The maintenance manager’s guide to always-on measurements

Keeping all the components of a facility running safely and efficiently is no easy task. And nobody knows that better than maintenance managers. Tracking the operational health of all of those components is key to preventing unexpected failures and costly downtime. The trouble is, routine maintenance checks often miss recurring problems. If maintenance technicians aren’t taking readings at the right moment, an intermittent fault can go undetected until it escalates into a full-fledged failure.

The most critical assets in a facility often have fixed sensors that take measurements around the clock to enable plant managers and technicians to see occasional faults as they happen. This helps them get to the root cause and fix problems before they cause a major outage.

However, finding intermittent faults in less critical equipment is a little bit like the proverbial needle in a haystack. If a circuit is tripping periodically, and everything is back to normal by the time a technician gets to the panel to troubleshoot, there’s not much to do other than wait for the next time the circuit trips. It can take several, often futile, trips until the technician arrives at just the right moment to capture the fault. It isn’t financially practical to install fixed sensors on every asset so in-person checks are the most common alternative.

Making always-on measurements more available

Now there is a solution that bridges the gap between permanent fixed sensor monitoring and periodic measurements with a handheld tool. The same wireless technology, networking, and storage infrastructure that has driven the rise of interconnected equipment, sensors, and applications—known as the “Internet of Things”—is also making smart sensor technology more practical for a broader range of equipment.

Fluke has embraced that technology to produce a movable, wireless monitor that measures power quantity. These sensors feature the same rugged reliability and accuracy found in Fluke handheld tools, along with the reliable connectivity of Fluke Connect™ wireless technology.

24/7 remote monitoring

Plant technicians can use these the 3540 FC Three-Phase Power Monitor and Fluke Connect software to monitor voltage, current, and frequency from anywhere via a smart device, such as a mobile phone, tablet, or PC/Mac computer.

View data in real-time or browse through historical measurements.
For example, a product distribution facility may have miles of conveyor belt run by hundreds of motors around the clock. All it takes is one motor to go down and a significant part of the operation will go down with it. That downtime can delay delivery or payment, and incur extra rush shipping fees. So keeping all of those motors running smoothly is very important.

The 3540 FC Kit can make it easier to maintain the health of conveyor system motors. You can start by using them to get a baseline of current, voltage, and frequency on a representative sample of healthy motors under full load.

With that baseline established you can take a closer look at motors that may have potential issues or which have been working very hard for an extended period of time.

The data collected may indicate symptoms of an issue and offer an early warning to schedule a shutdown so you can repair or replace the motor before it causes a major failure.

If you’re looking for an intermittent problem you can collect data over several days to get a comprehensive picture of what’s going on. Tracking performance over time can help you more accurately predict and even prevent equipment problems, and thus reduce downtime.

Catching real-time anomalies in three-phase power

The 3540 FC power monitor makes it easy to simultaneously measure all legs of three-phase power for motors, generators, or electrical cabinets. You can attach the power monitor and then observe the results on your smart device. Because you can view all phases simultaneously in real time, you quickly see differences between phases.

Set a threshold on the sensor and real-time alarms will let you know if there’s a sudden spike or drop in power to help you quickly identify faults. The results will assist in identifying harmonic distortion, overloads, or degradation of one or more phases before it causes a safety hazard or a breakdown.

The 3540 FC provides two options to collect data:

- **Remote monitoring.** If wireless connectivity is available, the data will continuously stream from the sensor(s) to the cloud where it is accessible to smart devices.

- **Local logging.** If wireless connectivity is not available, the data will be stored locally until the technician uploads it to the cloud with a smart device.

**Portable sensor monitoring at a glance**

Common applications for Fluke power monitor, include:

- Setting alarms to indicate equipment performance outside of pre-set parameters
- Finding three-phase power imbalances from harmonic distortion, overloads, degradation, or failure of one or more phases
- Identifying motor amperage spikes, overheating from bad bearings, or insulation breakdowns
- Locating potential overloads in electrical panels
- Measuring supply side and demand side power at a common coupling point to monitor power consumption

**Learn more**

Use the 3540 FC Three-Phase Power Monitor and Fluke Connect Condition Monitoring software to screen the health of critical and noncritical systems. Predict and perhaps even prevent equipment problems and downtime. To find out more, consult your Fluke sales representative or visit www.fluke.com.