Beyond the Buzz: What Can IIoT Do For You?

You may have heard of the Industrial Internet of Things (IIoT). Or Industry 4.0. Or the Digital Revolution. Or the Connected Plant or Artificial Intelligence or Deep Learning or Digital Twins or Augmented Reality or any one of the myriad of buzzing technologies that promise to allow you to go sit on a beach while robots run your factory. But what exactly is IIoT?

What is "IIoT"?

The Industrial Internet of Things can be defined as a network of machines, computers, and people enabling intelligent industrial operations using advanced data analytics for transformational business outcomes.

That may be the most "business speech" version of the definition, but the idea, is to apply this definition to technology. Your typical facility is already experiencing more unplanned downtime than they're comfortable with. As a result, this directly impacts their bottom line. They also may not have the maintenance budget or maintenance personnel in place to combat that loss of revenue.

How IIoT Can Augment Your Existing Capital Assets

Despite these blanketed buzzwords implying quick-fix promises, IIoT applications are not a one-size-fits-all solution that you can simply bundle and save on. Look for experts who can analyze your current structure and thoroughly demonstrate how their IIoT solution can augment your existing assets and compliment the maintenance plans you already have in place. A true best in class offering will achieve this as well as demonstrate a tangible value by augmenting your incoming workforce with knowledge that is potentially lost by the exiting workforce.

There are a lot of numbers thrown around in terms of the value proposition of IIoT, but one of the most important known figures to focus on is $20 billion.

According to Craig Resneck of ARC Advisory Group, the leading technology research and advisory firm for industry:

> ***"The average impact of unplanned downtime in the process industries alone is $20 billion, or almost 5 percent of the annual production, making minimizing unplanned downtime attributable to automation one of the best ways for industrial organizations to improve their return on (automation) assets (ROA)…For example, between 2 and 5 percent of all lost production in petrochemicals plants is attributable to unplanned downtime. Reliability experts estimate that unplanned downtime costs 10 times as much as planned downtime for maintenance in the process industries.[1]"***

It should be noted that you shouldn't be investing in anything IIoT related that doesn't enhance the value of your current equipment. For companies who haven't found a viable solution or even considered IIoT related predictive maintenance, many have combatted unplanned downtime in other ways. In order to minimize downtime, they essentially have sunk a tremendous amount of money into maintaining their assets. For example, just having a replacement on hand for every motor in their facility. This may be viable for some, however, with emerging IIoT technology, it is a suboptimal way of addressing downtime risk.

What the industry is really focused on with IIoT is bringing that situation into balance where for any given facility you have a tolerable target for downtime risk. Predictive maintenance program providers want to leverage sensing technology, computing technology, and other pieces of IIoT to balance this equation. Augmenting your existing maintenance dollars creates a scenario where maintenance dollars are going more towards prediction and less towards reaction of unplanned downtime.

Filling the Void Left Behind by the Exiting Workforce

Over the past 30 years, industrial facilities have become increasingly complex in the way they do business. Just-in-time manufacturing has transitioned facilities into an increasing demand for around-the-clock working conditions. Naturally, not only are their people working around the clock, but their equipment is too, resulting on more stress on the machinery.

In contrast to the demand for equipment uptime, the twentieth century has endured a decrease in the availability of skilled maintenance personnel to ensure equipment is up and running continuously. In addition to that, the more experienced workforce that has maintained equipment under these conditions is preparing to exit and enter retirement. We're also finding

that suitable replacements for these skilled workers are becoming much harder to find as college graduates are drawn more toward innovative roles, and less towards maintenance related roles that may have been in existence for decades.

> ***What we're really focused on with IIoT is filling that void of the exiting workforce with balance by leveraging sensing and computing technology to achieve the ideal, tolerable downtime risk. Routine and route-based maintenance will be replaced with hour-by-hour actionable data through IIoT equipment monitoring.***

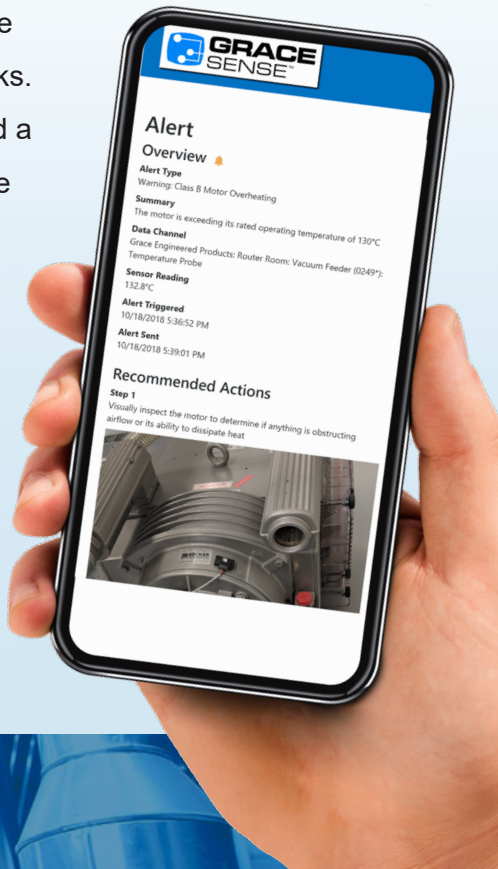
Beyond the Buzz: What Role Can IIoT Perform for You?

What we don't want to see with proven IIoT solutions is broken trust from users who were promised one thing and got something else entirely. Nobody should be able to say, "I tried IIoT and it didn't work for me." The point is, don't deploy an IIoT labeled system because the term is trending or simply because you have the maintenance budget to give it a shot. IIoT systems are ready to emerge and provide tangible value, but you must find the right experts and focus on your applications where they can demonstrate an immediate tangible value.

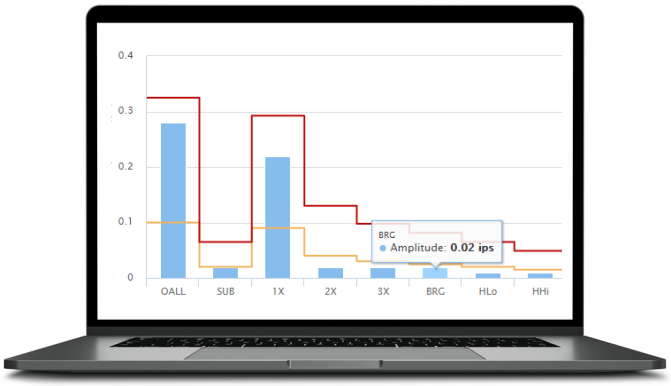
In order for IIoT technology to translate from buzzword to tangible value generation, the technology needs to merge with all the equipment assets in your facility seamlessly. Implementing this technology to create predictive maintenance programs by taking a network of sensors to optimize maintenance teams as well as the assets that they're monitoring. The most promising mechanism that is currently gaining traction and proven ROI is the deployment of wireless vibration sensors.

What role do vibration sensors play in the Industrial Internet of Things? The most obvious answer is that any critical piece of equipment in the industrial setting is going to have some major rotating component, possibly multiple major rotating components. Those rotating components are subjected to a constant mechanical and electrical load. The mechanical load is going to lead to strain, friction, fatigue, and all kinds of sources of potential degradation when running continuously. These critical pieces of equipment are subject to degrading potentially faster than other components in the industrial environment.

The typical maintenance of rotating equipment is often more complex than other tasks. It can be expensive and a lot of times it will require downtime. Utilizing vibration analysis as a method to provide as much warning as possible that a piece of rotating equipment is starting to



degrade will result in alert capabilities indicating that it needs to be maintained. The incorporation of vibration sensing technology will transform a reactionary based maintenance environment into a predictive maintenance based environment. This unlocks new potential by enabling the careful planning of when to schedule that maintenance before equipment completely fails.



Final Thoughts

With all this in mind, the next time you hear these IIoT buzzwords you should be able to attach a tangible and relatable representation of what IIoT is for you as opposed to being an abstract silver bullet solution. The proper deployment of predictive maintenance systems, vibration sensors, and a user interface to keep track of all your equipment by the hour in one place is superior to checking in periodically with your current routine based maintenance program. Typical routine vibration analysis programs are performing an analysis on a monthly or even quarterly basis. IIoT technology can enhance your program immensely with continuous vibration analysis hourly, reducing the need for the already sparse routine based inspections and increasing time spent on analysis over data collection. This generation's incoming maintenance workforce is dwindling and we need to prepare, however, IIoT is not meant to replace your analysts; it augments them! You want your maintenance team to be the best in class which is why you need to equip them with best in class IIoT based predictive maintenance technology.

Sources:

1. *Reducing Unplanned Downtime and Helping Future-proof Automation System Assets*, by Craig Resneck, ARC Advisory Group, August 5, 2016