Predictive Analytics for Pumps, Valves and Seals

BEARING
VIBRATION

MOTOR
TEMP

ROOT CAUSE MISALIGNMENT

EST. REMAINING
TIME TO FAIL 17 DAYS

TRENDING

MTBF TRENDING

Experience In Motion

Driving step change in reliability

The Flowserve IPS suite of products, software and services helps plant reliability engineers, operators, and maintenance personnel not only monitor but also predict equipment and system behavior in order to take prompt actions to prevent unplanned downtime. Actions to sharply improve reliability and efficiency. To resolve problems with fast, targeted and efficient maintenance. To keep people and equipment safe. To apply predictive intelligence to prevent problems long before they can affect your operations. To provide the deep understanding and recommend actions that improve how you run your operations.

Reduce unneeded downtime and maintenance. If a pump can wait for maintenance, let it wait. Don't tear down a pump in a turnaround if you can avoid it; at a minimum, go immediately to what needs repairs. When you see signs of trouble, that's when you take action — and avoid unplanned downtime and wasted efforts.

Reduce maintenance costs. Zero in quickly on the root cause of the problem. In some past cases, maintenance might have fixed a vibrating pump, put it back in service, but saw the problem return without a true understanding of its root cause. Now, you can diagnose and quickly treat the issue. Flowserve has the parts, tools and expertise to help you fix it properly — the first time.

Increase energy efficiency. Optimum pump efficiency can be elusive. If some pumps are just slightly off their best efficiency points, their performance can quickly deteriorate, their energy demand increase, and their time to failure or repair can drop dramatically. But now you can know where all your units are on the pump operating curve — and how to optimize them for maximum efficiency.

Improve safety. Reduce the time your people spend in higher-risk areas. You know exactly where the problem is and what it will take to fix it. Give your maintenance staff the right parts, tools and instructions they need to get in, make the repair and get out. It's how you limit high-risk hours in controlled areas of the plant.

Use your existing infrastructure. The Flowserve IPS approach is built on an open platform, i.e., it will work with your existing systems and processes. Our system can also support equipment from nearly any manufacturer.

How knowledge drives action

Know

Imagine having your equipment tell you if there is a problem you need to be worried about. Pressure, temperature, vibration, run time, and even when maintenance needs to occur—all of this can be captured and you will be notified when attention is required. Flowserve gives you improved visibility into equipment: where you can now access performance data and alerts anywhere, any time. You can look at symptoms and know the root cause of a potential problem—*before* it occurs. And with that precise knowledge, you can prepare the necessary parts, tools and resources you'll need to take action.

Act

Flowserve provides real-time monitoring capabilities, built on a foundation of engineering models derived from decades of experience in the industry. You will quickly know what needs to be repaired, and can send an engineer or technician directly to the trouble spot— or in some cases you'll simply need to monitor the asset while continuing operations. You can order spare parts you know you'll need. And you'll only need to fix what you know needs fixing, saving both time and money.

Optimize

You can optimize your turnarounds or outages by having better insight on which equipment needs maintenance, which procedures need to be undertaken, and which parts or tools might be required. Knowing this ahead of time will help you be more efficient. Get your units operating at their best efficiency and thereby reduce your energy costs. Flowserve not only provides services to fix your problems at any level, but also helps you manage your assets to their highest levels.
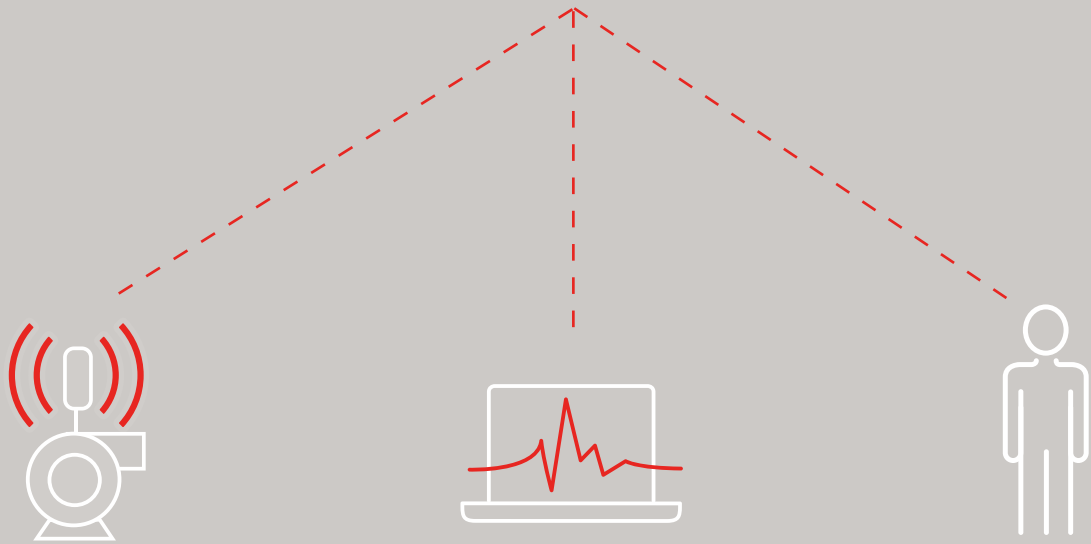
Predict

Flowserve provides superior failure mode detection, true root cause analysis, and can even predict the remaining service life of your critical assets. Using applied engineering models, machine learning, and advanced analytics, you'll know whether to take action or when to call in Flowserve experts to assist. You'll protect critical assets from unplanned failures— and take uptime, reliability, efficiency and productivity to new heights.

FLOWSERVE

The Flowserve Approach

Products

Flowserve offers a range of IPS products that continuously collect and/or transmit your specified performance data from any asset: vibration, pressure, temperature, flow rate, even the presence of fluids: the real-time information you need to understand your asset performance and keep your operations up and running.

Software

The Flowserve approach to software is unique in that we use proprietary engineering models built on decades of OEM experience, and layer on industry-leading machine learning methods to provide our customers with the best possible combination of predictive analytics. Simply stated, it's the only software designed to understand pumps, valves and seals: how to diagnose their problems, learn from their life cycles, predict their future working life and, uniquely prescribe the steps to take to fix them. It's scalable software that embraces open standards to make it easy to use with existing infrastructure, ready to work on any platform, from the plant control room, to a maintenance technician's handheld, an engineer's laptop or in the cloud.
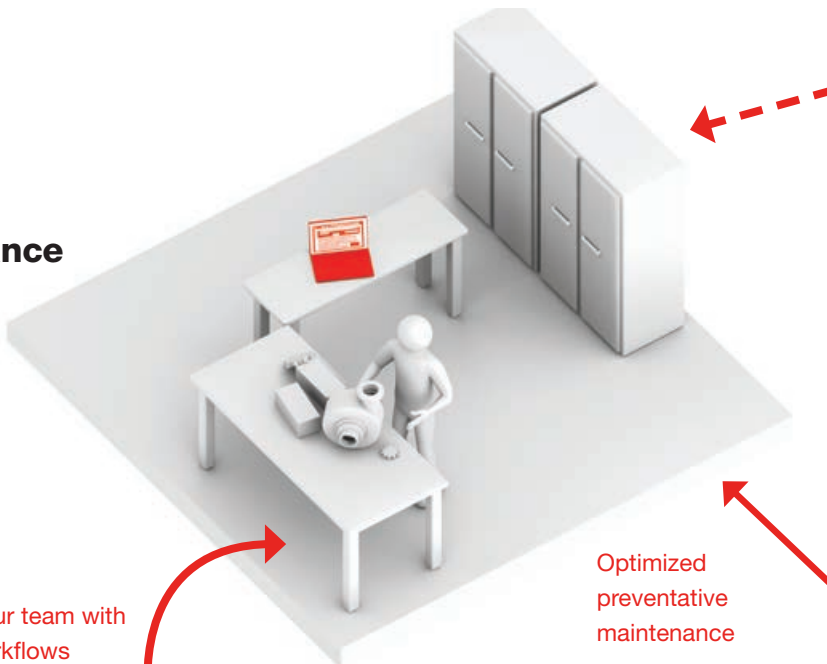
Service

Take advantage of the largest network of company-owned service and parts manufacturing centers. Flowserve experts can be called upon when needed, and we can be there quickly. We not only know how to help you spot trouble; we can be there to help you fix it. If you don't have the capacity, tools or skills available, we can support you. You can access Flowserve service at any level, from individual solutions to comprehensive consulting services and longer-term service contracts.

Products to help you connect your assets and people.
Scalable, secure software to help you predict events.
And services to help you improve and maintain reliability.

Flowserve IoT technology, services and capabilities

Plant Maintenance

IPS Insight delivers root cause identification, remaining run time and digital record keeping
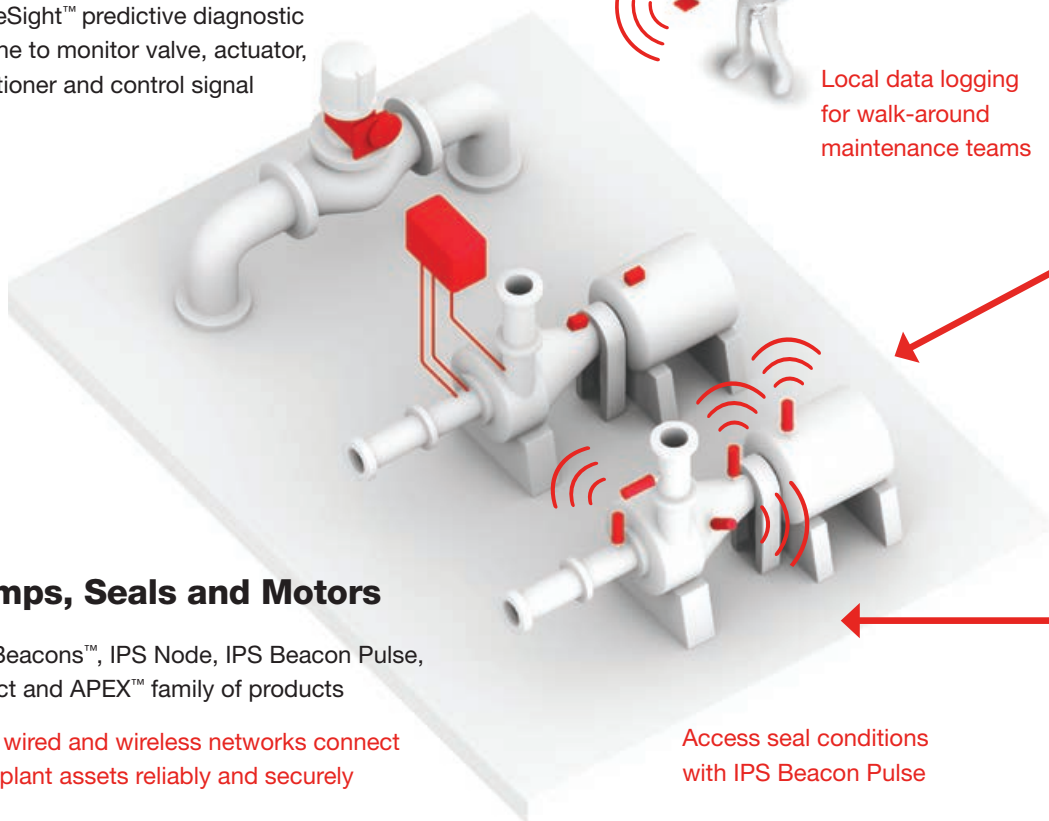
Notify your team with email workflows

Optimized preventative maintenance

Valves

ValveSight™ predictive diagnostic engine to monitor valve, actuator, positioner and control signal
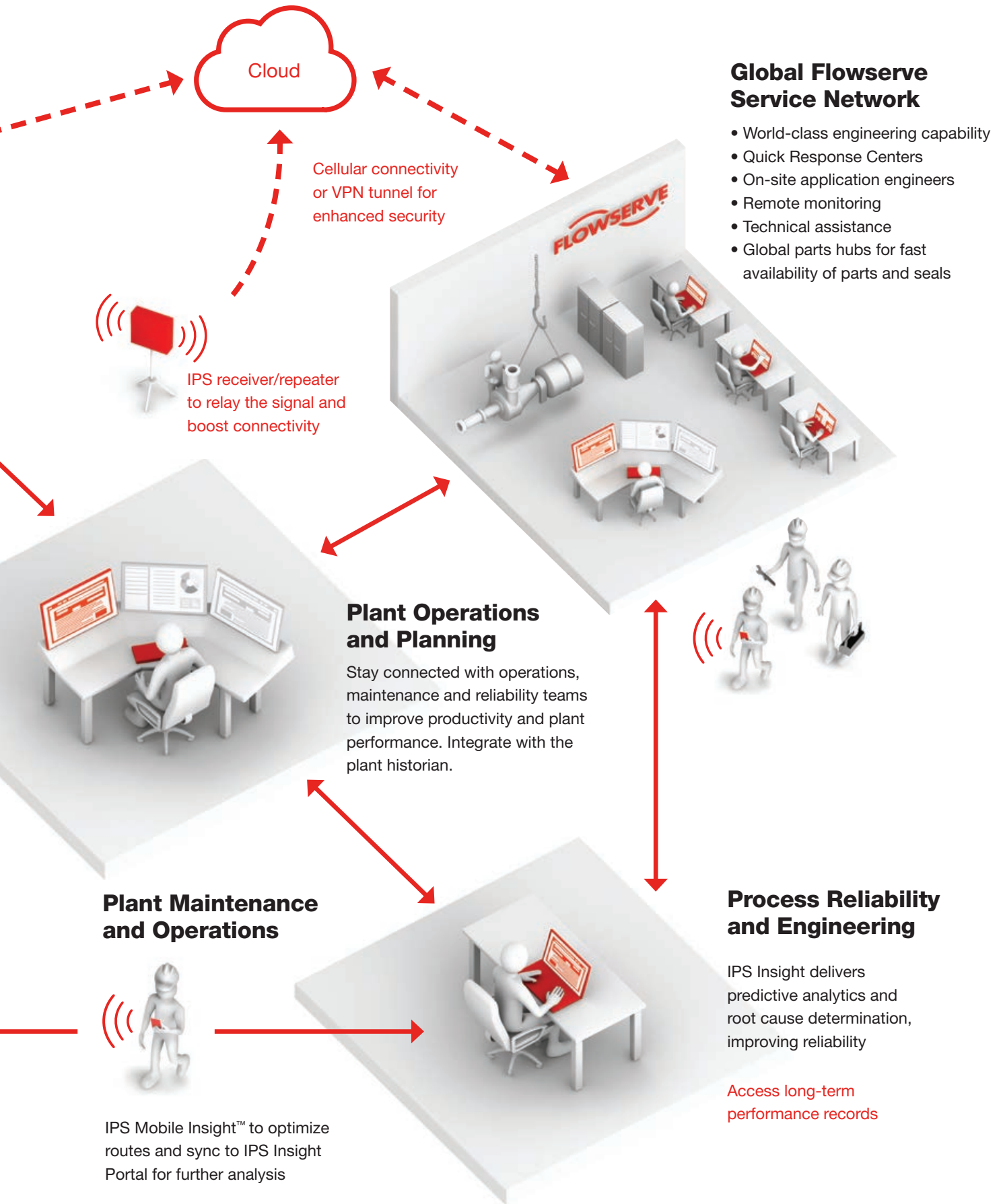
Local data logging for walk-around maintenance teams

Pumps, Seals and Motors

IPS Beacons™, IPS Node, IPS Beacon Pulse, Detect and APEX™ family of products

Both wired and wireless networks connect your plant assets reliably and securely

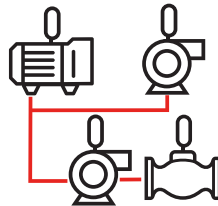Access seal conditions with IPS Beacon Pulse

Cloud

Cellular connectivity
or VPN tunnel for
enhanced security

IPS receiver/repeater
to relay the signal and
boost connectivity

Global Flowserve
Service Network

- World-class engineering capability
- Quick Response Centers
- On-site application engineers
- Remote monitoring
- Technical assistance
- Global parts hubs for fast
  availability of parts and seals

FLOWSERVE

Plant Operations
and Planning

Stay connected with operations,
maintenance and reliability teams
to improve productivity and plant
performance. Integrate with the
plant historian.

Plant Maintenance
and Operations

IPS Mobile Insight™ to optimize
routes and sync to IPS Insight
Portal for further analysis

Process Reliability
and Engineering

IPS Insight delivers
predictive analytics and
root cause determination,
improving reliability

Access long-term
performance records

Getting you connected and informed— faster, smarter and cost effectively

The industrial internet and predictive analytics solutions from Flowserve follow a step-by-step process for customers to advance their existing capabilities to improve reliability using technology. They provide the means to gather data through the IPS family of monitoring devices, from the affordably simple to the comprehensively smart. They also provide the
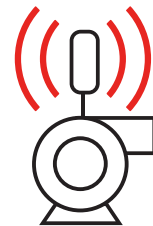
1. Assessment

- Assess processes
- Prioritize pumps
- Document reliability issues
- Define customer current and future performance requirements

2. Data acquisition plan

- Technical model that establishes monitoring levels
- System design
- Select monitoring equipment
- Local plant site or hosted cloud option
- Utilize the default HMI design or develop a custom one
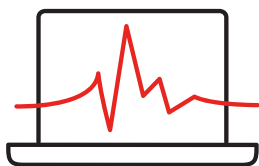- Visualization, alarms/notifications and mobile requirements gathering

3. Installation and commissioning

- Install new or repurpose existing monitoring equipment and infrastructure
- Install wireless repeaters/ routers as needed
- Software setup and configuration
- Customer training as needed

software that transforms data into actionable online knowledge. They bring Flowserve service capabilities to your operations. Online today, they are scalable at any level, from monitoring a single pump at a single location to providing comprehensive operational reliability services across an enterprise. And you can enter at any point, and grow your online knowledge to match your needs. Below is our step-by-step approach to improving reliability through data-based services.

4. Monitoring and optimization

- Online data gathering and understanding baselines

- Software configuration

- Mobile accessibility

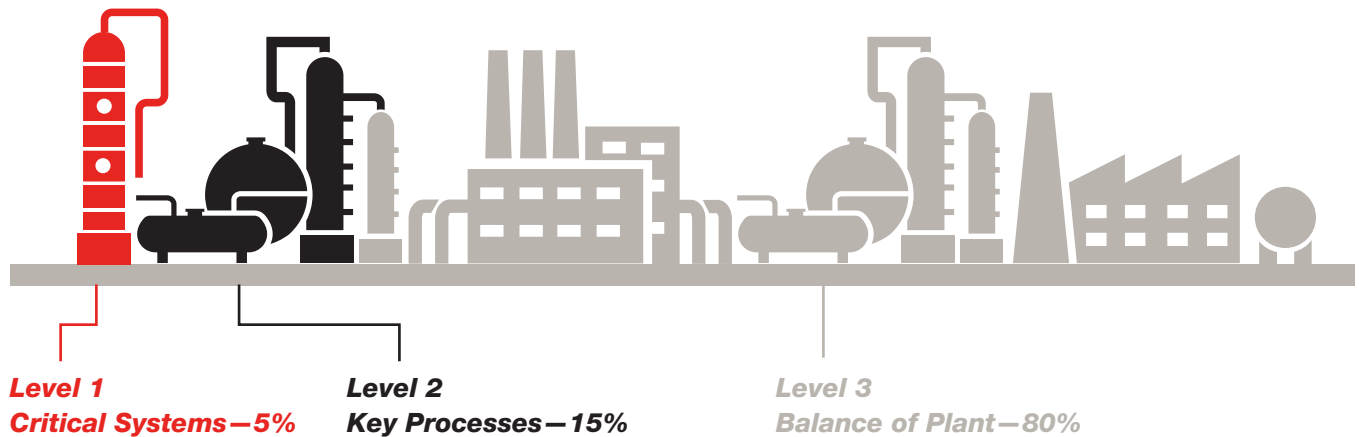- Model and system validation and refinement

5. Long-term service and support

- Plant- and enterprise-wide service agreements

- Engineering and asset expertise and support

- Value-added technical services such as field and engineering services, and training

IPS builds solutions for critical, key and BOP systems.

Level 1
Critical Systems—5%

Level 2
Key Processes—15%

Level 3
Balance of Plant—80%

Flowserve offers a broad range of solutions specifically designed for a broad range of applications. From simple, cost-effective data loggers that can enhance your route-based maintenance, to high-speed data acquisition systems to monitor your critical flow systems—and everything in between.

Technical model of monitoring requirements

As you implement Flowserve IPS solutions, you grow your capabilities by prioritizing on a need-to-know basis. Flowserve has developed the IPS lineup of offerings to align both your costs and monitoring capabilities to the criticality of selected assets in your operations. From simple and highly affordable local IPS Beacon data loggers, to the industry's most sophisticated intelligent monitoring, high-speed diagnostic system, the IPS APEX, Flowserve has the technical model that matches your operational and reliability priorities, balancing affordability with criticality.

IPS Family of Products

Condition Monitors

IPS Beacon 2

IPS Beacon Pulse

Economical, easy to install and maintain, with local data logging and short-range *Bluetooth*® wireless and local visual alert capabilities to optimize maintenance practices.

Wireless

IPS Node

IPS Multi-Port 103

Cost-effective, long-range wireless data acquisition and transmission, providing information for equipment maintenance optimization and condition monitoring.

Predictive Analysis

IPS APEX

IPS Detect

High-speed data acquisition and predictive analytic capabilities for flow control equipment.

IPS Mobile Insight

Access real-time equipment performance data on a handheld device, configure devices while in the field, and upload field data to the cloud with the touch of a button.

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IPS Insight Platform

Cloud-based or locally hosted platform leveraging deep predictive analytics based on both OEM engineering algorithms and machine learning to help optimize system performance, better understand potential failure modes, and help avoid unplanned downtime. Not only can you now know when an asset might fail, but also how it might fail.

New solutions from evolving capabilities

Flowserve is picking up the pace. Our advances in analytics and machine learning expand the depth, breadth and speed of our diagnostic and predictive capabilities. We are partnering in the industry to implement "best-in-class" hardware, communications, analytics and software to help customers identify and tackle their toughest reliability and productivity challenges.

The knowledge to immediately improve plant performance and reliability

Flowserve is unique in this space. We've always led the way in manufacturing and service. Now, we're taking the lead in creating new technologies to detect, diagnose and optimize flow-related equipment, giving customers end-to-end solutions that improve the overall performance of their operations. With our unmatched service capabilities, we now have the technology to help our customers detect and diagnose problems, and all the resources, tools and knowledge it takes to solve them. It's a continuous effort to provide the best possible solutions for our customers.

Learn how Flowserve can take on your toughest pump reliability and productivity challenges today.

Contact a Flowserve service representative near you to schedule a plant reliability and performance assessment.