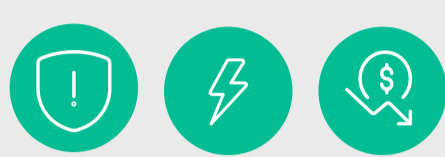# Plantwide asset health management

Baker Hughes

Comprehensive monitoring of asset condition requires flexible connectivity, analytics, and visualization capabilities to enable world-class reliability strategies. Baker Hughes Asset Health solutions enable smarter decisions to avoid downtime while improving safety and asset life.

Unexpected downtime has major cost consequences

The examples to the right highlight the cost of downtime for single-stream process operators, and the importance of condition monitoring across the full spectrum of asset criticality.

Lost productivity (USD)	
A large power plant off the grid for one week	$13.9 million
A single-stream mineral process offline for one second	$3,200
Restarting a cement kiln	$75,000
Boiler restart at a 650 MW power plant	$300,000
Cargo ship docked longer than scheduled, cost per hour	$40,000
Overhead ladle crane in a steel plant, non-functional cost per hour	$235,000

20%
lower internal operating expenses targeted by companies while increasing pressure on performance

50%
of workforce to retire in the next 5–10 years—knowledge and experience is not being transferred

3−5%
of lost production is due to unplanned events, costing 2−5x more than planned events

THE BENEFITS OF CONDITION MONITORING

Identify machine challenges
Recognize root-cause failure mechanisms
- In progress
- At the earliest possible opportunity

Identify damage
- As soon as it happens
- Well before functional failure

Greater insights
Gain visibility into machines negatively impacting production and compare machine performance across your plant
- Which machines?
- Where in the process?

Answers to longstanding questions
- What needs to be done to optimize production?

Enhance planning
Provide data to help answer
- What's wrong?
- Can I continue to run?
- What do we need to do about it and when?

CONNECT, ANALYZE AND VISUALIZE

S1

System 1 is a comprehensive condition monitoring solution for assets across the entire spectrum of criticality. It enables condition monitoring from machine protection devices, distributed systems, wireless and portable data collectors—and brings the data together into a single analysis platform while providing clarity and context through its powerful diagnostic HMI views.

It collects and analyzes plantwide condition monitoring data, empowering operators to:
- Make more informed, proactive decisions on individual machine maintenance
- View a holistic health report of interconnected plant equipment
- Reduce downtime and improve overall plant ROI

TOTAL ASSET COVERAGE IN ONE VIEW

Your fleet: well understood but data is in silos/fragmented

Your knowledge: built slowly and hard to transfer
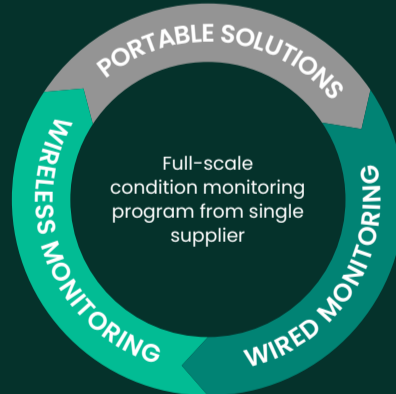
Your insights: slow to deploy and hard to scale

Your priorities: Difficult to plan and execute without data

Data visibility with context and clarity is a game changer. System 1 simplifies data management by bringing together multiple collection methods and systems, including:
- Online systems that collect data continuously
- Distributed systems, including wireless
- Portable data collection for periodic data collection and analysis

ONLINE, WIRELESS AND PORTABLE SOLUTIONS

PORTABLE SOLUTIONS
WIRELESS MONITORING
WIRED MONITORING
Full-scale condition monitoring program from single supplier

PORTABLE SOLUTIONS
- Human element—see, touch, smell
- Periodic measurements
- Suitable for many asset types

WIRELESS MONITORING
- Simple to deploy
- Fast to expand
- Cost effective

WIRED MONITORING
- Highest channel and sensors type capacity
- Fastest sampling rates
- Protection capable

Wireless capabilities are transforming plantwide monitoring solutions. Sensors can be added to any asset to communicate over a wireless network back to the software program.
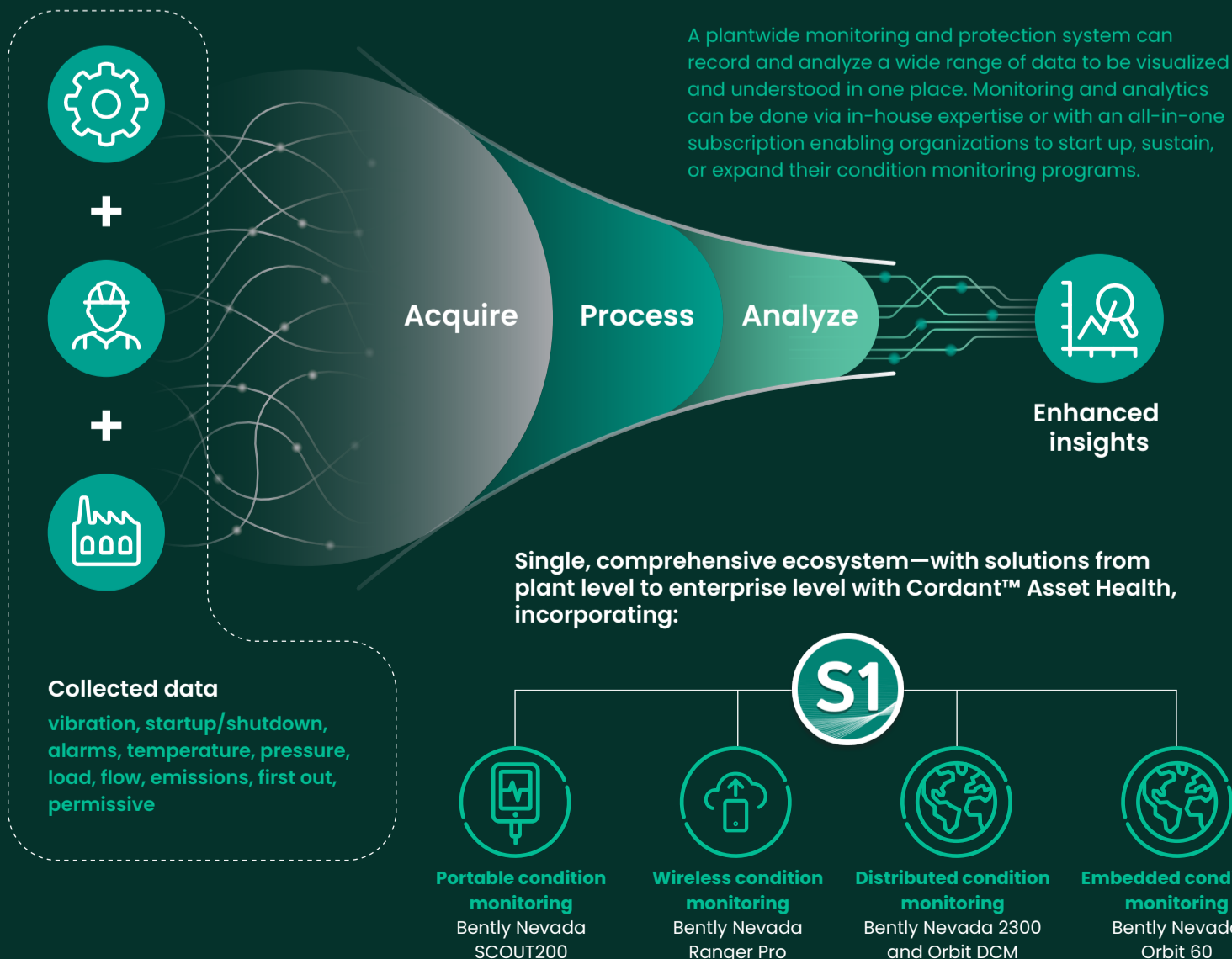
We use wHART or ISA100 protocols to keep assets online and monitored around the clock.

Wireless for: online, semi-continuous data, low-to-medium-risk assets, and flexible deployment.

Portable for: handheld analyzers and collectors for periodic and route-based monitoring.

PLANTWIDE DATA ANALYSIS

A plantwide monitoring and protection system can record and analyze a wide range of data to be visualized and understood in one place. Monitoring and analytics can be done via in-house expertise or with an all-in-one subscription enabling organizations to start up, sustain, or expand their condition monitoring programs.

Acquire → Process → Analyze → Enhanced insights

Collected data
vibration, startup/shutdown, alarms, temperature, pressure, load, flow, emissions, first out, permissive

Single, comprehensive ecosystem—with solutions from plant level to enterprise level with Cordant™ Asset Health, incorporating:

S1

Portable condition monitoring
Bently Nevada SCOUT200

Wireless condition monitoring
Bently Nevada Ranger Pro

Distributed condition monitoring
Bently Nevada 2300 and Orbit DCM

Embedded condition monitoring
Bently Nevada Orbit 60

WANT TO LEARN MORE?
bakerhughes.com/cordant