

Wilcoxon product line overview

May 2011

Value proposition – Total cost of ownership

Wilcoxon Sensing Technologies products offer total lower cost of ownership

- World-class products and services
- 98% on-time delivery and the shortest lead times
- Industry-leading product quality and reliability
- Competitive pricing
- Technology to enable your success



Brief history - learn more online, wilcoxon.com

Wilcoxon Sensing Technologies was founded in 1960 by engineers from the David Taylor Naval Research Lab to make products for the US Navy

- Began manufacturing sensors for condition based maintenance in the 1980s
- Established an advanced technology R&D group, Wilcoxon Labs in 1999
- Acquired by international aerospace defense and electronics group Meggitt PLC in 2004
- Changed name to Meggitt (Maryland) Inc. in 2011
- June 16, 2017 acquired by Amphenol Corporation
- August 2017 changed name to Wilcoxon Sensing Technologies

Brief history – learn more online, wilcoxon.com

For decades, Wilcoxon Sensing Technologies has manufactured a line of world-class industrial accelerometers for vibration monitoring applications to customers worldwide

- Located in Germantown, MD (Washington, DC metro area)
 - 29,000 square feet (2,700 square meters)
 - Engineering, manufacturing, sales & business operations staff
 - NIST-traceable calibration and testing
 - ISO 9001:2000 certified, continuous registrations since 1997
 - ISO 14001:2004 certification since 2009
 - OpEx continuous improvement
 - Kanbans for production control and inventory management
 - Compliant with US export regulations, ESD, Low-voltage, WEEE, EMC, ATEX and RoHS directives
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Off the shelf and custom solutions – learn more online, wilcoxon.com

- Responsive and dedicated Customer service representatives
 - Inquiries answered in 2 days or less
 - Non-standard product quotes take less than 4 business days
 - Over 50% shipments have a lead time of 1 week or less and 80% of orders ship in under 2 weeks
- Unrivalled reliability (MTBF of up to 25 years)
- Wilcoxon sensors set the industry standard for quality vibration sensors
- Strategic supplier to many major system OEMs and total solutions providers, experienced in private labeling, special orders and custom sensor designs for a wide range of applications
- We have the products, technological expertise and resources to enable our customers' continued success

Industry standard, global reputation – learn more online, wilcoxon.com

- Wilcoxon sensors are designed for reliable measurements in even the harshest plant environment. Top exit, side exit, integral cable, explosion proof housings and intrinsically safe vibration sensors are available. CE, FM, CSA, SIMTARS, and ATEX certification are available on many models. We perform helium leak tests to ensure a true hermetic seal, providing excellent MTBF – up to 25 years on the most popular sensors. The quality of Wilcoxon sensors is the standard by which all other vibration sensors are measured.



Equipment health monitoring industries – learn more online, wilcoxon.com

Wilcoxon Sensing Technologies industrial vibration sensors and accessories are vital to condition based maintenance and process control monitoring in many industries including these examples:

- Pulp and paper
 - Machine tool
 - Nuclear
 - Power generation
 - Petrochemical
 - Food and beverage
 - Pharmaceuticals
 - Rail
 - Wind power
 - Steel making
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Defense and maritime – learn more online, wilcoxon.com

- Submarines
 - Hull monitoring
 - Towed arrays
- Sonobuoys
- Shipboard sensors
 - Equipment health monitoring
- Helicopters
 - HUMS and AVM systems
- Homeland security



Select customers – learn more online, wilcoxon.com



Vibration analysis – learn more online, wilcoxon.com

Reliable vibration sensors and accessories ensure accurate measurements

- Dynamic piezoelectric vibration sensors for equipment health monitoring and test and measurement applications
- Consistent product performance from piezoelectric crystal stabilization, which ensures that accelerometer sensitivity doesn't drift over time - less than 1% sensitivity drift over 10 years
- Contamination-free sensors achieved by completing final weld in an inert atmosphere inside a dry-box
- True hermetic seal, backed by helium leak testing of sensors to 1×10^{-8} cc He/sec, compared to competitors' low-technology bubble tests that allow 10,000 times more leakage

General purpose accelerometers – learn more online, wilcoxon.com

- 100 mV/g output accelerometers take vibration measurements across a broad frequency range for monitoring most industrial machinery
- Predictive maintenance systems for all rotating equipment
 - Motors, fans and pumps
 - Moderate speed gearboxes
 - Machine tool spindles
 - Paper machine rolls
 - Compressors



High performance accelerometers – learn more online, wilcoxon.com

- High temperature vibration sensors
 - 150°C for IEPE-type accelerometers
 - Up to 260°C for charge output sensors
- Low frequency accelerometers to 0.1 Hz, even lower for seismic sensors
 - Low speed applications like wind turbines and cooling towers
- High frequency accelerometers to 29 kHz
 - High frequency gear mesh
 - Small bearings
- Triaxial accelerometers
 - Multi-directional data for additional analysis
 - Faster data collection



Specialty sensors – learn more online, wilcoxon.com

- Dual output sensors measure vibration and temperature
- Piezovelocity transducers output a vibration signal relative to velocity
 - Paper machines and pumps
- Seismic accelerometers measure vibration to the sub micro-g level, as low as 0.05 Hz
 - Control delicate processes such as integrated circuit manufacturing
 - Underwater pumps
- Zerkometer® mounts where zerk fittings exist to grease bearings



Simplified 24/7 condition based maintenance – learn more online, wilcoxon.com

4-20 mA sensors and transmitters

Many facilities want to monitor machinery vibration, but cannot invest in an “expensive” vibration program or hire trained vibration analysis professionals. Wilcoxon 4-20 mA products keep track of vibration levels so that maintenance professionals can take action on machines based on simplified, continuous vibration data.

- Cost effective compared to traditional vibration monitoring programs
- Output signals fed to a process control computer (PLC/DCS/SCADA) or directly to a vibration alarm for 24/7 continuous monitoring and alarming
- Simplified 4-20 mA data is easily understood, no trained analysts needed
- ISO 10816 offers guidance on vibration limits for rotating machinery

4-20 mA vibration sensors - learn more online, wilcoxon.com

- An accelerometer and signal conditioner in one transducer
- Output in terms of acceleration, velocity or displacement
- Overall vibration level calculated by rms, peak, true peak or true peak-to-peak detection
- Loop powered
- Shaft speeds from 60 RPM (1 Hz) to 120,000 RPM (2,000 Hz)
- Top exit, side exit, integral cable, intrinsically safe and explosion proof models available
- New and improved, low cost, high temp versions



Vibration transmitter - learn more online, wilcoxon.com

- Signal conditioning modules that interface with traditional accelerometers
- 4-20 mA data output
- Dynamic data output on BNC front connector for more extensive vibration analysis
- Over 30,000 configurations available. Custom order your iT Transmitter
 - Acceleration or velocity input
 - Acceleration, velocity or displacement output
 - English or metric units
 - Overall vibration level calculated by rms or peak, or our exclusive true peak or true peak-to-peak detection
 - Selectable full scale
 - 10 mV, 100 mV or 500 mV sensor input
 - Choose high-pass and low-pass filters from over 20 possibilities, also field adjustable



Vibration alarm - learn more online, wilcoxon.com

- Relay alarm accepts 4-20 mA signal from the iT Transmitter or any loop powered sensor and alarms when user-defined set points are exceeded
- Interfaces with iT Transmitter modules for 4-20 mA signal and power, without wiring
- Compatible with 4-20 mA signal from a variety of sensors, including: vibration, temperature, pressure, level, flow, force, and speed sensors
- Three alarm relays
- User-programmable settings
- Accurate to 1%



Vibration sensor network accessories - learn more online, wilcoxon.com

Wilcoxon line includes everything to complete the sensor network

- Custom and off-the-shelf cable assemblies
- MaxFlex® cable assemblies for data collectors
- Mounting accessories
- Enclosures
- Portable vibration meter

Custom and off-the-shelf cable assemblies - learn more online, wilcoxon.com

Wilcoxon cables are built to your specifications and exacting our standards

- Select your connector
- Select your cable from extensive cable protection and environmental resistance options
 - Jacket options including Teflon® and spiral wrapped cable armor
 - Cables rated to 260° C
- Custom cable orders are usually built in less than a week
- Many standard cables ship the same day



MaxFlex cables for data collection - learn more online, wilcoxon.com

Optional safety connector breaks away

- Compatible with most data collectors including those made by SKF, Emerson (CSI), and Rockwell (Entek)
- Designed to exceed the harsh environmental requirements of industrial applications. MaxFlex® cables have reinforced cable joints at the sensor connector end - the most common place that similar cables fail - to serve the needs of field data acquisition. They are rugged, reliable and resistant to abuse.
- Why MaxFlex® is the best
 - Extended life
 - Reinforced for strength and maximum flexibility
 - Pull tested to over 100 pounds
 - Excellent EMI/RFI shielding



Sensor mounting accessories- learn more online, wilcoxon.com

When using piezoelectric sensors to measure vibration, the sensor must directly contact the machine surface. The more intimate and stiff the contact between sensor and the machine, the better the ability to couple and measure high frequency signals.

- Wilcoxon product line offers mounting options to fit virtually every machine and application
 - Flat and 2-pole magnets
 - Mounting studs
 - Isolator pads
 - Cementing pads



Enclosures, switch and termination boxes - learn more online, wilcoxon.com


Junction boxes simplify taking route data by making multiple channels of vibration output available at one source for the fastest walk around data collection

- Terminal boxes
- Junction boxes
- Multi-channel junction boxes
- Expandable switchable junction boxes



Wilcoxon Sensing Technologies

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