

# Solution Profile: Motor and Gearbox Monitoring



Continuously monitoring motors and gearboxes has many benefits



## Increased Productivity

- Avoid Motor Failures: From bearing wear and broken fan blades
- Avoid Gearbox Failures: Due to low-oil from worn seals, bearing wear, or missed maintenance
- Identify Drive Component Problems: Worn belts, misaligned couplings, and improper mounting



## Proactive Maintenance

- Predict and Avoid Problems: Shift from preventive to predictive maintenance
- Avoid Staff Shortage and Maintenance Backlog: Save time by avoiding unnecessary routine maintenance
- Lower Maintenance Costs: Proactive maintenance costs less than reactive maintenance



## Improved Management of Spare Parts

- Demand Planning: Use real-time data on part wear to order spare parts
- Reduce Storage: Reduce inventory of unnecessary or obsolete parts
- Reduce Fees: Proper procurement planning reduces part cost

Downtime Avoided  
Each Year

**60+ hrs**

Downtime  
Costs Avoided

**\$3 Million**

Pay Back Your  
Investment in Less Than  
**2 Months**

After adding a Banner condition monitoring solution to the most critical motors and gearboxes on a large assembly line at a global automotive OEM, the customer was able to avoid 60+ hours of downtime in one year by using data to predict failures before they happened and performed maintenance during scheduled downtime.

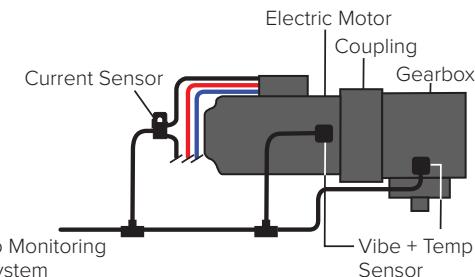
In this assembly line application, the customer chose to monitor large motors and gearboxes that were both mission-critical to their overall productivity and difficult to replace. By avoiding unplanned downtime, the costs avoided through less downtime on these motors and gearboxes contributed to total over \$3 million.

The investment in our monitoring solution provided immediate ROI when considering the costs of lost productivity due to unplanned downtime. Payback is also achieved quickly due to the simplicity of installing the system, and the ability to catch equipment problems immediately.

# How to Begin Monitoring Motors and Gearboxes

## Core principle: motor and gearbox health involves measuring vibration, temperature, and current

Sensors are installed on motors and gearboxes, and measure vibration in two axes. Our patented VIBE-IQ technology utilizes machine learning to establish baseline, warning, and alarm vibration levels, providing easy predictive analysis. This approach, coupled with temperature measurements from the same sensor, along with manual threshold setting based on the machine and environment, triggers notifications upon exceeding limits. Additionally, by installing a current transformer sensor on an AC power supply wire, you can monitor for changes in amperage and trigger notifications based on manually-configured threshold values.



## Parts you will need

This is a basic list of parts you will need to get started. Many more options exist for sensor types, cable lengths, and remote connectivity. Wireless options offer simpler installation due to fewer wires, while the wired version offers local monitoring with faster sensor update rates. Consult your local Banner representative for help building the solution that best fits your application.



Solution with Wireless Sensors



Solution with Wired Sensors



## Install and commission your monitoring system

Securely fasten the vib/temp sensors onto solid metal parts (no fan shrouds) of your motors and gearboxes. Note the orientation of the sensor, the X-axis should align with the motor or gearbox shaft, while the Z-axis should be imagined as going “through” the shaft. Install the current sensor around the L1 wire supplying AC power to the motor with the arrow on the sensor pointing in the direction of current flow to the motor, see datasheet for details.

Mount your Area Monitoring Gateway to a suitable location per the instruction manual and apply power to the device. Follow the instructions to connect the wireless sensor to the gateway.

Follow the instructions to log on to your free trial of Banner Cloud Data Services (CDS). Once you are logged on and your gateway is sending data to the cloud, you will be able to monitor the vibration, temperature, and current of your motors from anywhere by viewing the dashboard in CDS. Finish by setting up your manually-configured thresholds for temperature and current, and then set what types of alerts you want sent (e.g., email or text) when these measurements reach warning and alarm states, so you can schedule maintenance prior to equipment breakdown.

## Take the next step

Visit [www.bannerengineering.com/monitoringsolutions](http://www.bannerengineering.com/monitoringsolutions) to build your next monitoring system, find an authorized distributor, or chat with a technical expert.



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