

# Focus on Reliable Assets



Three Strategies to Drive Reliability  
with Handheld Communicators



## Table of Contents



### Fix It When You Find It

Using Field Diagnostics to Improve Maintenance



### Go Anywhere in the Plant

Why a Built For Purpose Tool is Needed for Effective Maintenance



### Maintain Valve Performance

Use Advanced Field Diagnostics to Avoid Unnecessary Repairs





## Fix It When You Find It

### Using Field Diagnostics to Improve Maintenance

Monitoring and tracking the status of equipment in the field is an essential part of day-to-day plant operation. Field technicians are the eyes and ears of the plant, whether they are investigating a known issue or are simply monitoring assets during regular rounds. From asset management software to field tools, everything should work together seamlessly to ensure maintenance is efficient, data is accurate, and devices are healthy.

More handheld field devices are available to assist field technicians than ever before. Yet according to a 2016 PdM survey conducted by *Plant Services*<sup>1</sup>, pen and paper data collection is still a significant part of plant practice for 64.9% of respondents. If handheld devices deliver high value, why aren't field technicians using them? Perhaps it's because low-end or non-dedicated handheld data collectors create more problems than they solve.

*Extra hours spent on repairs could be better spent on other tasks; not having access to diagnostic data in the field is a significant performance handicap.*

#### The Problems with Paper

Tracking diagnostics in the field using pen and paper leaves the plant vulnerable to data loss. Notes taken in the field are likely to be hasty, illegible, and unreliable. Steps may be overlooked, and issues that seem minor at the time of repair might be forgotten and go unrecorded. The bigger and more serious a problem is, the less time technicians have to record accurate data about diagnosis and repair.

Even if field technicians take detailed notes of all maintenance activity, handwritten notes may not be accurately entered into the asset management database, preventing the plant from accurately trending asset health over time. With an incomplete audit trail for completed repairs and adjustments, the organization has poor visibility to overall device health.

#### When the Right Tool Isn't at Hand

The absence of an effective handheld communicator increases the likelihood of process disruption. A technician may hear or see something on a piece of equipment that suggests a problem, but without accurate tools for analysis, the field technician can't necessarily diagnose the problem. When sight and sound aren't enough, the technician will have to bring the failing device back to the shop for inspection and analysis. At best, this means a long trip back with a piece of equipment, wasting a great deal of time. At worst, the removed component may create a gap in the process requiring that it be shut down until the technician can analyze the problem back at the shop, get the device repaired, and return it.

When field technicians don't have access to robust portable diagnostic equipment, they are forced to jump through hoops that leave them spending extra time analyzing problems instead of fixing them. Trying to analyze failing equipment without the right tools means adding additional non-value added work in order to properly diagnose issues. When those issues are diagnosed, they often take longer to repair. Extra hours spent on repairs could be better spent on other tasks; not having access to diagnostic data in the field is a significant performance handicap.



#### Improving Field Diagnostics

To avoid or minimize process upset, the plant must provide technicians with powerful and portable diagnostic tools so they can identify and troubleshoot device issues in the field.

Emerson's 475 Field Communicator provides easy access to device diagnostics and offers troubleshooting steps to help technicians fix the problem at the device. The 475 Field Communicator is fully compatible with AMS Device Manager, so device configurations are easily transferred between AMS Device Manager and the 475 unit.

With a 475 communicator, technicians won't waste time transporting failing devices back to the shop for analysis or reconfiguration. They can diagnose many instrumentation problems with Foundation fieldbus and HART devices while the devices continue to run. Simple issues can be addressed on the spot, avoiding unnecessary, and potentially destructive, invasive physical investigation of the problem.

Moreover, some issues are much easier to diagnose in the field. While it may not be possible to tell the difference between a configuration problem and a wiring problem from the control room, a mobile technician, supported by wiring diagrams and diagnostic tools on the 475 communicator would have little difficulty diagnosing the problem at the source.

A field technician carrying the 475 Field Communicator can feel confident that he has the tools at hand to properly diagnose any device issues he may encounter. Diagnosis in the field means significant savings in work hours and peace of mind knowing that problems will be fixed quickly and properly the first time.

<sup>1</sup> Plant Services. PdM Survey. February 2016.



## Go Anywhere in the Plant

Why a Built For Purpose Tool is Needed for Effective Maintenance

From the results of the PdM study conducted by *Plant Services*, it is clear that organizations are responding to the needs of field technicians. The survey indicates a steep rise in procurement of mobile devices for plant data collection since 2014. This is most likely a result of the flexibility of purpose such devices offer. However, not all devices are created equal; reliance on consumer-grade mobile devices for data collection may be premature, particularly for plants that value rapid response from field technicians.

There are an increasing number of workflow management and clipboard replacement apps for consumer grade smartphones that allow technicians to keep track of activities in the field. So why are field technicians leaving these devices back at the shop when they perform rounds? The answer is simple: the sensitive, fragile devices are hard to use and easy to break.

A device built for the consumer market is not developed to withstand the physical abuse of a plant environment. Tablets and smartphones are not designed to be used by technicians wearing heavy work gloves while trying to access hard to reach places. Under these circumstances, devices get dropped, scratched, and banged frequently.

Anyone who has dropped a tablet or smartphone knows that they break easily. These consumer devices do not stand a chance when dropped multiple times onto concrete or packed gravel floors in a plant.

Even if a consumer device is housed in a protective case, its sensitive touchscreen and small buttons will be nearly impossible to use when a technician is wearing heavy gloves, and will often require both hands to operate, a luxury technicians won't always have.

**“Consumer smartphones increase total cost of ownership by up to 50 percent compared to ruggedized devices.”**

– “The Hidden Costs of Using Consumer-Grade Mobile Technology.”  
*Motorola Solutions. 2014.*

### Unsuitable for Hazardous Areas

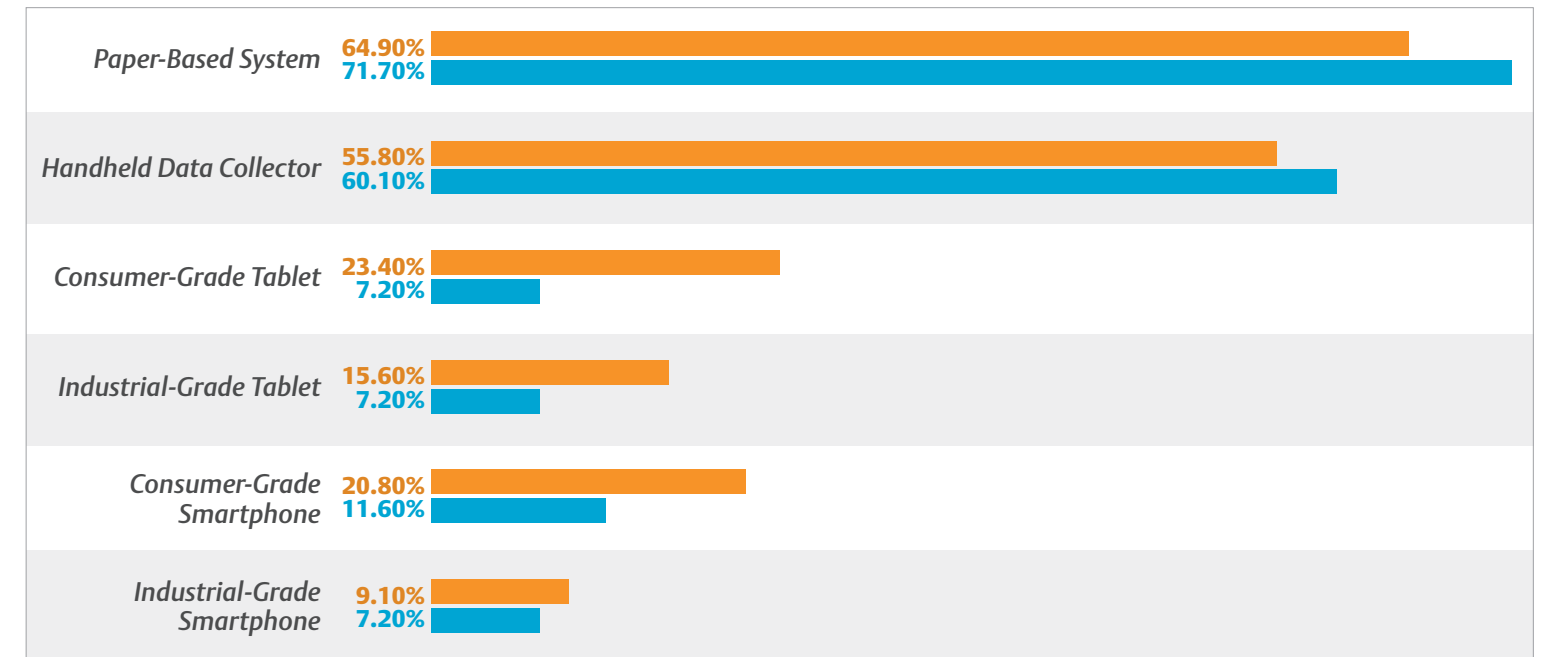
Technicians working in hazardous areas need equipment that can follow them into any situation. When a technician receives a call to investigate a possible equipment malfunction in a hazardous area, there are often safety regulations that make carrying consumer mobile devices problematic.

If a field communicator or mobile device that a technician carries is not intrinsically safe, he will be limited in his ability to quickly respond. Consumer smartphones and tablets are not rated to be safely carried into hazardous areas. This means that a technician who is already in the field carrying a tablet or smartphone would have to return to the shop to exchange equipment before entering the hazardous area for investigation.

If the plant does not own any devices that are safe to carry into hazardous areas, the organization may have to pull a hot work permit in order to allow a technician to bring his portable device in to diagnose and make repairs on the faulty equipment. If time or safety concerns make permitting not possible, the process may need to be shut down in order for the work to occur, creating the very process interruption that a technician is trying to avoid.

## Data Collection Methods Used with PdM

2016  
2014



*Plant Services. PdM Survey. February 2016.*

### Use a Tool That Allows You to Go Anywhere

The 475 Field Communicator is built to withstand the abuse it will take in the field. Designed with harsh industrial environments in mind, the 475 communicator features large keys and physical navigation buttons that allow for one-handed operation, even while wearing work gloves. The rugged display is visible in all types of lighting and is designed to take the bumps and drops that come from normal use in the plant.

The 475 Field Communicator is certified to go anywhere a technician can go. Because it has Intrinsic Safety certifications including CENELEC/ATEX, FM, CSA, FISCO, and IECEx, there's no need to shut a process down or get a hot work permit. Technicians have the freedom and flexibility to go where they need to, when they need to, letting them solve more problems in less time.

Learn more at [www.fieldcommunicator.com](http://www.fieldcommunicator.com)



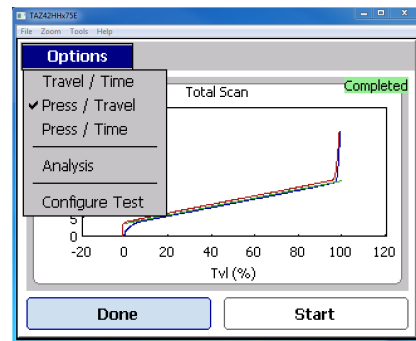
## Maintain Valve Performance

Use Advanced Field Diagnostics to Avoid Unnecessary Repairs

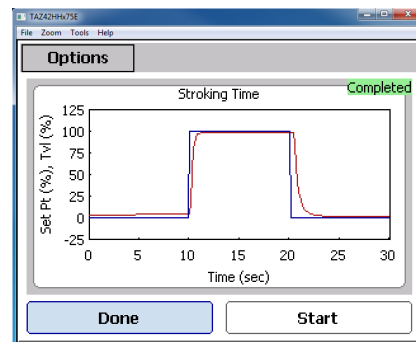
Of all the devices that technicians monitor in the field, valves tend to be some of the most problematic and the most critical. Unlike other instrumentation, valves are often much more costly to diagnose and repair. Field technicians are often required to pull a valve to investigate a problem. Because removing valves means creating holes in the pipe, taking a valve out for inspection means shutting down the process.

In addition, valve problems can be particularly tricky to diagnose. Technicians frequently need to disassemble the valve to determine the root cause of the problem. Unfortunately this disassembly can cause further damage to the valve, making repairs more complicated and more expensive.

Valve troubleshooting is further complicated by the fact that key symptoms of a valve problem (the valve not controlling the process efficiently and/or a deviation in valve travel) can signal either a mechanical problem or a configuration problem: two issues with wildly different solutions.



Use Total Scan to determine significant change in friction or irregularity to the valve's seating profile



Quickly detect major issues with valve stroke diagnostics

### Simplifying Valve Monitoring

Valve health inevitably degrades over time. The parts move, resulting in wear. However, valves don't usually fail without warning, providing technicians with the tools to identify these warning signs.

To give technicians comprehensive control to solve valve issues, they need to have constant, easy access to advanced valve diagnostics in the field.

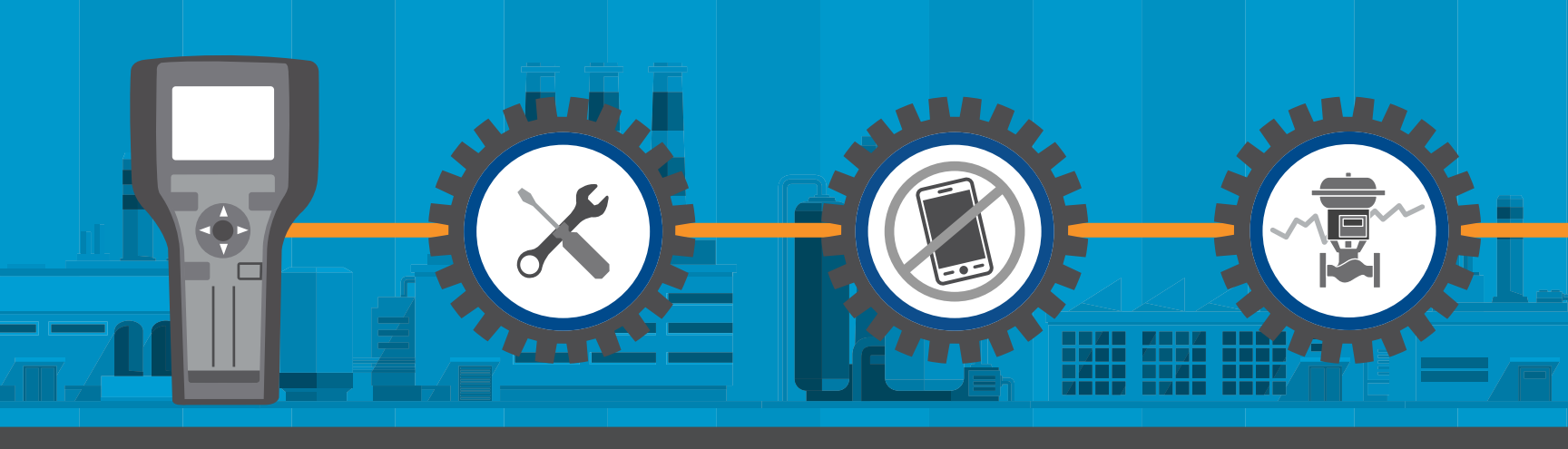
Using ValveLink™ Mobile software on the 475 Field Communicator gives technicians the ability to perform advanced valve diagnostics in the field. They can accurately diagnose valve problems without having to pull the valve or perform potentially destructive troubleshooting.

With ValveLink Mobile software, technicians can quickly perform tests including valve signature, PD one button sweep, and step response, receiving results on an intuitive graphical interface. Test results provide a clear understanding of what is going on inside the valve, allowing for proper planning, parts procurement, and scheduling of repairs before the valve is taken out of service. This insight is also vitally important during a quick turnaround or in short maintenance durations.

Any valve issues that stem from external problems (loose connections, improper wiring, or improper configuration) will be easier and less invasive to detect, empowering technicians to make key decisions in the field. With ValveLink Mobile at their fingertips, technicians gain the flexibility to treat each problem based on the information they witness in the field, saving time and money and improving safety.



Advanced valve diagnostics allow you to perform tests like Total Scan, Step Response, and stroke valve right at the valve - without taking it out of service.



Emerson celebrates 25+ years of industry expertise in handheld communicator technology, delivering powerful predictive diagnostics while simplifying work in the field.

Learn more at [www.fieldcommunicator.com](http://www.fieldcommunicator.com)

**Emerson Process Management**

12001 Technology Dr.  
Eden Prairie, MN 55344

© 2016, Emerson Process Management. All rights reserved.

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.



**EMERSON. CONSIDER IT SOLVED.**