

THE REAL VALUE OF INVESTING IN AN  
IOT SOLUTION IN MAINTENANCE  
AND MANUFACTURING

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DIFFERENT PERSPECTIVES FOR MAINTENANCE ORGANIZATIONS  
TO EVALUATE RETURN ON INVESTMENT (ROI)





## EXECUTIVE SUMMARY:

Advances in IoT technology have opened the door to endless opportunities for organizations to change the way they are performing maintenance. Being able to listen to your assets in real time, identifying when conditions are not only unique but require action, and seamlessly automating the maintenance response changes the game for preventive maintenance (PM) and reliability while creating value in more ways than one.

This paper will explore the many value perspectives of investing in an IoT solution in maintenance and manufacturing. Think beyond even the most obvious benefit of reduced failures and cost savings, to the re-allocation of labor hours and the elimination of human error.



## Reduced Failures, Improved Reliability & Cost Savings

“We have all been faced with questions regarding our asset health – are we doing everything we can to reduce failures and reduce maintenance costs? If listening to our assets with IoT could eliminate half the maintenance failures that occur during start-up, that would be 34% of our failures... Ask what that would be worth to your organization?” –Senior Director of Maintenance at a large food manufacturer.

Maintenance was previously based on the idea that asset failures follow a “bathtub curve”, where failures were more likely to occur early on in the lifecycle, stabilized in the middle, then again occurred at the end of the asset life. In reality, asset failures are random, and not all failures are equal. The following simple use case demonstrates the real cost savings of connecting sensors on steam traps to a maintenance management system like IBM’s Maximo.

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## USE CASE: COSTLY STEAM TRAP FAILURES

Steam Traps routinely fail at 25%, or 1 out of every 4 steam traps fail each year. Identifying failed steam traps is either very obvious (noise or steam in an occupied room) or left undiscovered until the next annual PM review of those steam traps, resulting in up to 12 months of unnecessary losses before the asset is inspected again and the failure is addressed.

In a typical manufacturing plant that uses steam in its operation, an average failed steam trap costs about \$4,500 in operational losses (Chemicals, heat, etc.). Then consider, for example, if a plant has 100 steam traps and 25% fail annually, that means you are looking at about \$112k/year in operational costs just from your steam traps. Or... \$112k in potential cost savings.

By connecting directly to the steam trap, you enable the capability of being automatically and

immediately notified of the failure to quickly replace the defective part and avoid the ongoing operational losses (while at the same time, eliminating the annual PM labor costs!).

FIGURE 1: Steam Trap Failure Cost Comparison

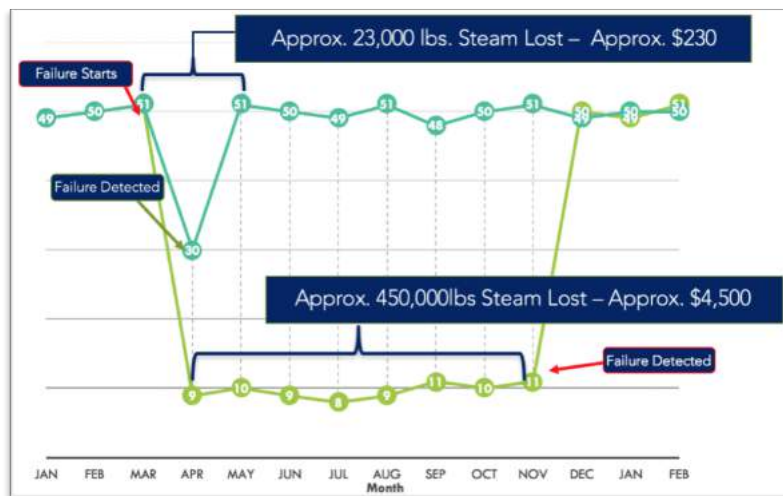


Figure 1 demonstrates the average potential cost savings comparison from leveraging IoT to identify and act on steam trap failures in real time.

## Reallocation of Labor

The hidden jewel when it comes to IoT and maintenance is the elimination of unnecessary maintenance activities, which frees up labor hours to do other things. There is so much value in identifying "recreational" vs "value-add" maintenance activities that can be eliminated with IoT. How often do you spend time on monthly PM inspections only to have the equipment fail due to a "random" event?

“We work with a manufacturer who has approximately 70,000 equipment locations, and spends over 250,000 labor hours inspecting these locations. By leveraging IoT technology to have their assets talk to them, they expect to reduce preventive maintenance activities by 50%. For them, **that translates to 125,000 labor hours that can be reallocated** to accomplish other maintenance activities.”

-Wayne Brisson, CEO at Aquitas Solutions

Consider other added benefit of freeing up maintenance technician time like the simple ability to reduce cost by doing work with your own people without having to hire outside or supplemental contractors. This reallocation can also address the common issue of finding qualified people for the harder to staff 2<sup>nd</sup> and 3<sup>rd</sup> shift by reducing the number of people required for those shifts. It's not that IoT is replacing the mechanics – it's replacing the non-value add parts of the operations, and allowing the most effective and efficient use of time.



## Elimination of Human Error

By having information come directly from our machines, you are eliminating the potential of human error in both the collection of asset data and maintenance introduced failures.

### ELIMINATION OF HUMAN ERROR: ASSET DATA

With the birth of IoT came the age of Advanced Analytics. The analytic and machine learning capabilities available are growing at an exponential rate. However, most maintenance organizations don't have the data or the data quality to harness the power of these platforms.

Most maintenance organizations are barely even tracking failure codes, let alone capturing data about the asset conditions before, during and after a failure. Connecting directly to the machines allows us to capture that data with 100% confidence to be able to establish a baseline going forward for performing advanced analytics.



Even with all of the information available, does your team have time to analyze it? How many times have you analyzed a failure and realized the information to prevent the failure was there before the failure, you just missed it?

## ELIMINATION OF HUMAN ERROR: MAINTENANCE INTRODUCED FAILURES

Whether or not we like to admit it, sometimes maintenance can actually introduce a failure. The failure rate is actually quite high from not putting things back together properly – and there is a cost associated with unnecessary maintenance or unnecessarily introducing new parts. What if a mechanic doesn't notice that the part they are replacing is defective? If not identified early on a critical asset, could that lead to a catastrophic failure?

If you connect to your assets and listen in real time, the time it would take to discover and address a maintenance introduced failure would decrease significantly.



### Conclusion

Most maintenance organizations are facing the same challenges with silos of information, combinations of legacy machines that are not connected to anything and new sensed assets, and an aging workforce. Overcoming these barriers can bring real value. There are so many ways to calculate the true Return on Investment, but leveraging the right solution and strategy are key to success.

Think big, start small, act fast.

### **WANT TO LEARN MORE?**

For more information please contact:

Maddy Hawkins

Director of IoT Sales, Aquitas Solutions

[mhawkins@aquitas-solutions.com](mailto:mhawkins@aquitas-solutions.com)

or visit:

[www.Aquitas-Solutions.com/Connected-Maintenance](http://www.Aquitas-Solutions.com/Connected-Maintenance)

## ABOUT AQUITAS SOLUTIONS

Aqitas Solutions is a leading provider of EAM and IoT solutions that optimize asset intensive industries. The Company prides itself on working strategically and collaboratively with the top, globally recognized EAM and IoT platform solution providers to heighten business value and bring bottom-line benefits to their clients.

Based in Atlanta, GA, Aquitas' leadership team and management consultants have nearly one thousand man years of enterprise asset management experience and have been early adopters of IoT technology that helps clients leverage their EAM system to optimize performance and improve productivity and service levels across the entire spectrum of their organization.

The Company has a long history of delivering faster, smarter, and more agile solutions at a competitive rate helping customers streamline their internal processes and compete more efficiently in an increasingly synergetic world.

Aqitas Solutions is a registered Service Disabled Veteran Owned Small Business (SDVOSB), proud supporter of Women in Reliability Asset Management (WIRAM). In 2018, Aquitas achieved both a CRN® Top IoT Innovators Award and was named to the Next Gen 250 List for companies implementing groundbreaking IT solutions.

### CORPORATE HEADQUARTERS

300 Colonial Center Parkway, Suite 100  
Roswell, GA 30076

#### PHONE

678-222-3462

#### EMAIL

[info@aquitas-solutions.com](mailto:info@aquitas-solutions.com)

#### WEBSITE

[www.Aqitas-Solutions.com](http://www.Aqitas-Solutions.com)

