

Engineering safer environments with remote sensors

Harnessing the power of IIoT improves workplace safety

Governments have passed laws holding businesses responsible for providing employees with a safe working environment. Workplace conditions that pose a risk to personnel should be avoided or training completed to minimize hazards. Thankfully, advances in technology are making it easier for facilities to improve worker safety by decreasing contact personnel have with running machinery or dangerous areas. Providing a safe environment ensures that businesses maintain regulatory compliance and improves morale.

What are the regulations

Multiple organizations (private and governmental) provide practices and procedures to promote workplace safety. While regulations are comprehensive and depend on government enforcement, many organizations help businesses comply with laws or guidelines:

- [The CDC's National Institute for Occupational Safety and Health Education \(NIOSH\)](#)
- [The Department of Labor's Occupational Safety and Health Administration \(OSHA\)](#)
- [The Department of Labor's Mine Safety and Health Administration \(MSHA\)](#)
- [International Organization for Standardization \(ISO\)](#)
- [American Society of Safety Professionals \(ASSP\)](#)
- [American National Standards Institute \(ANSI\)](#)
- [Health & Safety Institute \(HSI, USA\)](#)
- [Health & Safety Executive \(HSE, UK\)](#)

An Ohio Bureau of Worker's Compensation report (2011) determined that injury claims dropped 88% in organizations that implemented a worker safety program. According to OSHA, occupational injuries and illnesses cost businesses more than \$170 billion a year. Implementing a safety program can decrease these costs by 20-40% while also increasing uptime and boosting morale.

Using technology to improve safety

Hazard mitigation, or "Engineering Controls", are practices put in place that limit the interaction between workers and dangerous situations, whether the risks are chemical or physical in nature. The invention of PPE at the beginning of

the 20th century separated workers from chemicals while control rooms and robotics minimized personnel running individual pieces equipment. The expansion of industrial internet of things (IIoT) technologies brings with it new ways to accomplish worker safety initiatives.

Reducing risks via remote sensors

Deploying a system of interconnected, IIoT-enhanced devices into your safety program can reduce worker interaction with hazards. For those working with machinery, one of the most common interactions is routine measurement taking. Manual routes using handheld tools require personnel to be at assets, possibly within hazardous areas. Minimize contact by minimized by using remote sensors to take measurements.

Safety doesn't just mean intrinsically unsafe conditions, such as working with live equipment or climbing ladders. Breakdowns in equipment can spill chemicals, release foreign bodies into machinery lubricants, or cause worker injuries. Installing sensors allows teams to monitor asset status and make repairs based on condition, rather than a schedule. Assets maintained using condition-based practices are less likely to have unexpected downtime or cause unsafe environments.

According to OSHA, a 50-person plant increased productivity 13% and saved more than \$265,000 in faulty products by implementing a rigorous safety and health program. Not only will implementing remote monitors improve your safety program and cut costs, OSHA says that businesses with fewer injuries are often rated as "better places to work".

Do this...	Skip that...
Open an app on your smart device and view real-time measurements	Climb a ladder to take measurements from HVAC equipment
Log onto the cloud-based repository and find the measurements you're looking for	Suit up into PPE gear to avoid exposure to heat, noise, or other dangerous environments
Allow remote sensors to automatically upload measurements to the cloud	Rely on error-prone human transcription or data entry

Fluke sensors for a safer environment

Vibration screening

Fluke 3561 FC Vibration Sensors are Chapstick-sized monitoring devices that automatically upload vibration measurements and surface temperature readings to the cloud. Monitoring equipment for changes in vibration can alert reliability professionals to misalignment, looseness, bearing wear, and imbalance.

Power monitoring

The Fluke 3540 FC Three-Phase Power Monitor wirelessly measures power variables in equipment and uploads data to the cloud. Current, voltage, frequency, and energy consumption change when equipment experiences load fluctuations. By screening asset performance, reliability professionals can detect premature wear in assets.

Data from the 3561 FC and 3540 FC are sent to Fluke Connect™ software.

Fluke Connect software

Fluke Connect software aggregates, stores, and organizes data, assets, and work orders. Fluke Connect provides real-time and historical data trending, graphing, time-boxing, and reporting. Keep your workforce mobile by accessing Fluke Connect from smart devices wherever there's an internet connection.

Fluke Connect2Assets & Connect2Mobile

Fluke Connect2Assets and Connect2Mobile are essential for facilities with existing SCADA, CMMS, PLC, or other data systems. The open architecture of Connect2Assets allows software to send and receive data from multiple industrial sources. Connect2Mobile puts all that information right in the palm of technicians' hands via smart devices.

If you'd like to speak with a Fluke representative about how remote sensors can improve safety in your facility, please head to www.fluke.com.

- Occupational Safety and Health Administration (OSHA). (2016, October). Recommended Practices for Safety and Health Programs. Retrieved January 20, 2019, from https://www.osha.gov/shpguidelines/docs/8524_OSHA_Construction_Guidelines_R4.pdf



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