

TECAT Wireless OEM Telemetry Platform

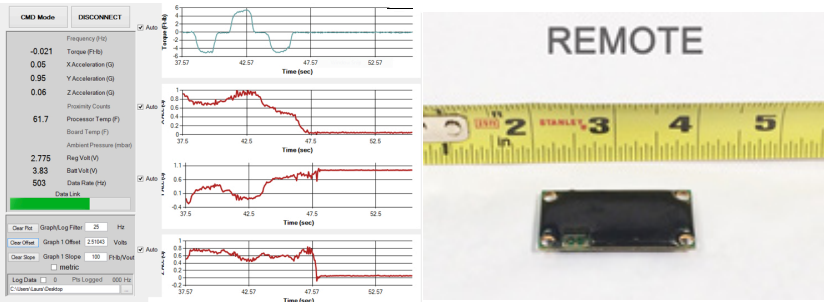
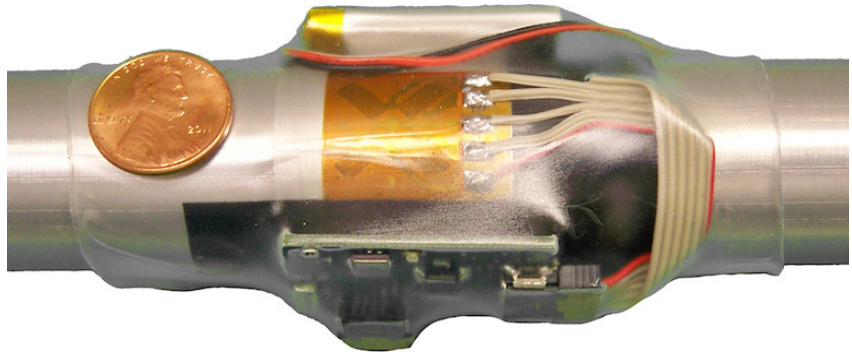
enables IIoT applications



WIRELESS WITH AN EDGE

TECAT Wireless OEM Telemetry System

A field proven sensor fusion platform suited for diverse applications



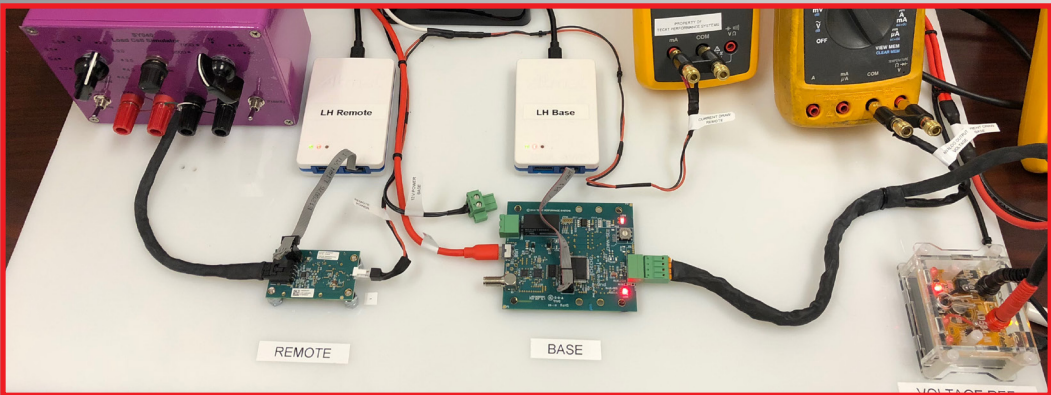
TECAT's OEM Telemetry System is a sensor fusion platform designed from the ground up for integration into OEM products and is based on TECAT's proven WISER products. This system, consisting of a remote unit (the sensor fusion board), base unit (for output from the OEM product), and configuration software allowing the OEM to configure, calibrate, and display data from the system.

SYSTEM IS CAPABLE OF MEASURING A VARIETY OF DATA INDIVIDUALLY OR COMBINED

- Strain (torque, tension/compression, bending...)
- Temperature
- Pressure (liquid and gas)
- Distance/displacement
- Magnetic field
- And many more through a variety of available MEMS sensors capable of being added to the remote unit

SYSTEM DOES THIS IN A SOPHISTICATED FASHION ALLOWING FOR

- Over 1 year battery life with a single Lithium D cell or many years in select applications.
- Capable of achieving Zone 0 intrinsically safe ATEX or similar certification.
 - Variable sampling rates up to 4kHz real time, configurable.
 - Transmission distances exceeding a mile.
 - Small size for ease of integration into OEM products.
- Industry leading accuracy, resolution, noise, and drift specifications.
- All with a license free 2.4GHz radio technology for error free communications.



WISER Model 4000

Wireless Data Sensor Platform

Power	
Power Supply Remote Unit	3V DC to 6V DC, absolute maximum of 6V DC
Power Supply Base Unit	5V DC unregulated
DC Sensor Driver	10 mA absolute maximum
Lithium Battery	Standard: 3.7V Single Cell Li-Poly (400mAh) Option 1: 3.7V Single Cell Li-Poly (850mAh) Option 2: 3.7V Single Cell Li-Poly (1000mAh)
Power Consumption	WISER remote with 350 Ω strain gauge- active gauge: 3.8mA@1kHz, inactive: 25 μA (note: data current consumption varies with over-sampling and data packet size)
Physical - Remote Unit	
Dimensions	36 mm x 23 mm x 4 mm (circuit board w/o mounting tabs and connectors) 45 mm x 23 mm x 6 mm (circuit board w/mounting tabs)
Weight	6.5 g (remote transceiver with epoxy coating) 9.0 g (400 mAh li-poly battery)
Communications	
Radio Frequency Transceiver Carrier	2.45 GHz direct sequence spread spectrum, license free worldwide (2.405 to 2.480 GHz) - 16 channels, radiated power @ 3.5dBm (2.2mW)
RF Data Packet Standard	IEEE 802.15.4 capable, open communication architecture
Range for RF Link	30m (100ft) line-of-sight
Base to Host Transfer	COMM Port via USB – up to 230400 baud; 8 data bits; no parity; 1 stop bit – open
Base Unit	USB (mounts as COM port), 0-5V Analog Output Channels (2.5V nominal centered)
Environmental	
Remote Operating Temp	-40°C to +120°C
Electrical	
Sensor Input	Full Wheatstone bridge gauge 350Ω resistance or higher
Accelerometer Range	Standard: none Option 1: +/- 16G Option 2: +/- 400G
Measurement Accuracy	±0.1% full scale typical (digital out)
DC Bridge Excitation	Vg = +2.048V DC at 10 mA max (pulsed to sensors to conserve power)
Shunt Calibration	2 independent shunt cal legs: <ul style="list-style-type: none">• Signal + to Ground with 100k resistor• Signal - to Ground with 100k resistor
Analog Gain	User selectable: 1X; 2X; 10X; 200X
Digital Gain	User selectable: 1X; 2X; 4X; 8X; 16X
Digital Offset	User selectable: ±100% full scale
Differential Input Range	Factory selectable: +/-5 mV; +/-10 mV; +/-20 mV
Oversampling	1X, 2X, 4X, 8X, 16X, 32X
Data Rate	User selectable: 250Hz - 4kHz
Compatible Software	WISER Data Viewer or User Supplied (WDV Requires Windows 2000/XP/Vista/Windows 7 or newer; .NET4.0; 512MB memory; 1Ghz processor or faster)

Note: All specifications are for 1kHz data rate; 16 bit; 350Ω gauge; 6" ribbon cable connection; 3.7V Li-Poly battery

OIL & GAS WIRELESS

THE PROBLEM

- Wired load cells experience wire breaks on average twice a year due to fatigue failure.
- Long stroke and installations with high winds can experience wire failures as much as 4x per year.
- Cable replacement is typically done by an electrical contractor who is in short supply.

WISER SOLUTION

- Battery operated wireless telemetry requiring only one battery change per year.
- Battery replacement can be done by a well tender who is already visiting the site periodically.
- 1 year ROI is achievable based on one cable replacement,



For more information on
WISER LC100-PP, please [click here](#)

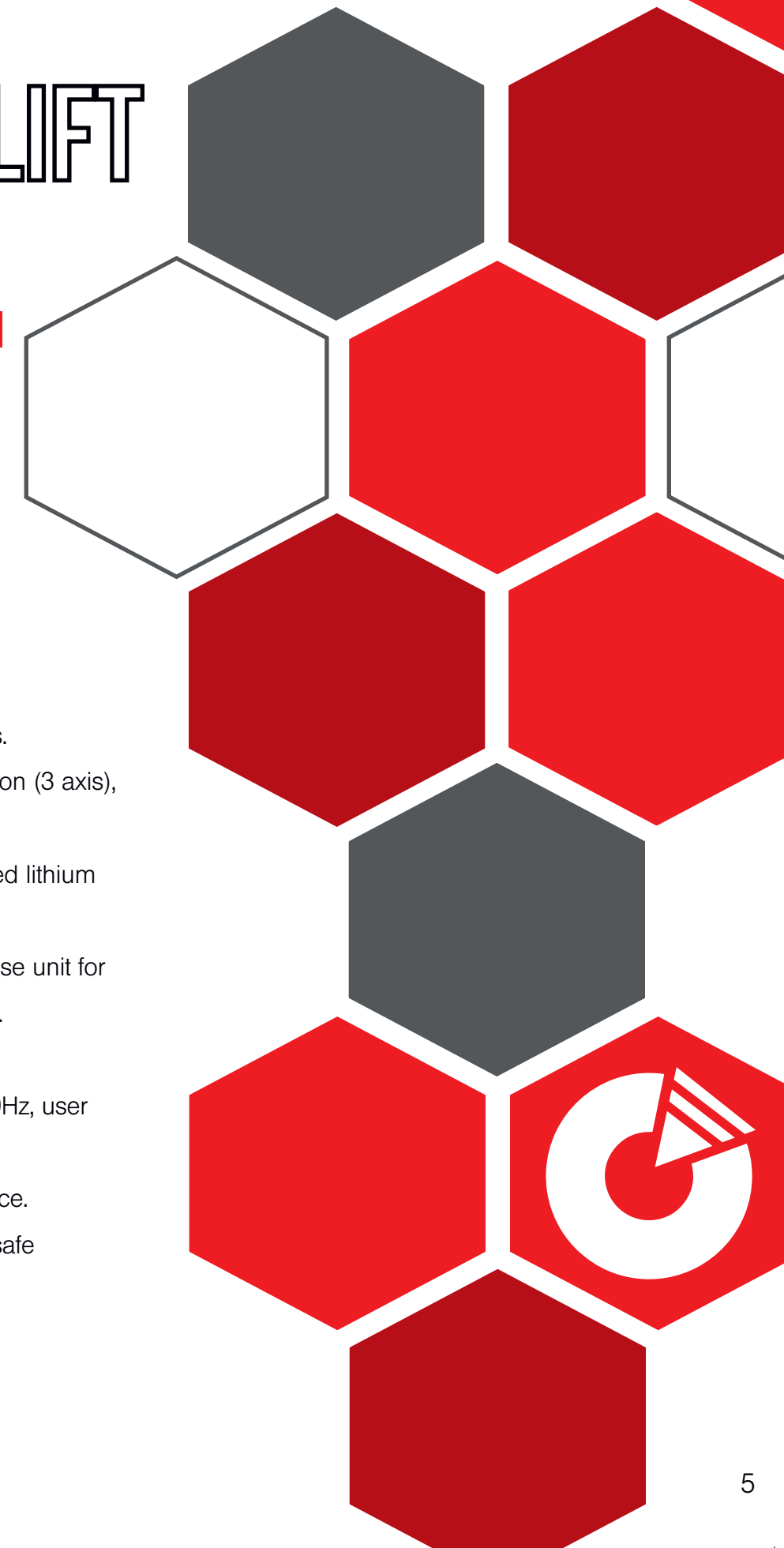
ARTIFICIAL LIFT

“Pump Jack” Load Cell

TECAT's WISER LC100 is used to wirelessly enable load cells that are used for performance monitoring and prognostic systems.

FEATURES INCLUDE:

- Sensor fusion allowing for simultaneous measurement of load (strain), acceleration (3 axis), and ambient temperature.
- >1 year battery life with 19Ah D cell sized lithium battery.
- Ratio metric mV/V strain output from base unit for ease of integration into existing controls.
- Measurement accuracy +/- 0.1% FS.
- 100Hz data rate (capable of up to 4,000Hz, user configurable, real-time adjustable).
- 1,000m line of sight transmission distance.
- Designed for ATEX Zone 0 intrinsically safe certification.



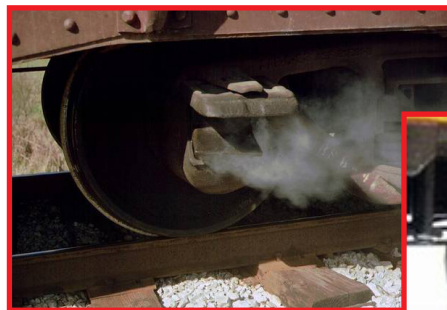
Application Examples

RAIL CAR BEARING TEMPERATURE MONITOR

TECAT's OEM platform can be used for early detection of rail car wheel carriage bearing defects and/or poor rail conditions.

THE PROBLEM

- The challenges for existing technologies include early detection, reliability and the cost of detection systems.
- Existing track-installed detection systems require line of sight which limits their used for detecting inward bearings.
- Early detection of bearing defects enable repair at the earliest opportunity when the car is available for maintenance, which results in fewer operational interruptions.



RAIL CAR BEARING FEATURES INCLUDE:



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| Sensor fusion allowing for simultaneous measurement of acceleration (3 axis), and bearing temperature. | >10 year battery life with 19Ah D cell sized lithium battery. | Digital/analog output from base unit for ease of integration into existing controls. | 0.1Hz data rate @ 10yr battery life (capable of up to 4kHz real-time adjustable for vibration monitoring). | 4-mile line of sight transmission distance. |
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ANEMOMETER & WIND SPEED SENSORS

TECAT's OEM platform was used to wirelessly enable anemometers and wind speed gauges for various applications where wired versions of the sensors were not practical or problematic.



ANEMOMETER WIND SPEED & DIRECTION

THE PROBLEM

- An airport needed wind speed and direction from both ends of the runway.
- Running wires such great distances was difficult and costly.
- Commercially available wireless solutions had insufficient transmission distance.

ANEMOMETER WIND SPEED ONLY

THE PROBLEM

- Regulations require cranes in ship yards to monitor wind speed at top of crane and cease operations for safety reasons if wind speeds are too high.
- Current wired systems require a wire to be strung along the length of the crane to the operator cabin.
- Commercially available wireless solutions were sub optimal in accuracy, power consumption (battery life) and transmission distance (reliability of transmission).

WISER SOLUTION

- TECAT's precision tuned RF circuitry provided for 5km line of sight transmission distance.
- Utilizing the remote processor only the relevant information is transmitted rather than the raw data stream.
- Perpetual battery life is achievable with a rechargeable battery and very small solar panel.

WISER SOLUTION

- TECAT partners with companies like the anemometer manufacturer to provide telemetry solutions rather than competing.
- Our IIOT platform was tuned to a transmission power that provided error free data to reach to operator cabin all the time every time without cumbersome wires.
- Perpetual battery life is achievable with a rechargeable battery and very small solar panel.

ANEMOMETER FEATURES INCLUDE:



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| Constant high speed monitoring of wind speed to identify gusts and transmit high speed snapshot of data only when necessary. | Fully configurable output and alert/ alarm signaling. | Very small footprint allowing for seamless integration into existing product without need to add additional enclosure for battery or electronics. | Sophisticated sampling algorithm for wind speed provided higher resolution measurement of wind speed than was achievable from the standard wired version. |
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TECAT
PERFORMANCE SYSTEMS

775 Technology Drive Suite 200
Ann Arbor, Michigan 48108 USA

Phone: (248)615-9862

tecatperformance.com