COMPREHENSIVE HOMOGENIZER HEALTH

Food & Beverage

COMPREHENSIVE HOMOGENIZER HEALTH

VIBRATION SENSOR

- Sentry
  - Site visits: how often?
  - In-person training
- Academy
- Customer training/handbooks
- Asset playbook

PRESSURE SENSOR

- Sentry
  - Site visits: how often?
  - In-person training
- Academy
- Customer training/handbooks
- Asset playbook

FLOW SENSOR

- Sentry
  - Site visits: how often?
  - In-person training
- Academy
- Customer training/handbooks
- Asset playbook

ULTRA-SONIC SENSOR

- Sentry
  - Site visits: how often?
  - In-person training
- Academy
- Customer training/handbooks
- Asset playbook

SMARTdiagnostics®

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WIRELESS VIBRATION MONITORING

With KCF, continuous vibration monitoring is easy and effective. Our V3 sensors come equipped with 20-lb magnets or studs for easy mounting, our DART wireless protocol enables sampling intervals of 10 minutes or less, and our SMARTdiagnostics® platform makes it easy to analyze data.

THE SOLUTION:

- ✓ Deploy V3 sensors on critical assets.
- ✓ Use SMARTdiagnostics® to analyze data, or let KCF's expert team of Sentry® analysts do it for you.

KCF Wireless V3 Vibration Sensor

KCF Base Station

THE PROOF:

SMARTdiagnostics®

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WIRED VIBRATION MONITORING

KCF's wired vibration monitoring has many advantages over wireless monitoring. Up to 7 sensors can be connected to KCF's IoT Hub, which features synchronous or even triggered data collection, enabling phase analysis. The IP69-rated, low-profile sensors are ideal for high-temperature, submerged, or shielded environments or where LOTO requirements or guarding make other forms of monitoring impossible.

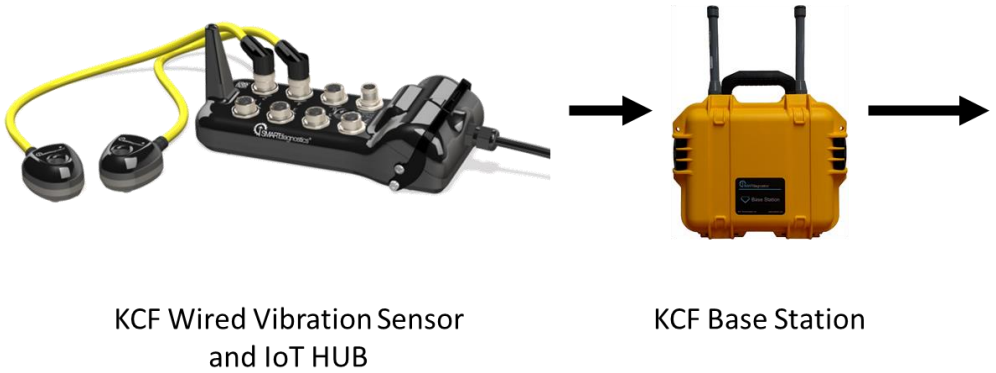
THE SOLUTION:

Sensors:

- ✓ fit under guarding
- ✓ are safe up to 257 °F
- ✓ can be submerged

Additional benefits:

- ✓ No battery changes
- ✓ Triggered data
- ✓ Synchronous data

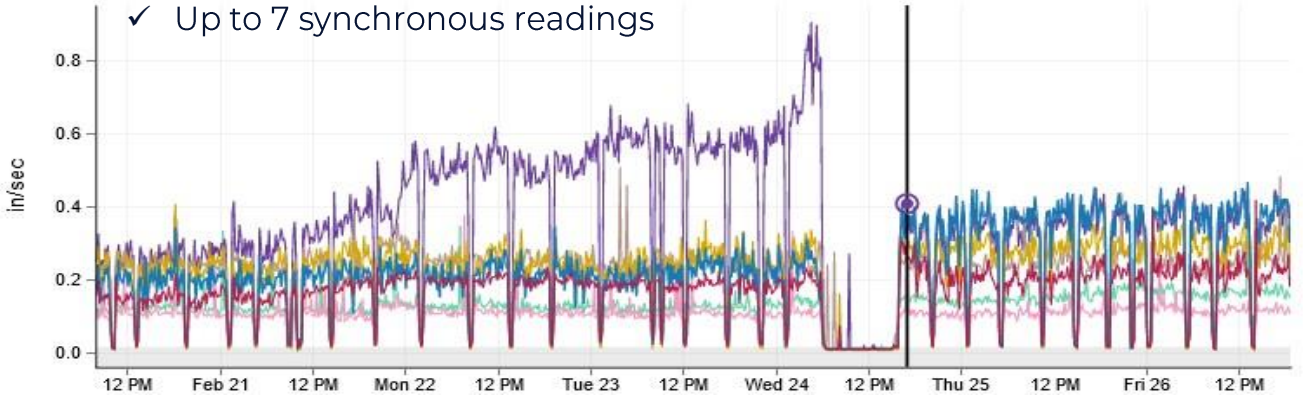


KCF Wired Vibration Sensor and IoT HUB

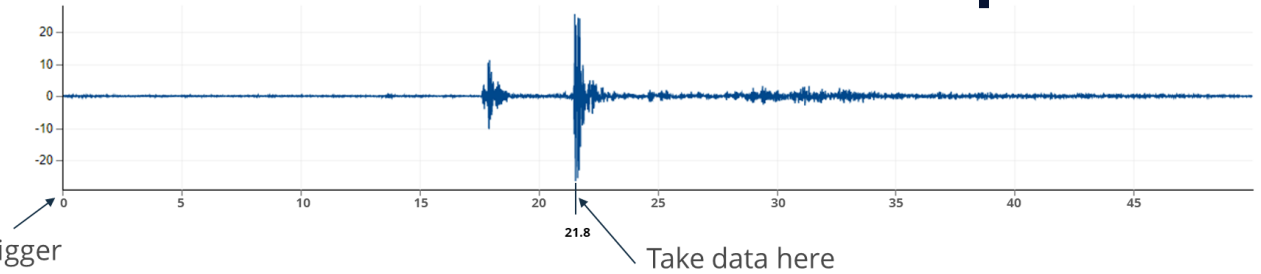
KCF Base Station

THE PROOF:

✓ Up to 7 synchronous readings



✓ Data collected on custom time delay from trigger



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IoT HUB MONITORING

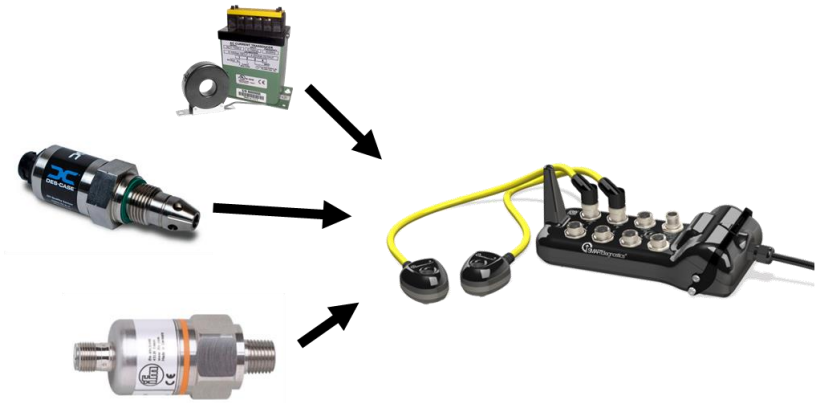
KCF's IoT HUB takes remote monitoring to many new levels. The IoT Hub features synchronous or even triggered data collection across up to 7 sensors, enabling phase analysis. The HUB is ideal for high-temperature or submerged environments or where LOTO requirements or guarding make other forms of monitoring impossible. It can also support and power any transducer with a 4-20 mA or 0-10 V output or receive PLC outputs.

THE SOLUTION:

- ✓ Supports third-party sensors
- ✓ Powers transducers
- ✓ Triggered data
- ✓ Synchronous data

Vibration sensors:

- ✓ fit under guarding
- ✓ are safe up to 257 °F
- ✓ can be submerged

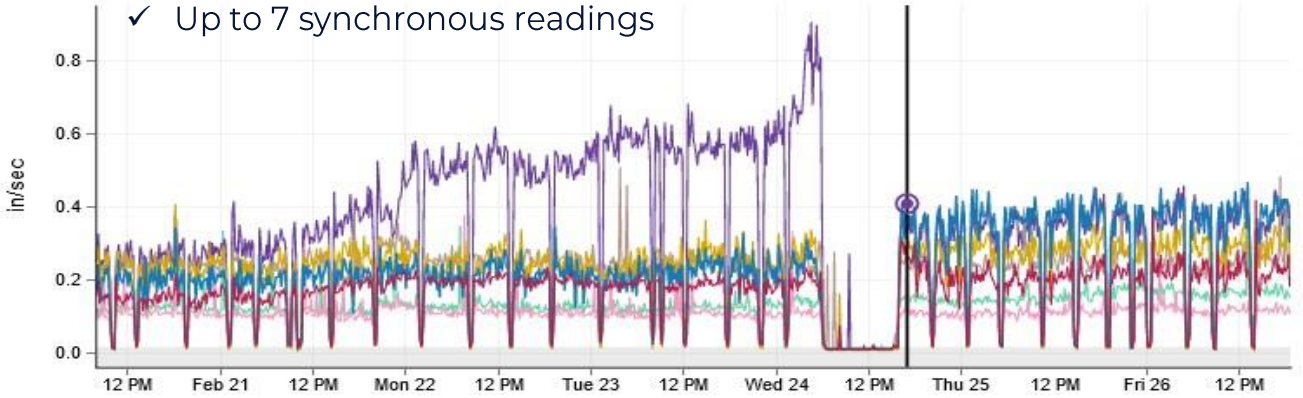


KCF/third-party transducer or PLC connection

KCF IoT Hub

THE PROOF:

✓ Up to 7 synchronous readings



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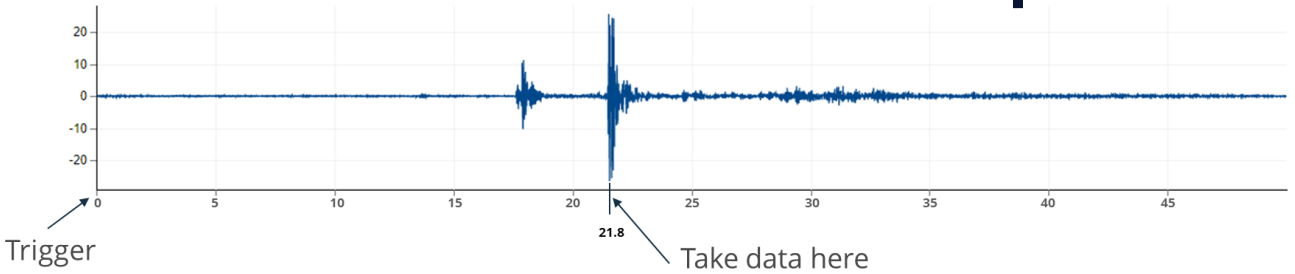

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CURRENT AND VOLTAGE INPUT NODES

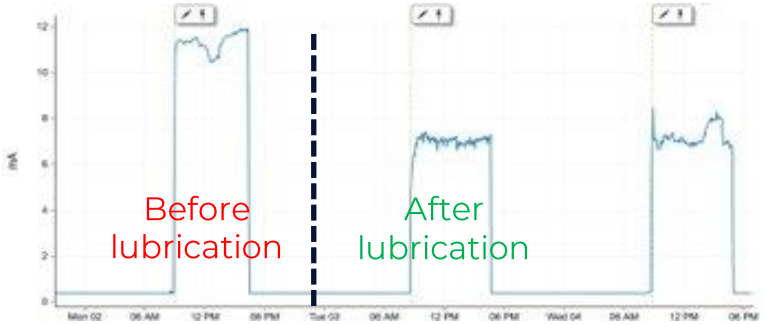
KCF's Current and Voltage Input Nodes (CIN/VINs) are data collection devices that combine with virtually any third-party transducer or PLC to wirelessly transmit data to the cloud for further analysis in KCF's SMARTdiagnostics® platform. CIN/VINs unlock the potential for continuous remote monitoring of anything for which a compatible transducer exists: Run Speed, Absolute or Differential Pressure, RMS Current, Oil Quality, Liquid Level, Temperature, etc.

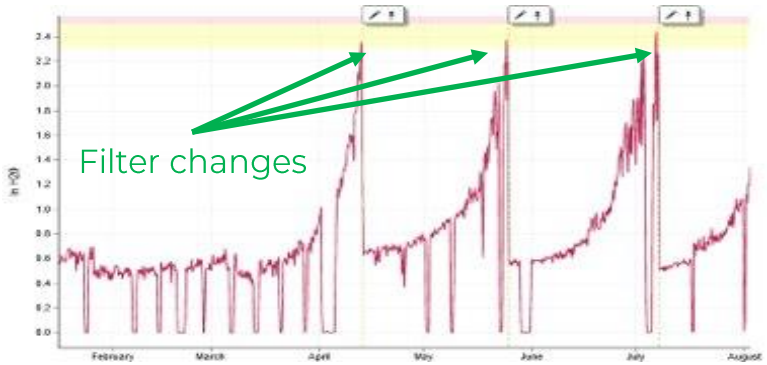
THE SOLUTION:

- ✓ Connects to virtually any 4-20 mA or 0-10 V transducer or PLC
- ✓ Wirelessly transmits continuous data into SMARTdiagnostics®

THE PROOF:

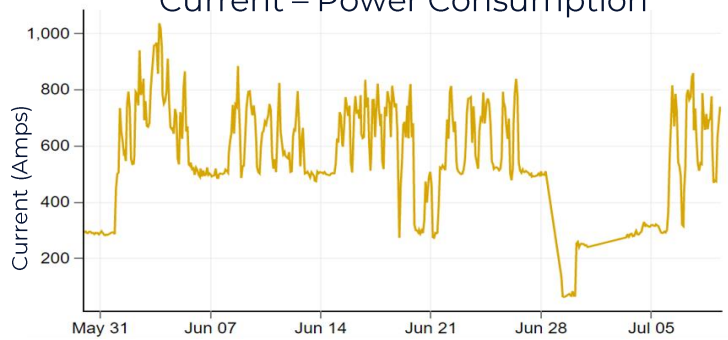
Ultrasound – Slow-speed Bearing Vibration

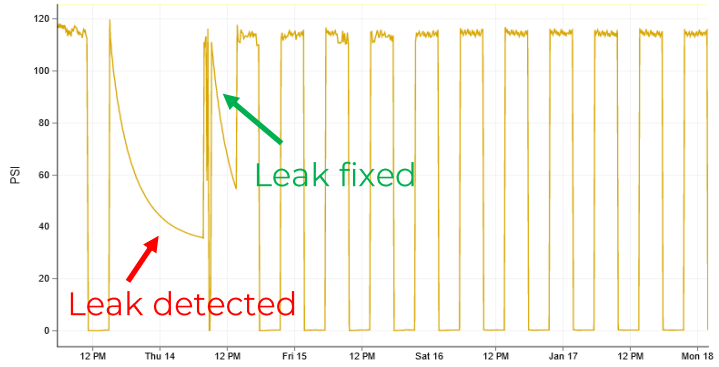




Differential Pressure – Filter Clogging

Current – Power Consumption





Absolute Pressure – Leak Detection

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RMS CURRENT

Current draw is directly linked to machine performance. RMS Current monitoring provides a continuous measure of energy consumption and efficiency. Fluctuations in current draw could be indicative of process problems, and low overall efficiency could be indicative of internal friction or damage.

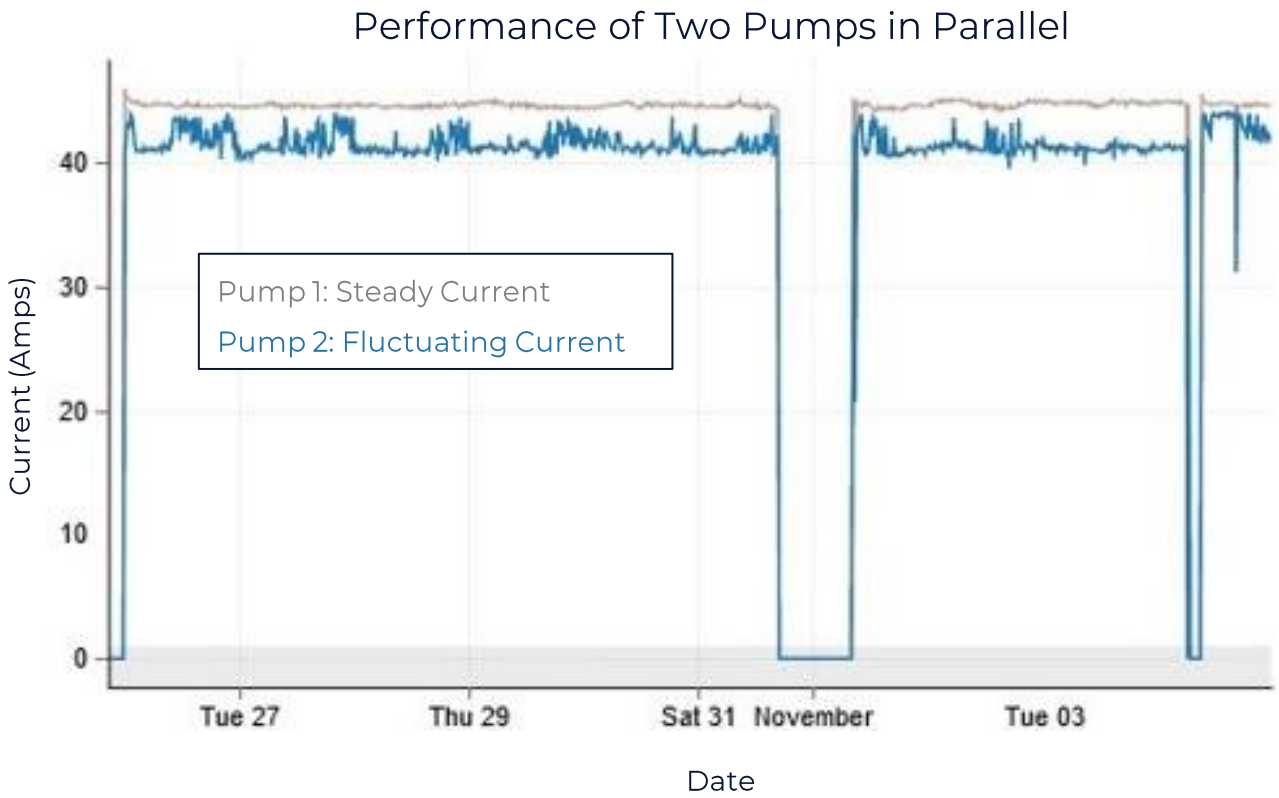
THE SOLUTION:

- ✓ Track power consumption of entire plant or individual assets
- ✓ Detect fluctuations and inefficiencies in machine performance
- ✓ Determine how close to Best Efficiency Point pumps and fans run
- ✓ Detect lubrication system failures in bearings and chains
- ✓ Detect filter clogging in pump and fan systems
- ✓ Detect dulling of cutting heads and blades

RMS Current sensor and KCF VIN or IoT Hub

KCF Base Station

THE PROOF:



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ABSOLUTE PRESSURE MONITORING

Absolute pressure monitoring is critical in pump, fan, and compressor systems. It can detect system inefficiencies as well as identify valve and seal failures, tank leaks, and low and high tank levels. KCF's Current Input Node (CIN), Voltage Input Node (VIN), and Wired Analog Adapter with the IoT HUB can accommodate third-party absolute pressure transducers across a wide variety of pressure ranges.

THE SOLUTION:

- ✓ Select a pressure transducer with the desired range and either a 4-20 mA or 0-10 V output.
- ✓ Couple the transducer with a KCF CIN/VIN or IoT HUB to get continuous data trending in SmartDiagnostics.

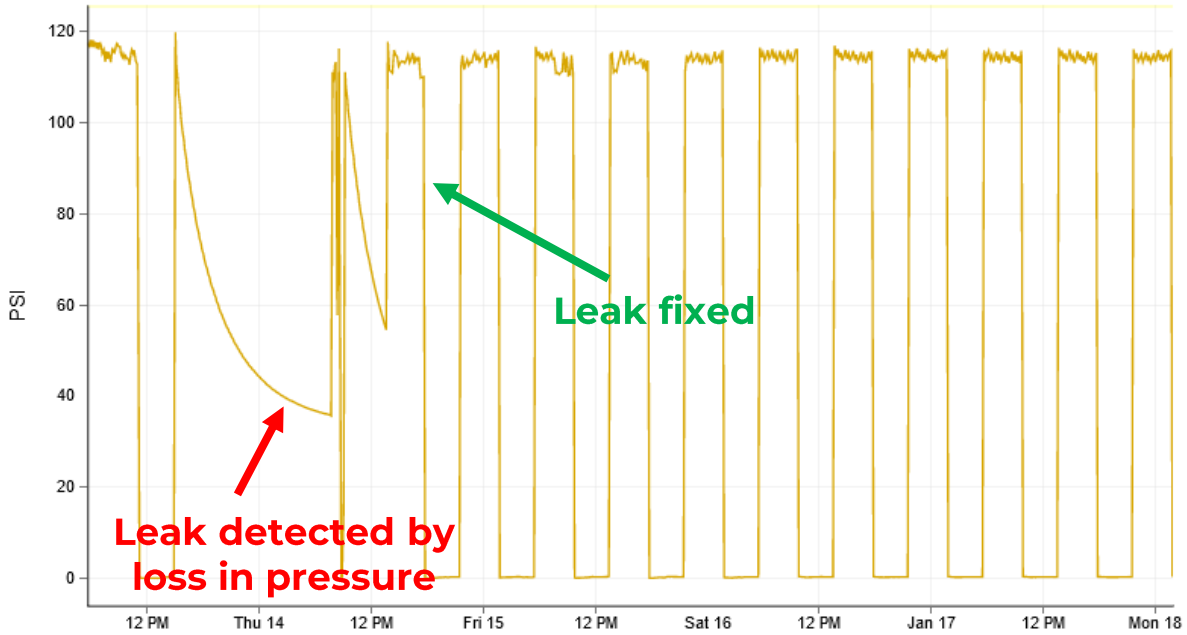
Absolute Pressure transducer and KCF CIN/VIN or IoT Hub

KCF Base Station

Data in SmartDiagnostics

THE PROOF:

- ✓ Leak detected and fixed allows a compressor to resume normal cycling.



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DIFFERENTIAL PRESSURE MONITORING

Differential pressure monitoring is critical for measuring increases across pumps, fans, and compressors as well as drops across filters, valves, and dampers. It offers greater precision than absolute pressure monitoring and is a great way to detect and address inefficiencies, saving money and improving reliability. The insights it provides can eliminate routes and ill-timed maintenance by alerting plant personnel whenever a concern arises.

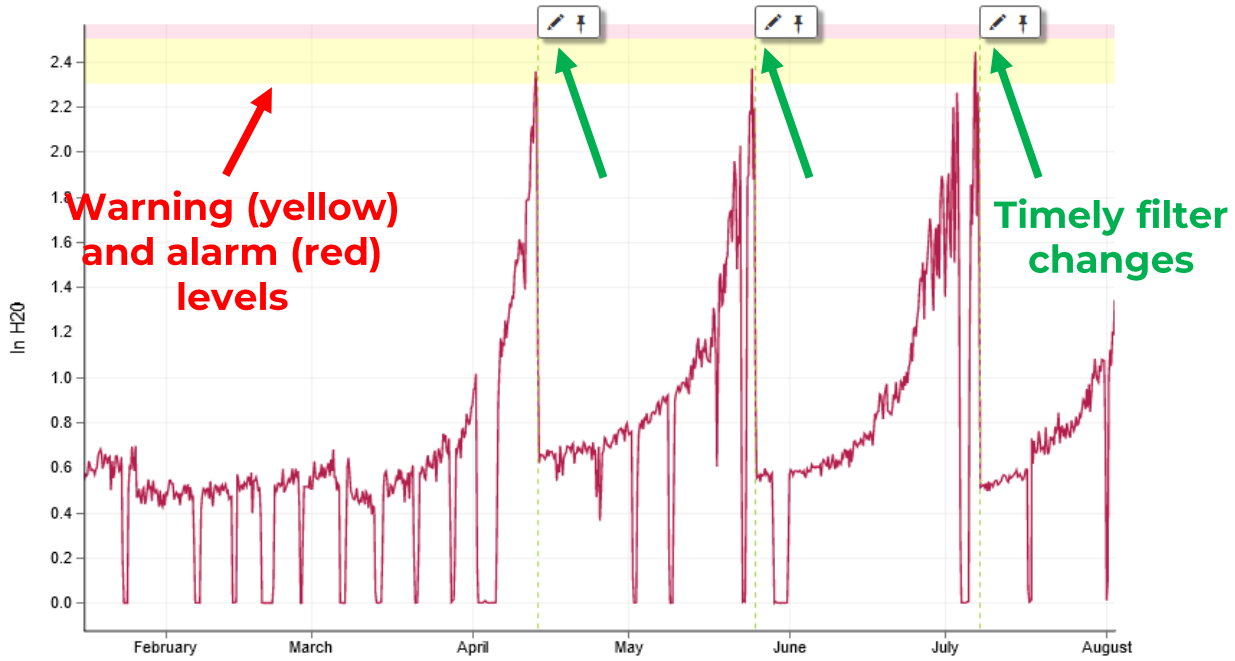
THE SOLUTION:

- ✓ Select a differential pressure transducer with the desired range and either a 4-20 mA or 0-10 V output.
- ✓ Couple the transducer with a KCF CIN/VIN or IoT HUB to get continuous data trending in SmartDiagnostics.

Absolute Pressure transducer and KCF CIN/VIN or IoT Hub | KCF Base Station | Data in SmartDiagnostics

THE PROOF:

- ✓ Spikes in pressure loss across a filter allows for timely changes.



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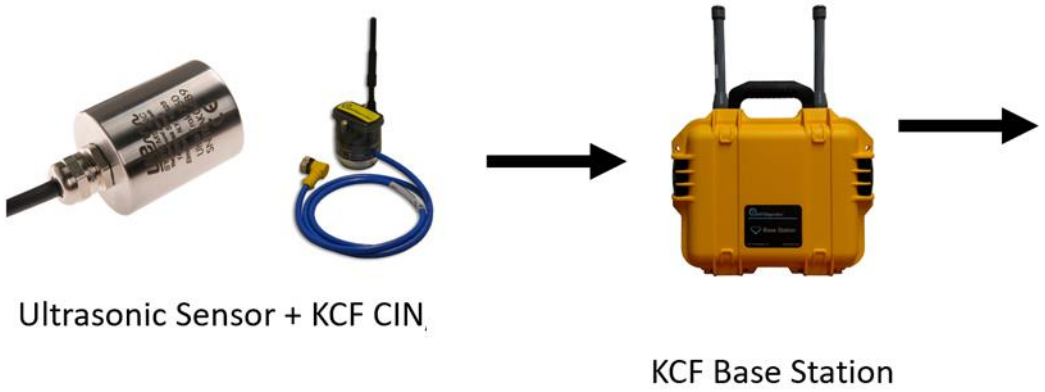
ULTRASONIC DETECTION

KCF's ultrasound kit acts like a microphone for high frequency sound. It is sensitive to acoustic frequencies beyond the range of human hearing, approximately 40 kHz. These frequencies are associated with frictional sliding and can detect steam trap failures, leakage, early-stage bearing failures, low-speed bearing failures, and lubrication problems long before they are detectable by standard vibration sensors in the non-ultrasonic range.

THE SOLUTION:

- ✓ The ultrasound probe can be mounted to an asset using a magnetic or epoxy mount
- ✓ The ultrasound kit wirelessly transmits data to a KCF base station via a KCF Current Input Node (CIN).

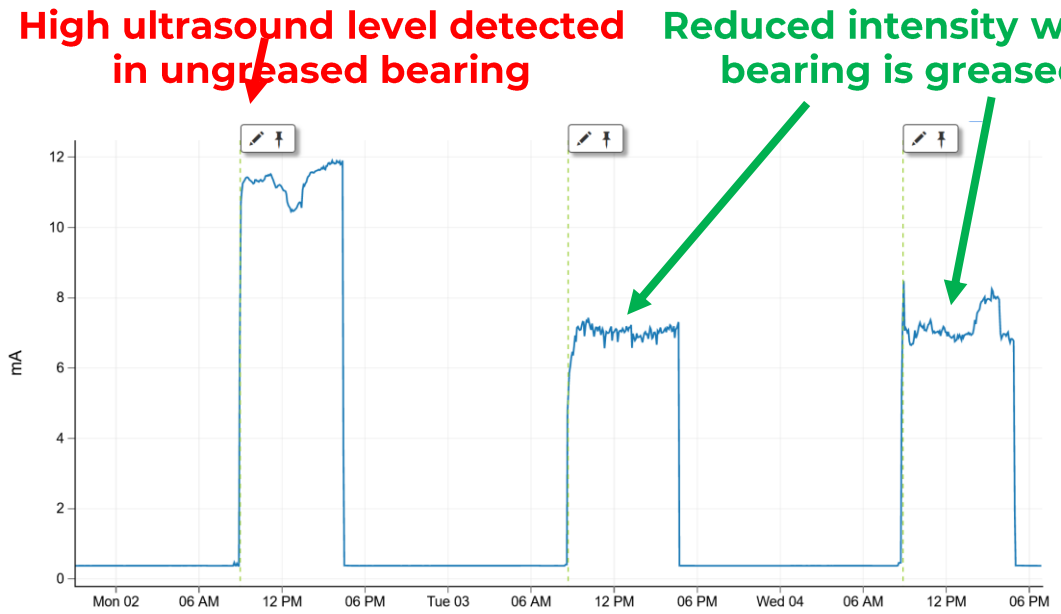


Ultrasonic Sensor + KCF CIN

KCF Base Station

THE PROOF:

- ✓ High-intensity vibrations detected in bearings with insufficient grease

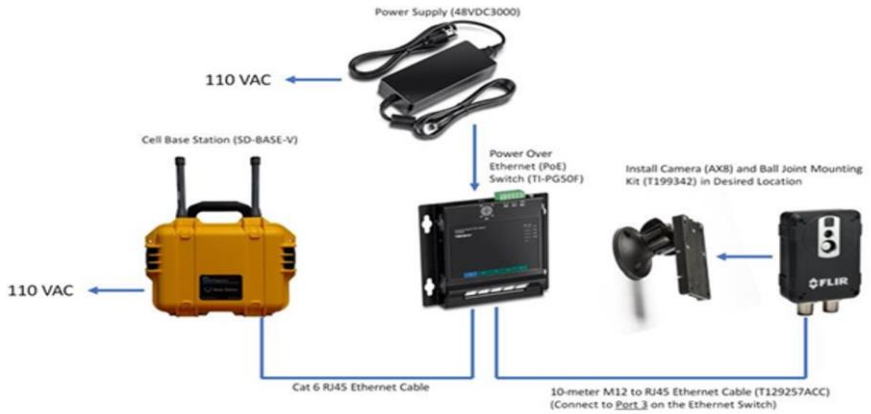


THERMAL IMAGING

Thermal cameras are special cameras that take pictures of heat rather than light--making it ideal for detecting fault conditions whose first indicator is a change in temperature. Other examples of where thermal imaging can be used include monitoring electrical switchgears for safety purposes, leak detection of expensive or hazardous fluids, and pump/compressor performance monitoring.

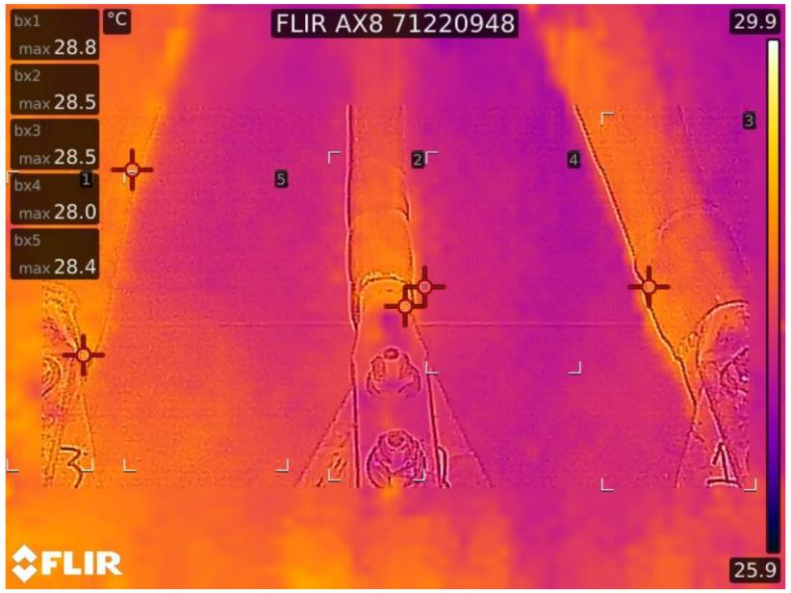
THE SOLUTION:

- ✓ Install a thermal camera within range of an asset, system or system component to monitor.
- ✓ Couple the camera and ethernet with a KCF Base Station to get continuous data trending in SMARTdiagnostics®.
- ✓ Configure alarms and notifications of temperature changes.



THE PROOF:

- ✓ Thermal imaging data and trends in SMARTdiagnostics® can be used to pinpoint regions of interest.



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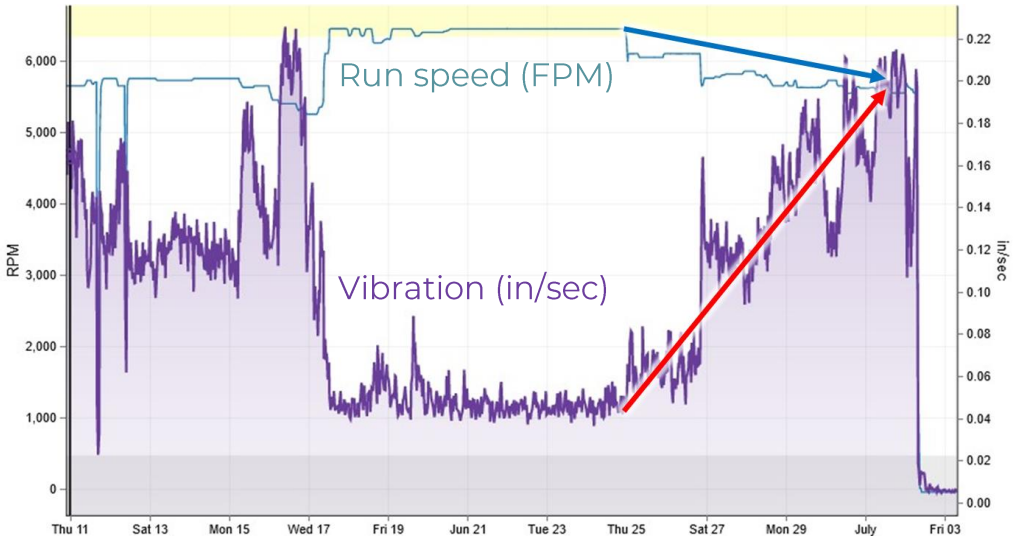
RUN-SPEED CORRELATION

Run-speed Correlation is used to tell you which speeds are best and worst for your machine. Vibration severity increases the faster a machine runs, right? Not necessarily. Natural resonances can cause machines to vibrate badly at any number of speeds. KCF's aggressive sampling intervals, coupled with speed data obtained from a PLC or tachometer, can be used to show precisely how run-speed affects your machine both as a whole and at specific monitoring points, allowing you to minimize damage while maximizing throughput.

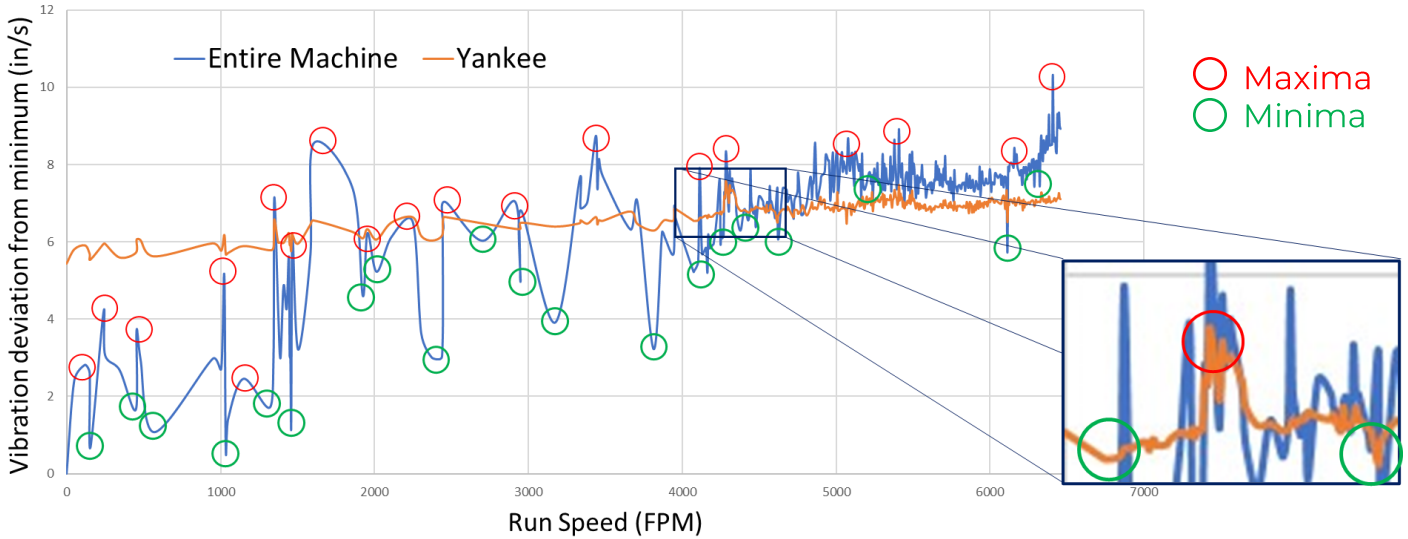
THE PROOF:

✓ Vibration may vary either directly with speed or inversely. Here, a 15% speed reduction increases vibration by 300%!



THE SOLUTION:

✓ Plots of speed vs. vibration show clear mins and maxes throughout the spectrum of operating speeds, both in the machine as a whole and in specific components.



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