

PERFORMANCE MONITORING

Balance of Plant Equipment Health Monitoring System

IPS Wireless™ performance monitoring systems can reliably and economically augment manual, route-based condition monitoring programs. Critical information from remote and difficult-to-access equipment can be continuously acquired, transmitted, and integrated into systems that help optimize the activities of maintenance and reliability personnel, ultimately improving equipment health and eliminating unplanned failures.

While not necessarily as mission-critical as the equipment used in primary plant systems, balance of plant (BOP) equipment still must operate reliably and continuously to maximize plant availability. Typically, BOP system condition is monitored via route-based programs, where technicians manually gather data points. This approach has several inherent weaknesses:

- Data is only gathered periodically.
- Data collection is limited to specific equipment, with some sub-systems left unmonitored.
- BOP equipment can be located in difficult-to-access or dangerous environments.

As a result, plant operators are often left dealing with undetected operational issues and less-than-ideal work environments when tackling BOP equipment monitoring.

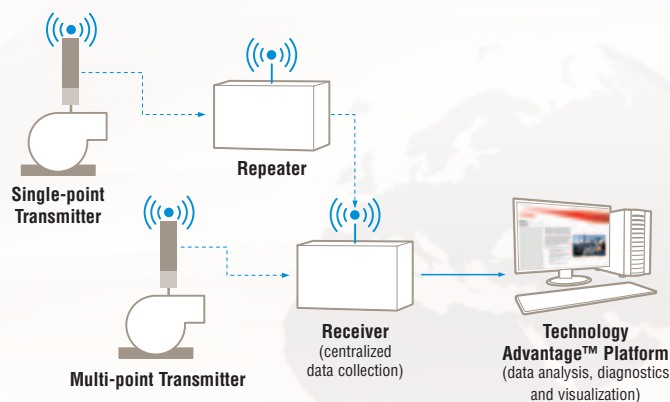
Continuous, Wireless Condition Monitoring of BOP Equipment

A balance of plant health monitoring system from Flowserve gives plant operators safe, secure, and reliable access to equipment and system data which, until recently, was not economically or practically feasible. By deploying IPS Wireless single-point and multi-point transmitters, myriad data points — vibration, pressure, temperature, gas emissions and more — can be continuously monitored for any equipment, system or sub-system at a fraction of the cost of traditional approaches. Strategic placement of IPS Wireless Repeaters and Receivers forms a virtual network that covers every corner of the plant.

A TURNKEY SERVICE OFFERING

Flowserve has created an integrated suite of technologies and services that allows customers to quickly realize the benefits of a full-scale, BOP equipment health monitoring system. Flowserve experts deliver all system and support services turnkey:

- System design, including hardware selection, based on monitoring needs and plant environment
- Implementation services to configure all required diagnostic, data analysis and visualization tools
- Setup of all necessary equipment alerts, watch lists, reports and communication protocols
- Ongoing support and maintenance of the entire system — from hardware to software





IPS Wireless Smart 102 Single-Point and Smart 103 Multi-Point Transmitters



These transmitters provide wireless data acquisition and transmission of analog and digital signals in a self-contained, self-powered unit. Transmitters have a range of 1.2 km (0.75 miles) which can be extended infinitely through the use of IPS Wireless Repeaters. Parameters monitored include:

- Pressure
- Temperature
- Flow
- Power
- Vibration
- Gas emissions
- Corrosion
- Level

Key Specifications

- Zone 0 (Class I, Div. I, Groups A, B, C, D, E, F, G)
- PVC housing and 316L stainless steel body

Note: IPS Wireless Remote Transmission Units (RTU) may be deployed for continuous data transmission requirements.

IPS Wireless Intelligent Repeater and Receiver

A repeater extends the transmission range of single- and multi-point transmitters and RTUs by forming a virtual (mesh) network within an entire plant site.

A receiver is the central collection point for transmitter data. It communicates collected data to the analysis, diagnostic, and visualization tools that allow customers to quickly interpret and act upon equipment condition information.

Key Specifications (Receivers and Repeaters)

- Zone 2 (Class I, Div. II, Groups A, B, C, D)
- NEMA 4X enclosure



Technology Advantage Platform

The Flowserve Technology Advantage Platform includes a powerful collection of data analysis, diagnostic and visualization tools. Once implemented, customers are equipped with a unique, comprehensive view of key performance indicators for plant equipment. Easy-to-interpret visuals show real-time operational data, comparing actual data to expected performance levels. A BOP equipment health monitoring system includes a subscription to this customizable platform that incorporates:

- Easy-to-interpret visuals
- Trend-building capability
- Alarm triggers and histories
- Collaboration tools to interact with third party experts
- Integration points for diagnostic programs and real-time data analysis



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