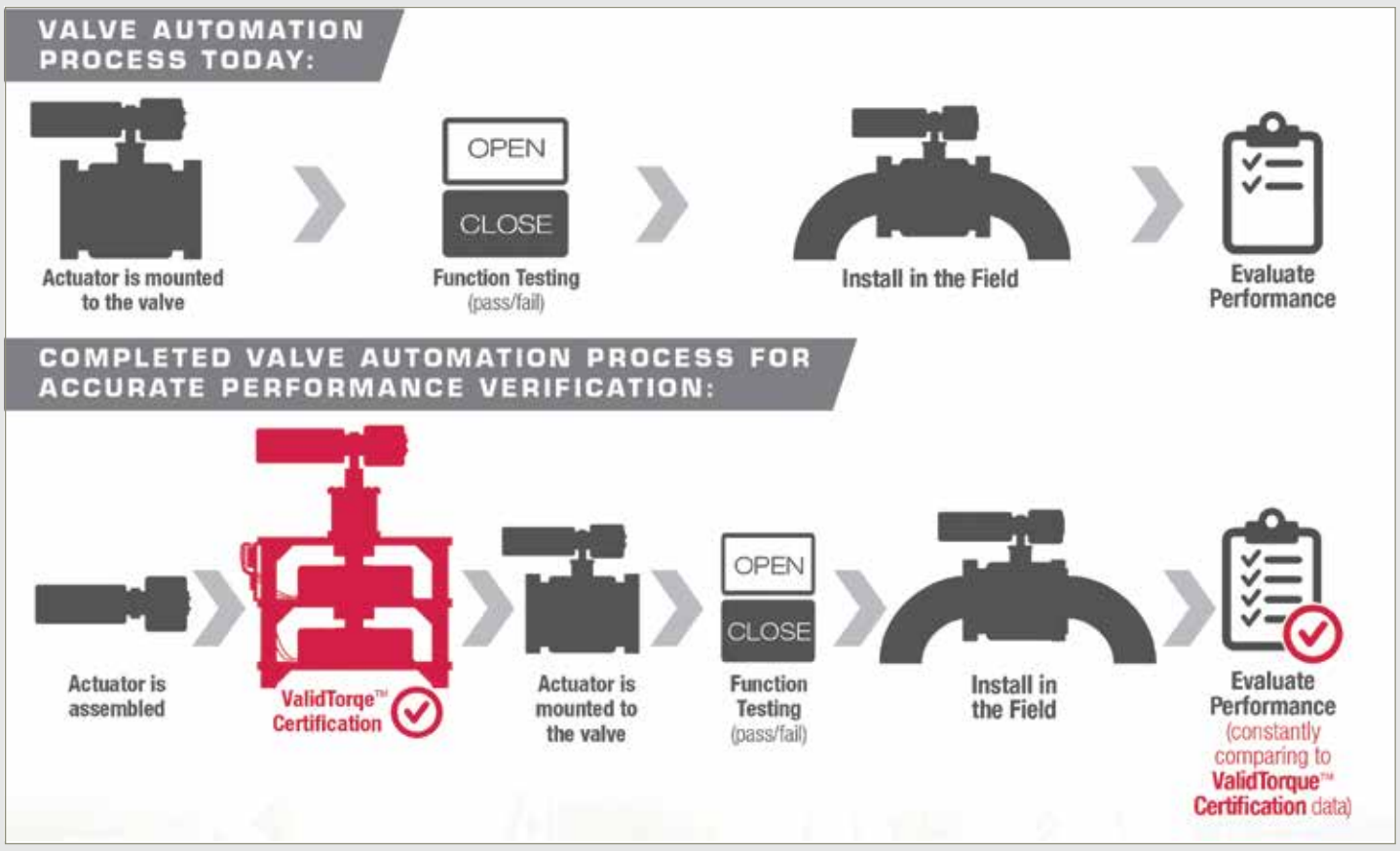

Stan, we have talked a lot before about ValveWatch® and the value of valve monitoring. This sounds pretty closely-related. How do those two things work together?

Stan: They go hand-in-hand. Today, almost everyone tests automated valves by measuring cycle time or the time required for the valve to move between two known positions, which is sometimes referred to as stroke time testing. But, nobody knows what it means when that measurement changes. That's because no one has the actual starting point or the relationship between change in cycle time and performance.

I routinely ask engineering and technical directors at the various actuation OEMs what they would say if a customer called and said their cycle time had changed by three seconds, and they need to know whether the automated valve will still perform its safety function. The answer is consistent, "I don't know, maybe, maybe not."

What that means is the primary test used to gauge whether a critical safety-related valve will perform its intended function is to time the movement between two known positions, but we don't know how to develop meaningful acceptance criteria for those measurements. We want to eliminate that problem for our customers and ValidTorque™ does that.

However, with this intelligence that definitively identifies when the problematic cycle time occurs, we have another problem... why? As John pointed out, right now, no one can know what caused that change.

Real-time online valve monitoring, such as ValveWatch®, combined with the certification data helps you evaluate the measurements that matter. If problems are evolving in the valve, you see it. If problems are evolving in the actuator or the controls, you see it. You measure the degradation rates and make plans to focus your resources exactly where they need to be focused at exactly the right time. That is what these digital initiatives are all about, and that is how you achieve notable business improvement through valve technology.

John: All valves degrade over time. Left unchecked, all will eventually fail. That is why so much redundancy is built in and why maintenance programs are so intense. ValidTorque™ certification and ValveWatch® will allow our customers to accurately predict when a valve has degraded enough to require repair or replacement before failure is probable.

Stan: And the data is clear because we know the starting point thanks to ValidTorque™ certification.

John: ValidTorque™ is the bridge between typical automated valve packages and accurate predictive performance in the field.

Stan: By adding it to the process, you create real information that transforms how you think about valve testing and maintenance. And it isn't hard to interpret. Valve monitoring data is valuable but normally requires a knowledgeable engineer to interpret it until a baseline and corresponding acceptance criteria is established for that particular valve. By adding the ValidTorque™ certification, a simple chart will illustrate when a valve's performance reaches a level that adds safety risk and demands attention.

John: These few extra steps that we take up front with ValidTorque™ will make it so our customers KNOW what performance levels they will get from a valve at the point of installation.

What do you think is the biggest impact ValidTorque™ and ValveWatch® can have?

Stan: I ask customers, if you have a valve with a 20, 40, 52-week lead time fail, what happens? Best case: you lose production time for some period while the repair is performed; worst case: you wait a long time for the replacement. Wouldn't it be better to know and predict a likely timeframe that a valve will degrade to that inoperable status? If you could do that, you would never let that critical valve get to that point.

John: If these two products are used correctly, it can transform facility maintenance. If you are monitoring a valve and comparing it to the true initial measurements, you will know when a valve needs to be repaired or replaced, why it needs to be repaired or replaced and can plan for it.

A plant that shuts down every three years to maintain critical valves, may not actually need to shut down that often or unnecessarily tackle a large scope of work. When you eliminate unnecessary work and especially work scopes typical of large valve maintenance and refurbishment projects, the savings can be immense.

What if someone isn't ready to make the jump to valve monitoring? What is the value of a ValidTorque™ certification for those end users?

John: Anyone that uses critical actuated valves on their installation needs to be certain of the starting point of performance so that when issues occur, and they always do, they can analyze what has changed from that base point.

When I spoke with one of our major customers about the ValidTorque™ certification, they were most excited about the potential to eliminate "problem valves" from their system. Everyone has them, but this particular operation has a big problem with bad acting valves that constantly require maintenance. ValidTorque™ baseline data and the performance monitoring results would allow them to understand exactly why a valve is a bad actor. The data will clearly tell them why that particular valve is degrading so quickly and help them correct it. Or, it could tell them that they have been focusing their maintenance in the wrong area.

> *"By adding ValidTorque™ to the process, you create real information that transforms how you think about valve testing and maintenance."*

Stan: It is also about knowing whether critical valves will perform safety-related functions and having the data and test processes required to prove that. ValidTorque™ certification does that. We will make the complete data package available to our customers and provide a process that allows the data to be properly used.

John: It's all about improving safety, efficiency and achieving digitalization objectives through accurate data.

To find out more about ValidTorque™ certification or ValveWatch® real-time, online valve monitoring, visit mrcglobal.com.

MRC Global's responsibility for ValidTorque™ certification accuracy and results and limitations of liability will be set forth in a written document between MRC Global and its end users of the ValidTorque™ certification.

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