

CASE STUDY

No expertise required: Setting up and reaping the benefits of vibration sensors

Three beta testers share their experiences with the 3561 FC Vibration Sensors

To use vibration sensors, many maintenance and reliability personnel believe they have to be a vibration expert. For some sensors, this may be true. However, for the 3561 FC Vibration Sensors paired with Fluke Connect™ Condition Monitoring (FCCM) software, expertise is not required. Out of the box and installed in about an hour, these scalable and easy to use sensors provide benefits with triaxial vibration screening and temperature trending. Learn more about how three beta participants gave these sensors a test drive in real-world applications.

Fabricator of aerospace parts

CMMS administrator for the aerospace parts fabricator said Fluke’s vibration sensor could be useful on more than 700 assets in their plant.

“We know if something has failed; *we want to see if it’s about to fail.*”

— CMMS administrator, fabricator of aerospace parts

The CMMS administrator for the last five years said the possibility of eMaint software responding to the sensors feedback would be a notable advantage. “It would be extremely useful. Our ultimate goal is that the FCCM software would feed into our eMaint CMMS.” The sensors would alert the eMaint system when they detect a change in condition, then generate a work order for a technician to inspect that machine.

For the beta test, he received and installed two vibration sensors, placing both on a hydraulic pump connected to a subcomponent of a CNC mill: one on the pump and the other on the motor for that pump.

“So, it’s basically the same component but two different bearings. This is only one pump of three or four on the whole machine.” The pump presented a prime testing site because a technician suspected it was failing. “He thinks it sounds like a coupling out of round,” the CMMS administrator said.

The temperature trending impressed him. “I think it’s very useful. It’s a lot cheaper than a thermal imaging device or some other kind of thermometer. But it’s accurate enough that if the temp went high, it would be a good additional indicator of failure along with the vibration. Or if

you get a temp spike without a vibration spike, it means an extra layer of an indication.”

The variety of time intervals available in the selector above each graph was impressive but the ability to also show even longer periods, such as a month or a quarter, was another benefit of the 3561 FC. “You need to see a curvature of a lot of data to see an indication of whether it’s on the way to failure. I don’t think two weeks of data will show that indication.”

“[The temperature trending] was really cool because even when the machine is off, you can see the cool down of the machine and see it change throughout the day even as the ambient room temperature goes up.”

— CMMS Administrator

The CMMS administrator also felt that the graphs were easy-to-read, made sense, and the difference in the colors between vibration and temperature was very helpful. He also appreciated the small size of the sensors. According to him, they are not obtrusive or likely to be bumped.

Baxter Manufacturing

Bob Keehan with Baxter Manufacturing, makers of commercial bakery equipment, installed two vibration sensors on assets in their R&D lab. Both were attached to external motors working mechanisms inside ovens — one powers the rotating of goods while the other lifts a rack of goods.



Product line engineer for 23 years, Keehan estimates that in the lab itself, the company probably has 20 pieces of equipment that could use vibration or temperature sensors.

“The only surprising thing about the sensors was the temperature. I did not know that was going to be there. That was good for us.”

— Bob Keehan, Product Line Engineer, Baxter Manufacturing

On the manufacturing floor, though, there’d be 20 of places for these sensors, as well,” he said, and listed anything from press brakes to laser cutters. The highlight of the beta test has been the discovery of the temperature monitoring. “I liked that. It’s nice having an extra data point in there. The motor’s getting too hot is really important,” he said.

That temperature feature expanded his ability to test assets remotely. For the first time, he left an oven running over the weekend in the lab. “I’d look every now and then at the app to see if it was still running. That was nice,” he said.

“It was nice to know something didn’t go wrong. Nice to be able to see that.”

— Bob Keehan, Product Line Engineer, Baxter Manufacturing

Keehan turned off the sensors’ push notifications on the first day because of some superfluous alerts, since this sensor and software are in beta testing. “We’re still learning what this is telling us. We’ve only had it two weeks.”

He foresees customers finding the same value in the sensors to monitor their ovens remotely, freeing them from the need to be onsite. The temperature monitoring could be useful in another area — their pre-certification testing on new products.



“We have to get third-party testing on all components of our equipment. So, on initial designs, we do temperature tests, and this will help,” he said, though it cannot replace the third-party tests, which require calibration.

A plastics manufacturer

A lead maintenance mechanic for a plastics manufacturer oversees 18 injection-molding machines. They range from a small 20-ton press to a 400-ton version. “We could use sensors on at least six pieces off the top of my head, and there’s potential points of data on each machine,” the lead mechanic said.

They perform monthly maintenance and, because relays are the first to go on a press, they check the electrical cabinet with a thermal imager for hot spots.

“Possibly the temperature aspect is more valuable to me, because that’s the first indication of failure especially in motors, pumps and bearings especially.

— Lead Maintenance Mechanic, Plastics Manufacturer

“The sensors would be useful, though, for pumps, for motors, and for bearings. Right now, we rely on [our ears] usually to find problems in those,” he said.

About two to three weeks ago, he installed two sensors with ease on a large, electric motor of a press. The triaxial sensors will be beneficial to him.

“I’m trying to measure axial vibration as well as vertical vibration of the bearing,” the lead mechanic said.

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