

IIoT Motors.

Yes...the "Internet of Things" has arrived for electric motors.

IIoT Motors

IIoT (Industrial Internet of Things) is a major force happening in the marketplace, and that includes its use with electric motors. You may have seen IIoT mentioned in a trade magazine, or perhaps had one of your coworkers try to talk you into investing some of the MRO budget into an IIoT system. As humans, we love new gadgets and electronics, but before we invest money in them we need to make sure we have the facts. If you have questions about IIoT and electric motors, including the benefits and limitations, then we have answers.

What on Earth is IIoT?

IIoT stands for Industrial Internet of Things. If you have ever spoken to an Amazon Alexa, interacted with a Ring doorbell, or used a smart television, you have been working with the Internet of Things (IIoT). IIoT extends the internet to allow devices and objects to connect with each other and to other devices through the Internet. The demand of IIoT-enabled devices is rapidly growing, and so are the devices that support it (I mean...whoever thought of a smart microwave or refrigerator?).

The Industrial IoT takes things a step further by using smart sensors and actuators to monitor and enhance industrial processes and equipment. These sensors capture and analyze data about machines, components, and processes in real time and then wired or wirelessly, depending on the solution, transmit that data for storage, further analysis, or to notify a technician or operator that something is going wrong. That data can be used to alert a change in behavior, provide baseline metrics for evaluating the performance of a machine, or predict when it will need certain maintenance tasks performed.

What Does IIoT Have to do with Electric Motors?

The types of useful data that are claimed by different sensor manufacturers in relation to electric motors includes energy consumption, number of starts,

RPM, temperature, cooling efficiency, airgap eccentricity, vibration, and bearing health. As you can see, this type of information can be very helpful with troubleshooting failed motors, checking the condition of operational motors, and determining when a motor needs a closer look or maintenance -- all of which can help minimize electric motor downtime.

Will IIoT Help With Maintenance?

IIoT is a powerful tool when it comes to maintenance and preventing the failure of critical components in your powertrain. The data it gathers can be used to signal incidents such as a bearing issue, electrical issue, or even a balance issue with a fan. This kind of data can be used as part of a maintenance plan. The intelligent use of IIoT can end up saving you hundreds and thousands of dollars in unnecessary downtime and expensive repairs that result from not catching an impending problem before it causes a catastrophic failure.

Isn't IIoT the Same as PdM?

Due to the closeness in what IIoT is monitoring in relation to Predictive Maintenance, IIoT is not the same as PdM (Predictive Maintenance). While it is true that there are some items that overlap and many times IIoT is utilizing PdM technologies, they are not the same thing!

Predictive Maintenance

The objective of predictive maintenance is to monitor equipment (like electric motors) in order to schedule maintenance when it is most needed: when it reaches the optimum combination of being the most cost-effective and before the equipment fails. The equipment is typically monitored while it is running during production to establish a good baseline for expected performance. PdM requires many different types of sensors and gauges as well as a means for storing or reporting the data collected.

IIoT is not PdM

IIoT goes well beyond predictive maintenance. Yes, it can provide continuous monitoring of the performance of an electric motor that can be used as part of PdM. It goes beyond PdM in that it integrates the collection of the data and typically makes it available both on-site and off-site.

Limitations of IIoT

As fantastic as IIoT technology is, it does have some very real **limitations**.

Will Not Replace Humans

With the advent of every new technology, it always seems that someone is afraid that tech is going to take their job. Well, there are certain failure modes that even the latest IIoT sensors cannot detect that humans can. These sensors as of yet cannot spot an oil leak, check oil levels, or check the color of the oil. IIoT sensors cannot tell you if an electric motor has started making a new sound or if the exhaust smells different. In short, IIoT will not be completely replacing humans when it comes to inspections and observation.

Data is Not the Same as Information

Also keep in mind that a massive amount of data is generated by IIoT sensors, and if that data is not processed into useful information then it is basically useless. You may have thousands of hours of data about the performance of an electrical motor, but if you do not know how to interpret or what actions to take from the data, it is not of any benefit at all.

Training is Critical

So, if you are going to invest in IIoT, you need to make sure that whoever will be using it is properly trained by an expert on what to do with all that technical data, how to use the sensors, and how to setup the software involved to generate reports and visualizations. If you fail at this point, your IIoT is going to be a waste of good money and a waste of good network bandwidth, too. There have been many reports that indicate that over half of IIoT initiatives fail. This is mainly due to not utilizing the data or misuse of sensors.

Conclusion

Are you in the market for an IIoT system? Not only do we repair, maintain, and sell electric motor equipment and components, but we can also help you get set up with an IIoT system through our **Predictive Service Group**. HECO can help you determine if an IIoT system is right for your needs, assist you in selecting one, and make sure your employees know how to get the right information out of it to support machine productivity and predictive maintenance. We then have the machinery experts such as ISO certified

vibration analysts to make recommendations based on the data IIoT can provide.