FLUKE® Reliability

3562 Vibration Sensor System Launch 07/21/2021

Speakers:

Tyler Evans, Dir. Product Management

Mike Ciocys, U.S. Technical Support Manager

Samantha LeSesne, Sr. Product Manager

Meet the Speakers

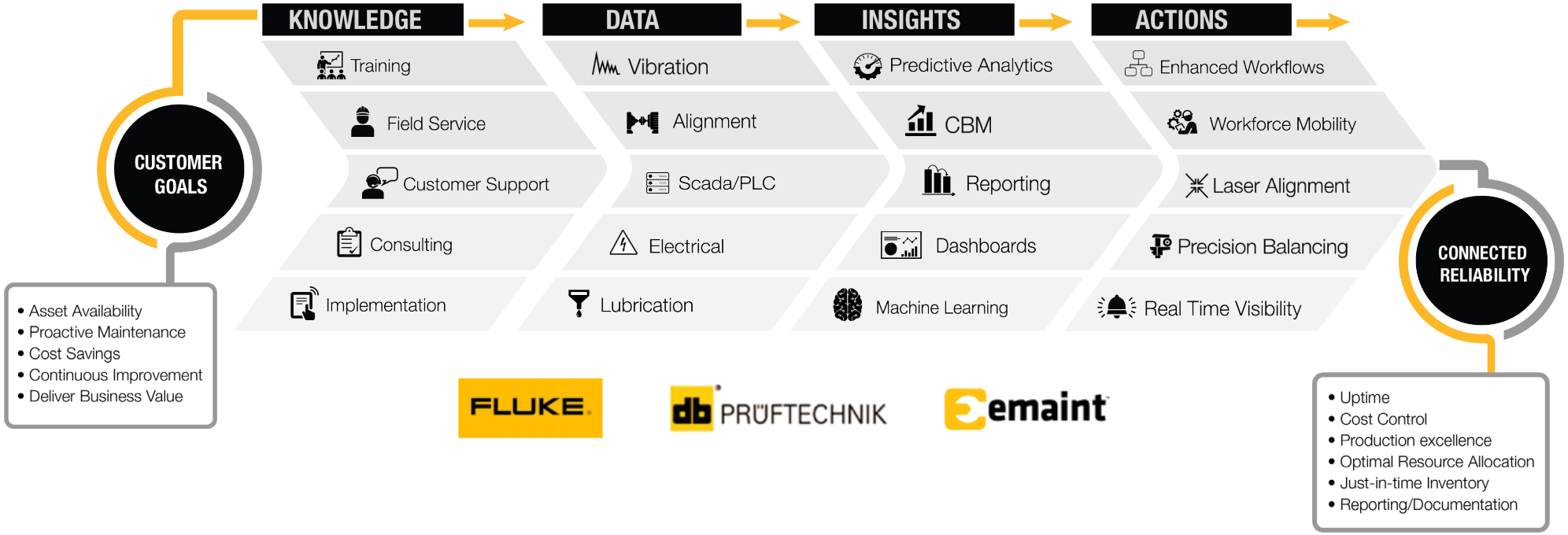
Tyler Evans

Director of Product Management, Fluke Reliability

- Setting product vision and roadmap for eMaint, DB Prüftechnik, Fluke Connect and the Accelix Data Platform
- Over six years at Fluke as well as time at NAVEX Global
- Synchronized set of business, software, manufacturing, condition monitoring and reliability maintenance skills

Fluke Reliability, Connected Reliability

We simplify connected reliability solutions for the people who keep the world up and running



Help guide the customer past the obstacles on their reliability journey from Point A to Point B

✓ **Successful start-up** ✓ **Successful implementation** ✓ **Successful sustainment**

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Every organization is somewhere on this journey …

Reactive	Preventive	Predictive/CBM
Corrective work orders after failure	**Calendar & meter based scheduling**	**Work orders from real-time asset data**
☒ Can be expensive	☑ Increased efficiency	☑ Increased uptime
☒ Shorter asset life	☑ Less downtime	☑ More productivity
☑ Appropriate for some assets	☒ Can perform too much / too little maintenance	☑ Data-driven maintenance decisions

Maintenance-centric → **Asset Health-centric**

Where are you in your reliability journey?

Where do you want to be in the future?

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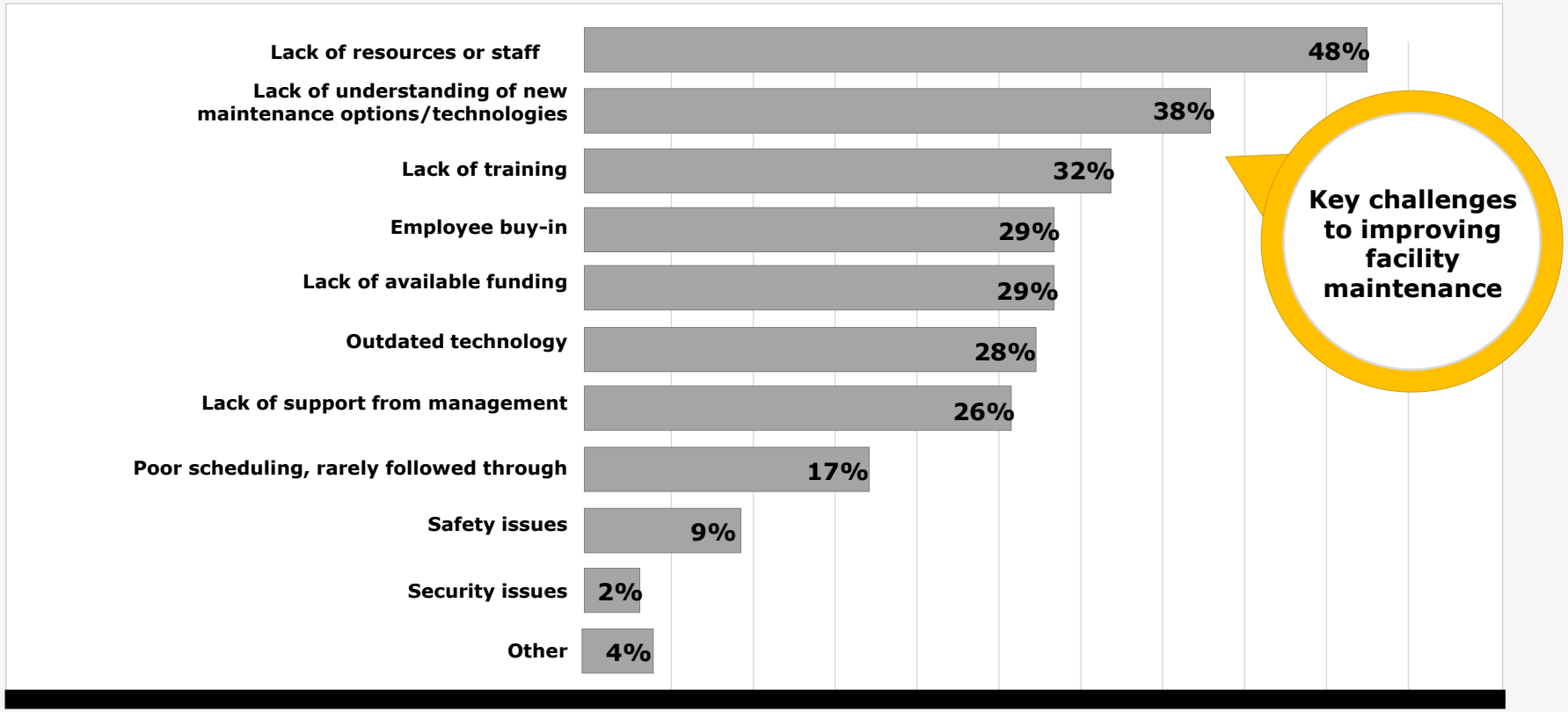
Today’s maintenance landscape

DOING MORE WITH LESS

Maintenance teams in nearly every industry are faced with one common problem:



Source: 2019 Facilities Maintenance Survey, Plant Engineering

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Done right, vibration monitoring can be part of the solution

Predictive equipment vendors have been developing and improving tools / software

So why are so many teams still relying on reactive and preventive methods?

Today's tools are the most advanced, and training has never been easier, but the problem is always time and resources.

1 **How do we grow a reliability program**
…when we are 100% busy?

When you can't conduct all the necessary routes, and machines are hard to access, add vibration monitoring to achieve coverage

2 **How do we make the best decisions**
…when we have incomplete information?

If you don't have the resources to analyze data for all of your important machines, apply screening-level monitoring as a fail-safe

3 **How do we monitor all critical assets**
…with limited resources?

Monitoring must be easy and scalable, so that it supports the resource balance between planned maintenance, repairs, and emergencies

Meet the Speakers

Mike Ciocys

Prüftechnik U.S. Technical Service and Support Manager, Fluke Reliability

- Lead Pruftechnik vibration and alignment advisor in the U.S., manager of the technical support department
- Accomplished alignment and applications engineer
- CAT III Vibration analysis certified, CRL
- Mechanical Engineering BA from Temple University

Introducing the Fluke 3562 Screening Vibration Sensor System

Complete solution:
hardware + software + service

A solution to move you forward in your journey

The Fluke 3562 features a **revolutionary batteryless, intrinsically-safe 6 Hz to 1000 Hz triaxial MEMS and temperature sensor** with **long-range radio sensor-to gateway connection**, enabling maintenance teams to continuously screen vibration readings for the **vast majority of their facility's assets**, not just the critical few.

The sensor and software application, **LIVE-Asset™ Portal**, ensure maintenance teams are **immediately notified when a closer look is warranted** for any given asset.

Fluke Reliability engineers will help **guide you past the obstacles** to a **successful start-up, implementation**, **sustainment** on your new condition-based maintenance (CBM) program.

Fluke 3562 Solution: Key features

Long-range sensor-to-gateway communication

An **ultra-penetrating sub-GHz radio signal** allows the Fluke 3562 sensors — powered by the Everactive® Edge self-powered circuit and networking technology — to **communicate with a gateway over extremely long distances**, requiring fewer gateways throughout a facility.

Batteryless operation

The intrinsically-safe 3562 vibration sensors **utilize power generated from a machine and its environment** through the connected TEG harvester or PV harvester instead of batteries, allowing the system to deliver virtually continuous operation. This minimizes upkeep by **eliminating the time and cost of battery replacement**.

Powerful monitoring capabilities

The **Live-Asset ™ Portal software** application enables users to **trend both overall values and magnitudes of 9 highest spectral peaks**, and temperature. With this capability, user can determine the machine health and decide actions should be taken.

Scalable triple-network solution

Extend always-on monitoring broadly across your plant or portfolio of facilities without having to make infrastructure changes by leveraging the ability to **connect up to 1,000 Fluke 3562 sensors** per gateway and the gateway's **triple-network connection capabilities** — LTE, WiFi, Ethernet, or a hybrid of all three.

What do we mean by vibration *screening*?

Vibration screening is the ability for users to **easily determine which machines are healthy or unhealthy** without having to go into deeper analysis

The 3562 system uses the data it monitors to calculate overall vibration value, which is represented as X, Y, Z-axis measurements.

By trending Overall Vibration over time, you can easily screen for any changes to overall machine health.

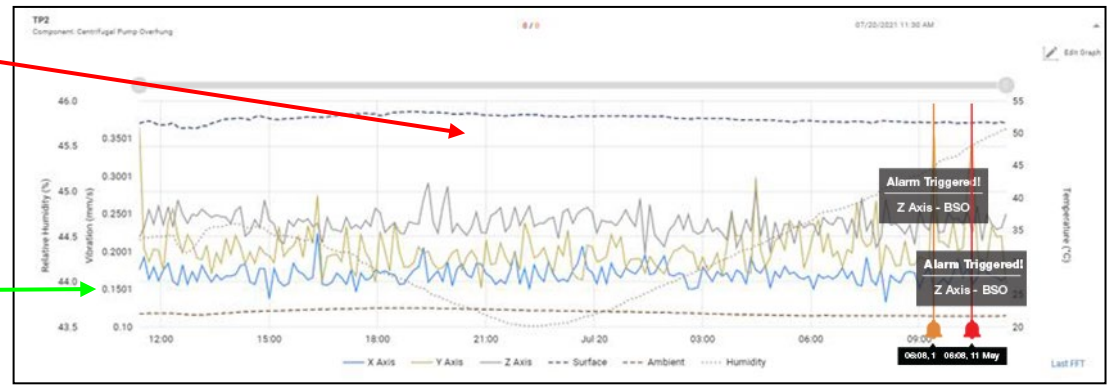
Machine with excessive vibration

0.58 in/sec Overall

Machine with normal vibration

0.02 in/sec Overall

Overall Vibration (OV)



Trend plot

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Meet the Speakers

Samantha LeSesne

Sr. Product Manager with Fluke Reliability, a division of the Fluke Corporation

- Product Manager for hardware and software solutions since 2019
  - Focusing on company's sensors, condition monitoring solutions
- 2+ year experience as Product Marketing Manager with Fluke
- Held various marketing manager positions with responsibility for:
  - Product management
  - Sales training and marketing support
  - NPI marketing campaigns
  - Market analysis

3562 System Demo

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3562 Screening Vibration Sensor specifications

Fluke 3562 Screening Vibration Sensor	
Frequency range	6 Hz – 1,000 Hz
Amplitude range	Autorange: +/- 2g, (X, Y, Z) 4g, 16g
Sampling frequency	3,200 Hz
Temperature	• Measurement range: -40°C to 85°C (-40°F to 185°F) • Accuracy: +/- 2°C (3.6°F)
Ingress protection class:	IP66
Power	• TEG harvester = minimum -9°C (15°F) difference between surface and ambient • Indoor / Outdoor PV harvester = Minimum 200 Lux • Energy storage = 8 hours @ 60 second sample rate, no power source
Sensor-to-Gateway communication protocol	Proprietary sub-GHz link
Sensor-to-Gateway communication range	• **Non-line of sight:** Up to 250 m (820 ft), depending on environment • **Line of sight:** Up to 1 Km (1/2 mile), depending on environment
Data Measurement and Transmission Interval	Configurable, default is every 60 seconds
Mounting	Magnet, screw, epoxy

Fluke 3562 Screening Vibration Sensor	
Hazardous location	Class 1, Division 2
Temperature sensor	Operation: -40°C to 85°C (-40°F to 185°F) Storage: -40°C to 85°C (-40°F to 185°F)
Vibration resistance	10-60Hz @ 0.69mm 60-3,200Hz @ 5.0g
Shock & impact resistance	100g @ 6 mS
Dimensions (sensor)	Approx. 53 x 48 x 81 mm (2.1" x 1.88" x 3.2")
Weight (sensor)	Approx. 180 g (0.39 pounds)
Material	PC-PET / Aluminum
Number of connectable sensors to gateway	Up to 1000

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3504 Wireless Gateway and Energy Harvesters specifications

3504 Wireless Gateway	
Power supply options	• AC input 85-264 VAC, 0.35A/115V, 0.25A / 230V, 47-63 Hz • Power-over-Ethernet: Compliant with IEEE 802.3af
Wireless Communication	Protocol to gateway: Proprietary sub-GHz link Protocol to cloud • WIFI: IEEE 802.11 ac/a/b/g/n • LTE • Ethernet: 10/100/1000 MBits/s
Ingress protection class	IP66
Temperature	• Operation: -30°C to 70°C (-22°F to 158°F) • Storage: -40°C to 85°C (-40°F to 185°F)
Number of connectable sensors	Up to 1000

Thermoelectric Generator (TEG) Harvester and Photovoltaic (PV) Harvester	
Temperature TEG harvester	Operation: -40°C to 75°C (-40°F to 167°F)
Temperature PV harvester	Operation: -10°C to 60°C (14°F to 140°F) Storage: -20°C to 70°C (-4°F to 158°F)
Dimensions (TEG harvester)	Approx. 74 x 58 x 36 mm (2.9" x 2.3" x 1.4")
Dimensions (PV harvester)	Approx. 86 x 71 x 13 mm (3.4" x 2.8" x 0.5")

3562 System KITs and Options

1 Hardware

Screening Vibration Sensor 16KIT
16 Sensors
16 Thermo-Electric Harvesters
16 USB-c 3.1 MTS Cables, 1 FT
16 software subscriptions
1 gateway

Screening Vibration Sensor 32KIT
32 Sensors
32 Thermo-Electric Harvesters
32 USB-c 3.1 MTS Cables, 1 FT
32 software subscriptions
1 gateway

Optional

Screening Vibration Sensor 8PK
8 Sensors
8 Thermo-Electric Harvesters
8 USB-c 3.1 MTS Cables, 1 FT
8 software subscriptions

3504 Wireless Gateway

Thermo-Electric Harvester

Indoor PV Harvester

Outdoor PV Harvester

USB-C 3.1 MTS Cable, 3FT

2 Software

Screening Vibration Sensor Software Subscription
First year included with sensors purchased

3 Services

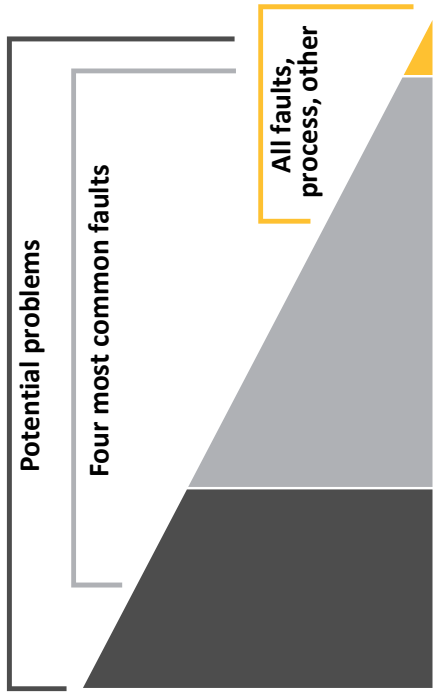
Onboarding (Required with Starter Kits)
Remote

Vibration Training (Optional)
2-day training
Product and vibration basics
Vibration data optimization

Determining the best tools for your needs

Classifying your rotating equipment into 3 major categories will help to determine asset criticality

3	All faults, process, other	PEOPLE: Expert analyst TOOLS: Advanced analytical tools ASSETS: Analyzing critical assets
2	Four most common faults	PEOPLE: Experienced technicians TOOLS: Fully-featured tools ASSETS: Evaluating critical data
1	Potential problems	PEOPLE: Entry-level technicians TOOLS: Simple screening tools ASSETS: Looking at all assets



Top 10% Production Critical

- Top Tier Machines
- Fewer in Number
- Main Turbine
- Paper Machine
- Machining Tools

Middle 60% Vital/Important

- Middle Tier Machines
- Hundreds/thousands
- Vital motors, pumps, fans, blowers, compressors, etc.

Bottom 30% Less Critical

- Bottom Tier Machines
- Hundreds/thousands
- Non-vital motors, pumps, fans, blowers, compressors, etc.

Use **asset criticality** to determine which specific machines that should be monitored. An assessment of your assets' criticality will help determine which machines should be monitored continuously with a wired or wireless sensor or with a handheld tool.

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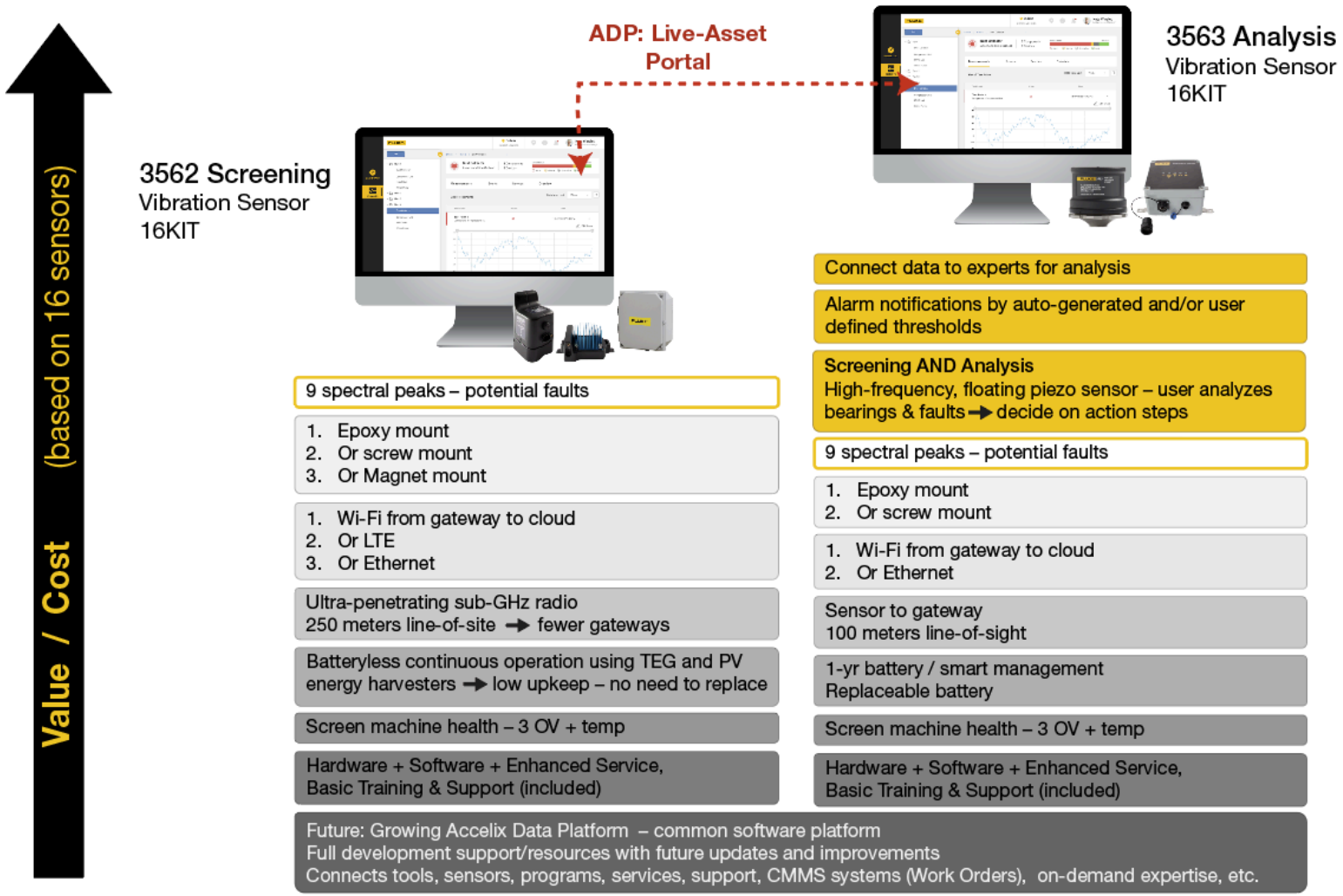
Fluke 3562 and 3563 Sensor systems

Compare value of vibration sensors



Given the broad range of assets in the average facility, most plants could support a mix of screening and analysis sensors

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What we solved for

Next generation in vibration condition monitoring as a system: Batteryless, intrinsically-safe, ultra long-range sensor to gateway communication, software analytics and scalable support

Jumpstart condition-based maintenance: Fit-for-purpose solution performs for all skill levels, improving sustainability and reducing risk and obstacles

Screen and alerts: Overall Vibration and 9 FFT peaks help determine machine health for quick action

What we solved for: Batteryless, intrinsically-safe, ultra long-range, user-friendly experience, wireless and scalable

To learn more, talk with our experts

TECHNICAL DATA

Fluke 3562 Screening Vibration Sensor

Wireless vibration sensors for machine health screening

Most machines in your plant are not production-critical

For maintenance leaders and teams seeking an accurate and easy way to maintain a condition monitoring system for Tier II-III assets, the Fluke 3562 Screening Vibration Sensor system delivers always-on screening of semi-critical and important machines.

Vibration is one of the earliest indicators of potential asset failure, but it can often be hard to measure regularly. Using wireless vibration sensors affixed to a machine, teams can screen asset data to determine whether they are functioning correctly or if an inspection is necessary. The sensors provide early warning of incipient failures via alarms and alert notifications to enable efficient deployment of team resources to address issues prior to plant downtime.

The Fluke 3562 sensors are powered by an energy harvester — either a thermoelectric (TEG) harvester or photovoltaic (PV) harvester, or both. The harvesters eliminate the need for batteries throughout the sensors' life. The system can also be attached to an asset in several ways via magnets, screws, and epoxy.

When affixed to a machine, each sensor sends data to the Fluke 3504 wireless Gateway. The gateway, in turn, transmits the data to the cloud via LTE (cellular), Ethernet or Wi-Fi. Vibration overall trends and FFT charts display the data, using user-generated parameters in the associated Live-Asset™ Portal software.

A complete solution that features not only hardware and software but also service, the Fluke 3562 system extends one-on-one onboarding help from Fluke Reliability engineers to your maintenance teams. Our experts will help guide you past obstacles to a successful start-up, implementation, and sustainment on your new condition-based maintenance (CBM) program.

'SET IT AND FORGET IT'

The Fluke 3562 Screening Vibration Sensor system combines a technologically advanced sensor and cloud software program to provide continuous, maintenance-free monitoring for motors and driven equipment. This low-maintenance solution requires minimal upkeep, enabling maintenance teams to "set it and forget it" and focus on other tasks.

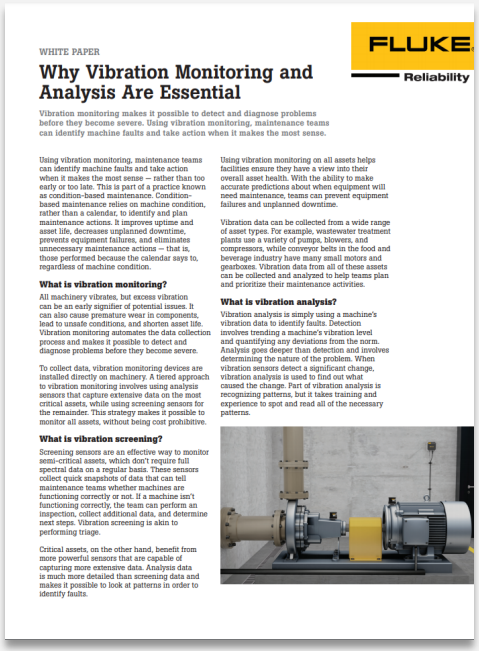
The system helps ensure four essential components of a reliability program:

1. Improved uptime with lower costs;
2. Data collected from a broad array of assets and machine types;
3. Integration of answers on a common platform shared with everyone on the team;
4. Support from condition-based maintenance (CBM) experts to help you start, implement, and maintain your new program.

Key benefits at a glance:

- **Long-range sensor-to-gateway communication**
  An ultra-penetrating sub-GHz radio signal allows the Fluke 3562 sensors — powered by the Everactive® Edge self-powered circuit and networking technology — to communicate with a gateway over extremely long distances, requiring fewer gateways throughout a facility.
- **Batteryless operation**
  The 3562 vibration sensors utilize power generated from a machine and its environment through the connected TEG harvester or PV harvester instead of batteries, allowing the system to deliver virtually continuous operation. This minimizes upkeep by eliminating the time and cost of battery replacement.
- **Powerful monitoring capabilities**
  The Live-Asset™ Portal software application enables users to trend both overall values and magnitudes of the nine highest spectral peaks, and temperature. With this capability, users can determine the machine's health and decide which actions should be taken.
- **Scalable triple-network solution**
  Extend always-on monitoring broadly across your plant or portfolio of facilities without having to make infrastructure changes by leveraging the ability to connect up to 1,000 Fluke 3562 sensors per gateway and the gateway's triple network connection capabilities — LTE, Wi-Fi, Ethernet, or a hybrid of all three.

Data sheet: Fluke 3562 Screening Vibration Sensor



WHITE PAPER

Why Vibration Monitoring and Analysis Are Essential

Vibration monitoring makes it possible to detect and diagnose problems before they become severe. Using vibration monitoring, maintenance teams can identify machine faults and take action when it makes the most sense.

Using vibration monitoring, maintenance teams can identify machine faults and take action when it makes the most sense — rather than too early or too late. This is part of a practice known as condition-based maintenance. Condition-based maintenance relies on machine condition, rather than a calendar, to identify and plan maintenance actions. It improves uptime and asset life, decreases unplanned downtime, prevents equipment failures, and eliminates unnecessary maintenance actions — that is, those performed because the calendar says to, regardless of machine condition.

What is vibration monitoring?

All machinery vibrates, but excess vibration can be an early signifier of potential issues. It can also cause premature wear in components, lead to unsafe conditions, and shorten asset life. Vibration monitoring automates the data collection process and makes it possible to detect and diagnose problems before they become severe.

To collect data, vibration monitoring devices are installed directly on machinery. A tiered approach to vibration monitoring involves using analysis sensors that capture extensive data on the most critical assets, while using screening sensors for the remainder. This strategy makes it possible to monitor all assets, without being cost prohibitive.

What is vibration screening?

Screening sensors are an effective way to monitor semi-critical assets, which don't require full spectral data on a regular basis. These sensors collect quick snapshots of data that can tell maintenance teams whether machines are functioning correctly or not. If a machine isn't functioning correctly, the team can perform an inspection, collect additional data, and determine next steps. Vibration screening is akin to performing triage.

Critical assets, on the other hand, benefit from more powerful sensors that are capable of capturing more extensive data. Analysis data is much more detailed than screening data and makes it possible to look at patterns in order to identify faults.

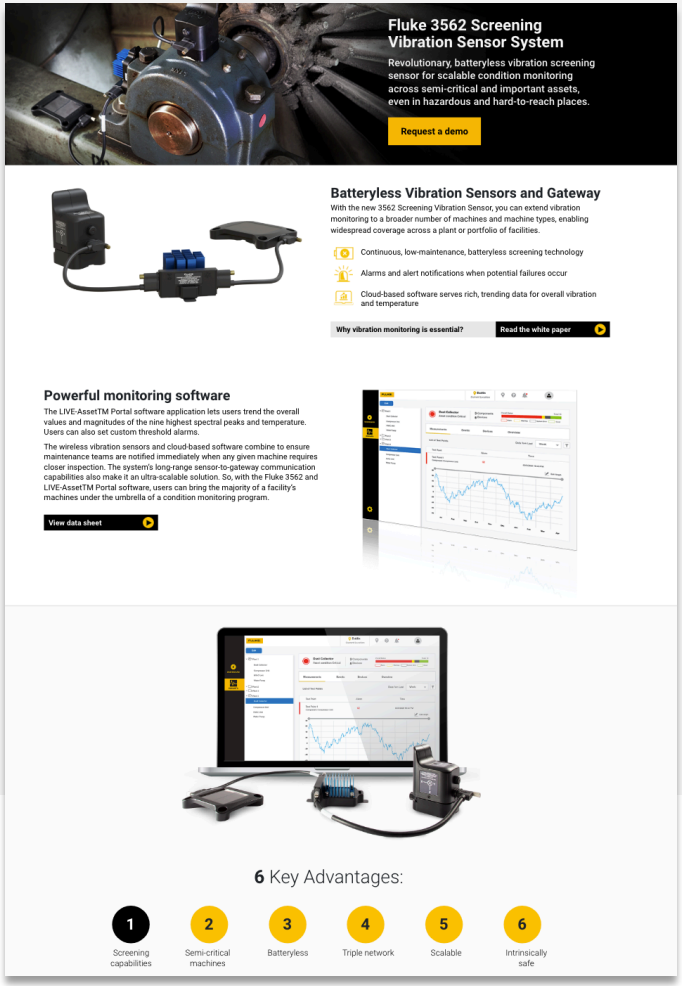
Using vibration monitoring on all assets helps facilities ensure they have a view into their overall asset health. With the ability to make accurate predictions about when equipment will need maintenance, teams can prevent equipment failures and unplanned downtime.

Vibration data can be collected from a wide range of asset types. For example, wastewater treatment plants use a variety of pumps, blowers, and compressors, while conveyor belts in the food and beverage industry have many small motors and gearboxes. Vibration data from all of these assets can be collected and analyzed to help teams plan and prioritize their maintenance activities.

What is vibration analysis?

Vibration analysis is simply using a machine's vibration data to identify faults. Detection involves trending a machine's vibration level and quantifying any deviations from the norm. Analysis goes deeper than detection and involves determining the nature of the problem. When vibration sensors detect a significant change, vibration analysis is used to find out what caused the change. Part of vibration analysis is recognizing patterns, but it takes training and experience to spot and read all of the necessary patterns.

Whitepaper: Why is vibration monitoring essential?



Fluke 3562 Screening Vibration Sensor System

Revolutionary, batteryless vibration screening sensor for scalable condition monitoring across semi-critical and important assets, even in hazardous and hard-to-reach places.

Request a demo

Batteryless Vibration Sensors and Gateway

With the new 3562 Screening Vibration Sensor, you can extend vibration monitoring to a broader number of machines and machine types, enabling widespread coverage across a plant or portfolio of facilities.

- Continuous, low-maintenance, batteryless screening technology
- Alarms and alert notifications when potential failures occur
- Cloud-based software serves rich, trending data for overall vibration and temperature

Why vibration monitoring is essential? Read the white paper

Powerful monitoring software

The LIVE-AssetTM Portal software application lets users trend the overall values and magnitudes of the nine highest spectral peaks and temperature. Users can also set custom threshold alarms.

The wireless vibration sensors and cloud-based software combine to ensure maintenance teams are notified immediately when any given machine requires closer inspection. The system's long-range sensor-to-gateway communication capabilities also make it an ultra-scalable solution. So, with the Fluke 3562 and LIVE-AssetTM Portal software, users can bring the majority of a facility's machines under the umbrella of a condition monitoring program.

View data sheet

6 Key Advantages:

1 Screening capabilities
2 Semi-critical machines
3 Batteryless
4 Triple network
5 Scalable
6 Intrinsically safe

Information page: Fluke 3562 Screening Vibration Sensor System

FlukeReliability.info/3562Sensors

Questions?

Your Experts

Samantha LeSesne
Sr. Product Manager,
Fluke Reliability

Tyler Evans
Director of Product Development,
Fluke Reliability

Mike Ciocys
Prüftechnik U.S Technical Service and
Support Manager, Fluke Reliability

For more information: FlukeReliability.info/3562Sensors

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THANK YOU!