Car Wash Solutions

Banner Drives Car Wash Efficiency

An industry leader in smart automation, Banner Engineering optimizes car wash facilities with advanced sensing and monitoring solutions. These technologies maximize efficiency and uptime, leading to increased vehicle throughput and consistent, high-quality service. With proven solutions for water and chemical level measurement to avoid waste, air pressure and machine health monitoring for time-saving predictive maintenance, and precision vehicle position detection throughout the tunnel, Banner is helping car wash operators solve their greatest challenges.

Extensive Industry Experience

For more than five decades, customers have trusted Banner with their business, relying on the quality and performance of our products and services, as well as our expertise and integrity.

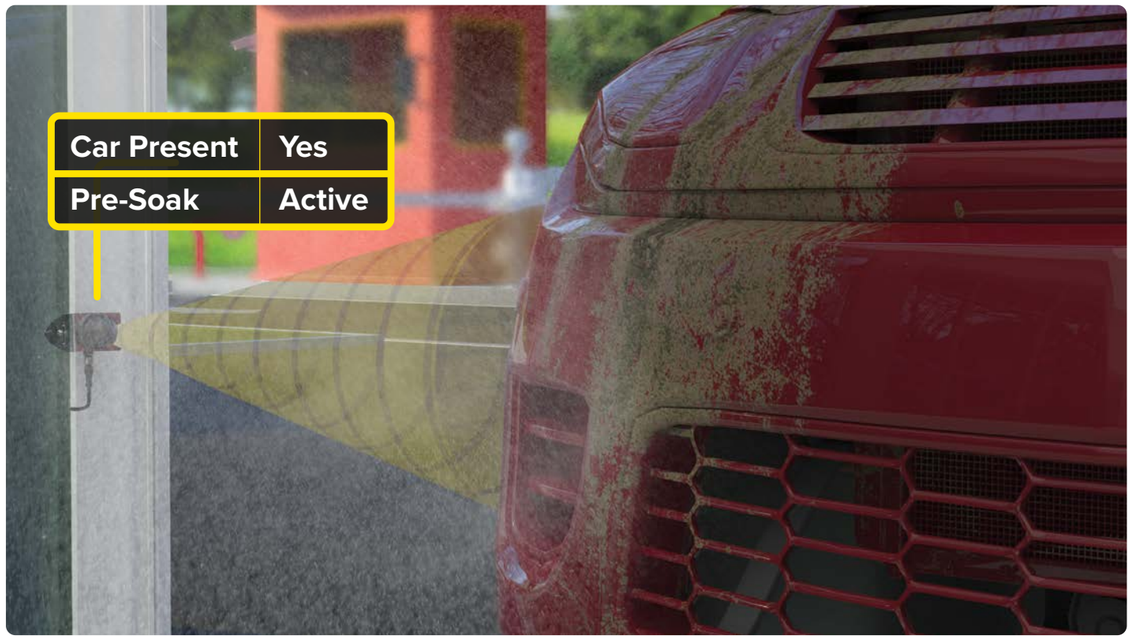
Innovative Sensor Technologies

From precise detection and measurement of critical liquid media to ensuring automated movements happen seamlessly, Banner sensors are engineered to deliver unparalleled accuracy and reliability.

Easy-to-Use Monitoring Solutions

Providing real-time understanding of equipment health and performance, Banner's monitoring solutions allow you to respond to small problems before they become big ones, maximizing car wash uptime and optimizing equipment performance.

Vehicle Detection Sensors for Car Washes



Vehicle Entry Detection with Radar Sensor

Challenge

A car wash needs to know when a vehicle approaches not only to make sure entry doors open and close at the proper times, but also to let the wash system know when to begin its cycle. Doors that don't open can quickly lock down an operation or damage vehicles by closing too soon. The wash may not start at all if it doesn't know a car has reached the correct location.

Solution

- Mounted at the car wash entrance, T30RW Washdown Series Radar Sensors can trigger critical process functions, opening and closing entry doors at precisely the right times
- Radar technology in the T30RW excels both inside car washes and right outside the doors, reliably detecting vehicles despite changing temperatures and the presence of water, mist, and steam
- The IP69K-rated housing resists harsh conditions, ensuring durable, dependable sensing even in moisture and spraying water

T30RW Washdown Series Radar Sensor

In-Tunnel Vehicle Detection with Photoelectric Sensor

Challenge

Extreme conditions inside a car wash—high pressure spray, drastic temperature changes, mist, steam, and high humidity—can hamper vehicle detection. On top of environmental challenges, the limitless variations in vehicle color, shape, size, and surface reflectivity, plus movement through the wash cycle, make vehicle detection and positioning challenging.

Solution

- For decades, QS30 High-Performance Long-Range Sensors have been the industry standard for vehicle detection, using high-powered infrared technology to verify vehicle positioning and provide a reliable sensing field even in mist and steam
- The rugged housing and IP69K-rated quick disconnects withstand the constant presence of water and extreme temperature swings
- Multiple sensors can be used concurrently, able to eliminate false trips by outside sunlight, ignore electromagnetic and radio frequency interference (EMI and RFI) from other automated car wash equipment, and be configured to eliminate crosstalk

QS30 High-Performance Photoelectric Sensor

Vehicle Exit Detection with Radar Sensor

Challenge

As soon as a vehicle leaves the tunnel, the wash system needs to know it can start the conveyor and bring the next car in. If the car wash has incorrect vehicle location information, the exit door may not open when needed, or the conveyor could push a vehicle into one stopped at the exit. Also, a car can be stuck waiting too long at the entrance if the system doesn't realize the tunnel is available.

Solution

- T30RW Washdown Series Radar Sensors mounted at the exit can monitor vehicle flow and let the wash system know to trigger functions
- The T30RW's radar technology mitigates environmental challenges that can affect other sensing technologies, dependably detecting vehicle positions near the exit despite swirling mist and noise from dryers

T30RW Washdown Series Radar Sensor

Predictive Maintenance for Car Washes

Vacuum Pump Monitoring at the Motor Control Cabinet

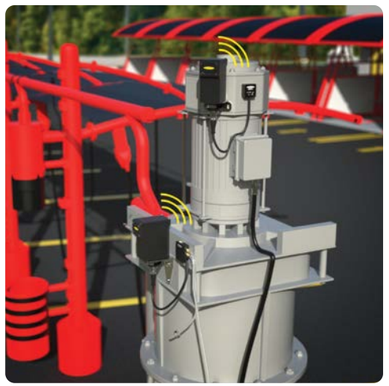
Challenge

A vacuum system helps deliver a great customer experience, so the impact of unexpected motor failure is felt immediately. To maximize uptime, the electric motor that powers the vacuum pump must continue functioning properly.

Solution

- A Q45CT Wireless Current Sensor can measure vacuum pump motor current at the control cabinet
- Gives operators another data point to determine overall system load and understand if service is needed to avoid unplanned downtime
- Wireless connection simplifies installation and communication with the monitoring gateway

Q45CT Wireless Current Sensor



Vacuum Pump Motor and Filter Monitoring

Challenge

Vacuum motors and filters are two potential failure points that can impact the quality and availability of this service. Early motor wear, loose fittings, poor alignment with the vacuum pump, and other problems can cause unexpected system failure. Also, filters require periodic maintenance, but cleaning them too frequently is costly, and waiting too long can impact system performance.

Solution

- Installed near the filters, the Q45 Differential Pressure Sensor can precisely measure buildup and indicate appropriate times for servicing
- A wireless vibration and temperature sensor installed on the motor can detect tiny vibrations from worn bearings and loose parts, allowing maintenance to be scheduled before failure
- Wireless sensor easily deploys on motors and filters, even on existing systems in remote and hard-to-access locations

Q45 Wireless Differential Pressure Sensor and Q45 Wireless Vibration and Temperature Sensor

Main Water Line Pressure

Challenge

Pressure fluctuations in the main water line can cause inconsistent wash quality and operational inefficiencies. A complete loss of pressure can indicate a major problem upstream.

Solution

- A Q45 Wireless Pressure Sensor installed on the main water line reports water pressure to the monitoring system every 10 minutes
- Water pressure measurements provide operators and maintenance teams the data they need to respond to problems as soon as possible

Q45 Wireless Pressure Sensor

Car Wash Conveyor System Monitoring

Challenge

The conveyor system inside the car wash tunnel requires all parts to work together as one continuous process. Any downtime due to a failed conveyor motor or gearbox completely halts operation and revenue generation.

Solution

- Adding a Q45VAC All-in-One Vibration and Temperature Sensor to the hydraulic motor and gearbox allows car wash operators to be notified if vibration levels and temperatures go outside specified ranges
- Because even very small vibration changes can indicate wear and other problems, advance warning of potential issues allows downtime to be planned, minimizing disruption to car wash operation
- The rugged wireless device is IP67-rated for dependable operation and communication in challenging car wash environments

Q45 Vibration and Temperature Sensor

High-Pressure Water Pump Monitoring

Challenge

High-pressure water pumps are susceptible to performance degradation over time, whether from normal mechanical wear, poor water quality, or high temperatures. Pumps that are not functioning properly may not deliver proper water pressure, which can compromise the cleaning process.

Solution

- A Q45VTPD-QM30 Wireless Vibration and Temperature Sensor can be installed on the electric motor that drives the pump
- Operators can see if the system is operating within normal vibration and temperature ranges
- VIBE-IQ machine learning technology simplifies the setup process by forming a baseline, then setting customized warning and alarm thresholds

Q45 Wireless Vibration and Temperature Sensor

Monitoring Gateway

The many different sensors in a car wash monitoring system connect to gateway, such as the DXM1200 Asset Monitoring Gateway with CLOUD ID. This gateway collects data from each sensor and sends it to the cloud via either a hardwired Ethernet or cellular network connection. The built-in display aids setup and diagnostics, such as the onboard site survey tool which shows wireless sensor signal strength between the sensor and gateway. Providing clear signal strength feedback helps make optimal device placement easy.

Asset Monitoring Gateway with CLOUD ID

Predictive Maintenance for Car Washes

Air Compressor Current Monitoring

Challenge

Sudden air compressor failure can quickly halt an entire car wash operation. Compressed air systems are typically always on, even when the facility is closed. This means that, over time, any air leaks can cause compressors to run unnecessarily and shorten component lifespan.

Solution

- A Q45CT Wireless Current Sensor can monitor current draw on an air compressor's power supply lines
- Any current draw outside specifications can indicate a problem early, allowing maintenance to be performed and minimize downtime
- Operators can monitor current data trends over time and know at a glance if compressors are running when they shouldn't be

Q45CT Wireless Current Sensor

Compressed Air System Pressure Monitoring

Challenge

Beyond the compressor, problems can arise in the compressed air delivery system. Leaks can make the compressor run more often than needed, leading to excessive energy use. If the leaks become severe, they can impact the performance of downstream equipment.

Solution

- Monitor pressure levels with a Q45 Wireless Pressure Sensor installed on the compressed air lines
- If the pressure readings deviate from the selected range, a notification can be sent to maintenance staff so they can quickly respond to the issue
- Tracking pressure trends over time can show changes in the compressor duty cycle, indicating possible leaks or water in the tanks

Q45 Wireless Pressure Sensor

Water Supply Pump and Buffer Tank Monitoring

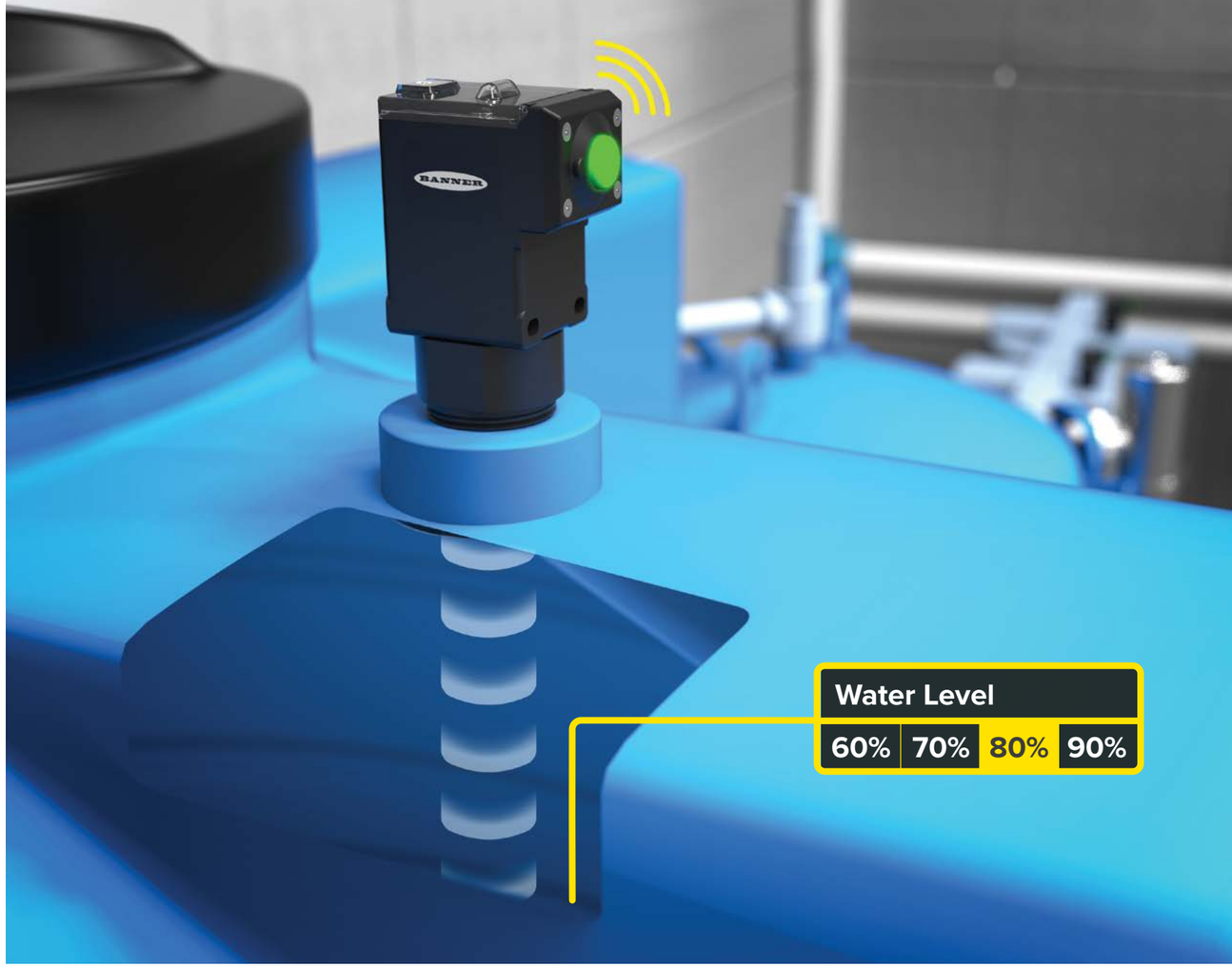
Challenge

Unexpected issues with water supply pumps or buffer tank levels can hinder efficient water delivery, negatively impacting the quality of the wash process. Significant operational disruptions may occur if the main water supply becomes unavailable.

Solution

- Installed on the water pump, a Q45 Wireless Vibration and Temperature Sensor can let car wash operators know in real time if the motor is showing signs of wear or is not running at all
- A Q45 All-in-One Wireless Ultrasonic Sensor installed on the buffer tank can indicate if there are ample water reserves for peak wash times, and can also let operators know if the main water supply goes offline

Q45 Wireless Vibration and Temperature Sensor and Q45 Wireless Ultrasonic Sensor



Tank Level Monitoring for Reverse Osmosis System

Challenge

The reverse osmosis system relies on semipermeable membrane filters to provide pure water for effective cleaning. If scale builds up and clogs these filters, less pure water gets through to the storage tanks which may negatively affect car wash operation and quality.

Solution

- A Q45UAA All-in-One Wireless Ultrasonic Sensor mounted on top of each storage tank can monitor water levels in real time
- Operators can be notified when tank levels drop below the specified range, indicating a clog
- The semipermeable membranes can be cleaned or replaced right away to maximize uptime

Q45 Wireless Ultrasonic Sensor

Smarter Automation. Better Solutions.™

Build Your Bundle

This tool will help you build out your monitoring bundle with CLOUD ID. Choose the monitoring gateway and sensors to monitor the critical equipment in your car wash at www.bannerengineering.com/car-wash.

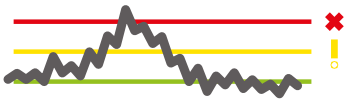
Banner CDS™ View Your Car Wash's Data Remotely

- Web-based monitoring that lets you view equipment health from anywhere
- Preconfigured and customizable dashboards to simplify setup
- View trends and set text/email alerts to notify staff of problems to help avoid unplanned downtime
- Creates a complete end-to-end monitoring solution when paired with Banner's sensors and gateway

CLOUD ID™ Recognizes an Array of Compatible Wireless Sensors

CLOUD ID is a technology that simplifies setup by allowing gateways to automatically recognize sensors and configure a cloud dashboard. This technology is found in many of our wireless sensors that measure vibration, differential pressure, temperature and humidity, tank level, and more.

VIBE-IQ® Takes the Complexity out of Vibration Monitoring



VIBE-IQ vibration monitoring software uses machine learning to simplify the process of setting warning and alarm thresholds for rotating assets like motors and gearboxes. The software continuously monitors vibration for changes and sends warnings and alarms automatically to ensure optimal performance and prevent unplanned downtime. VIBE-IQ does all the complicated analytical work, making the process effortless for users.

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