CURRENT NEWS

Predictive maintenance: forecast productivity.

When equipment fails in a chemical processing plant, production drops and costs soar. Fluke's lineup of predictive maintenance tools can flag key signs when trouble is brewing. Use these tools to catch problems before they wreak havoc on your business.

FLUKE®

This is Kris.

He's a Westburne industrial sales rep. and a straight-up people person. You'll start off as his customer, but don't be surprised if you become friends over time. That's just the way things evolve with Kris. He'll work hard to grow your trust – and he'll hustle to keep it.

With more than 14 years at Westburne, Kris knows what it means to be in it for the long haul. He stands behind everything he sells. If you run into a snag down the road, you can bet he'll be standing by to help.

Kris knows that unscheduled equipment downtime can tank productivity. That's why he's standing by with solutions like Fluke's lineup of predictive maintenance tools. They're designed to signal potential issues before they become operational problems.

Fluke's predictive maintenance tools are geared toward helping your company run more efficiently. Just like Kris.

He's here to help.

KRIS GOPAL
INDUSTRIAL SALES REPRESENTATIVE
WESTBURNE \ BURNABY

Take the guesswork out of maintenance.

WHAT

Unplanned downtime is incredibly expensive for chemical processing plants. Regular downtime adds up quickly. The trick is knowing what's going to break down – and when. Predictive test tools take the guesswork out of preventative maintenance. They measure equipment performance in the four key areas of vibration, temperature, calibration and power quality, and flag issues before they become trouble.

WHY

Different types of maintenance yield radically different results. Reactive or preventative maintenance can backfire, but a maintenance program that uses predictive tools to pinpoint concerns up front – that's just a smarter way to operate. Fluke's predictive test tools also make record keeping a cinch. Use them to track the status of your equipment in real time and to keep track of your maintenance records for all time.

HOW

Westburne can help.
Fluke has an entire lineup of products geared toward smart predictive maintenance. With so much riding on your maintenance program, you really need to get it right. Your Westburne sales rep. will help make sure you do.

MAINTENANCE 101

There are three basic approaches to asset maintenance:

1. **Reactive maintenance:** equipment runs until it dies and then is repaired or replaced.
2. **Preventative maintenance:** equipment maintenance is based on a schedule (time) rather than the condition of the equipment.
3. **Predictive maintenance:** uses real-time equipment performance to determine when preventative maintenance should occur.

Choose smart.

Maintain your assets, your production schedule and your bottom line.

About 86% of maintenance is either reactive (too late) or preventative (can be unnecessary). Unnecessary maintenance can be a waste of money. Maintenance that comes too late leads to equipment failure.

When equipment fails, production falters and losses can add up in a hurry. Failed equipment costs manufacturers three percent in lost revenue alone every year. It may not sound like much, but for a company with a net income of $100 million, that's a 30 percent hit to their profitability.

In a chemical processing plant, scheduled maintenance means shutting things down to allow safe access to high-tech equipment and high-pressure, high-temperature pipes and vessels. That downtime either halts production entirely or it cripples access to critical elements required for production (e.g. steam, electricity). **One way or another, every minute lost has a cost.**

The trick is determining what assets need repair when. Predictive maintenance is targeted. Using hand held devices like Fluke's digital multi-meters, digital infrared thermometers and insulation testers, personnel can measure key indicators on critical equipment at regular intervals. It rates the condition and tracks any changes over time. When a key indicator jumps off the baseline measurements, that's a red flag for action.

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Predictive maintenance solutions

Equipment	Key indicators	Measurement	Test tool
UPS/PDU	Intermittent tripping Process interrupts	RMS voltage, RMS current, frequency (Hz), connection frequency (Hz), connection resistance, data log readings over time for anomalies	Infrared thermometer, digital multimeter, clamp meter
Transformer	Heat Buzzing	Temperature, harmonics, impedance at neutral-ground bond, voltage balance, current balance, loose connections	Infrared thermometer, digital multimeter, clamp meter, PQ analyzer
Panels/switchboards	Intermittent tripping Hot circuit breakers	Voltage balance, current balance, data log readings over time for anomalies, loose connections, temperature	Infrared thermometer, digital multimeter, clamp meter
Controls (ASDs Disconnects)	Process anomalies Change in system performance	Voltage balancet, harmonics, current balance, inrush current, voltage sags, connection resistance, data log readings over time for anomalies	Infrared thermometer, digital multimeter, clamp meter
Lighting panels	Flickering lights Buzzing	Inrush current, harmonics, insulation resistance to ground, temperature, nameplate rating, overloading, voltage balance, current balance, resistance, connection motor start capacitor	Infrared thermometer, digital multimeter, clamp meter
Motors and other equipment (gearboxes, pumps, fans, chillers, A/C units, generators)	Heat Intermittent tripping	Inrush current, insulation resistance to ground, temperature, nameplate rating, overloading, voltage balance, current balance, resistance, connection motor start capacitor, harmonics	Infrared thermometer, digital multimeter, clamp meter, insulation resistance tester

FOUR TELLTALE SIGNS THAT MAINTENANCE MAY BE NEEDED

1

Vibration

Much of the equipment in the chemical processing industry has rolling element bearings, couplings and gearboxes. Some degree of vibration is normal, but excessive vibration can indicate a problem. **Vibration analysis tools** are remarkably effective, cost-effective approach to flagging immediate maintenance concerns.

2

Temperature

In predictive maintenance, infrared thermal imagining is the best first line of defense. Changes in temperature are a serious red flag when monitoring equipment status. Predictive **infrared thermal imaging tools** can capture the complete temperature profile of an asset from the outside. No spot-checks, no contact, no shutdown required.

3

Calibration

Process manufacturing requires the precise coordination of thousands of interdependent components to run smoothly. For optimum performance, each component has to consistently and repeatedly perform an exacting task. Calibration can be fickle and requires regular inspection, testing, adjustments and repairs. **Calibration tools** can test for precision and pinpoint any requisite tweaks.

4

Power quality

Reliable and consistent power is essential for productivity. The loss of power or sub-standard power quality can be devastating to a production facility's operations. **Power quality tools** can detect power issues and spark corrective actions to ensure optimal draw and efficiency.

Fluke tools offer foresight.

Fluke's complete line of predictive maintenance test tools help maintenance technicians spot potential equipment failures by focusing on key indicators.

Vibration testing: designed to make vibration analysis and alignment checks fast and effective so maintenance professionals can target root causes and address issues quickly.

Thermal imaging: from the affordable and easy-to-use Performance Series™ to the Professional Series™ and the Expert Series™, Fluke's advanced infrared technology delivers picture-perfect diagnostics anywhere and every time.

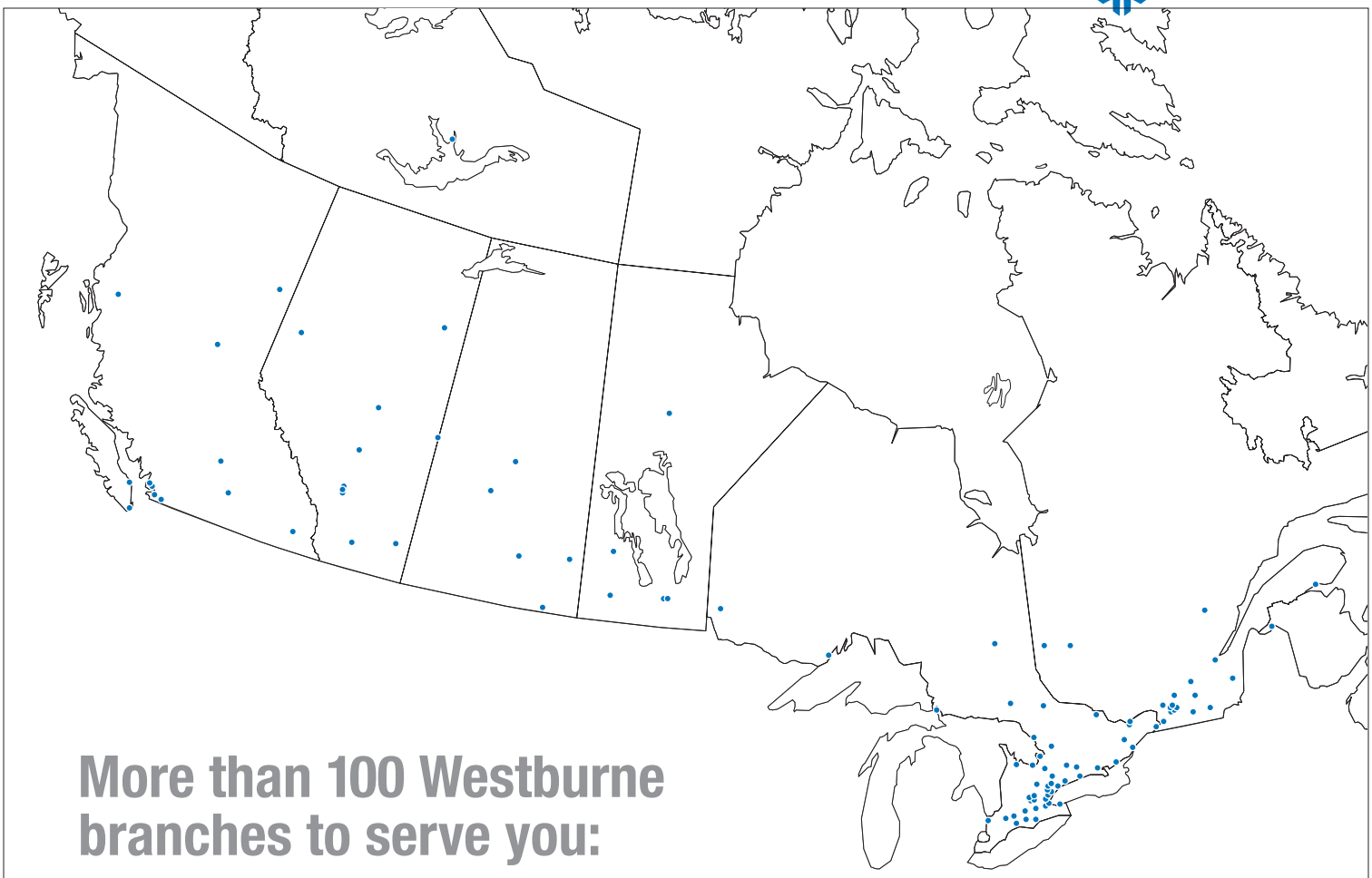
Calibration: everything from simple test gauges to calibrators with built-in electric test pumps. Designed for use in the field, Fluke's precision calibration tools are as rugged as they are nimble.

Power quality: an extensive range of power quality test tools for troubleshooting, preventative maintenance and economizing operations in industrial applications and utilities.

Connect with your maintenance numbers.

Many of Fluke's predictive maintenance tools are Fluke Connect™ enabled which means the data they generate can be shared wirelessly from one location and device to another. Saved input can be sent to a smart phone. Multiple modules can be viewed by technicians on site or off, simultaneously.

Store images and measurements in the EquipmentLog™. That data is another powerful predictive maintenance tool. Use it to track performance trends over time.



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