

**Bentley**<sup>®</sup>  
Advancing Infrastructure

**CONNECT** Edition



# AssetWise<sup>®</sup> Asset Reliability – Asset Health Monitoring

Enable the Right Work on the Right Equipment at the Right Time

AssetWise Asset Health Monitoring provides a cohesive and integrated approach to developing, implementing, and managing a living program for asset performance, integrity, and reliability. The application is integrated with SAP EAM, IBM Maximo, and Oracle eAM Enterprise Asset Management systems to enable the right work on the right equipment at the right time.

## The CONNECT Edition

The SELECT<sup>®</sup> CONNECT Edition includes SELECT CONNECT services, new Azure-based services that provide comprehensive learning, mobility, and collaboration benefits to every Bentley application subscriber. Adaptive Learning Services helps users master use of Bentley applications through CONNECT Advisor, a new in-application service that provides contextual and personalized learning. Personal Mobility Services provides unlimited access to Bentley apps, ensuring users have access to the right project information when and where they need it. ProjectWise<sup>®</sup> Connection Services allow users to securely share application and project information, to manage and resolve issues, and to create, send, and receive transmittals, submittals, and RFIs.

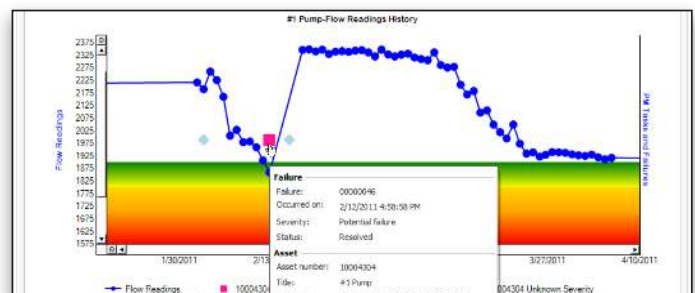
## AssetWise Drives a Proactive Asset Performance Management Process

AssetWise Asset Health Monitoring is an asset condition monitoring and data consolidation platform. It enables you to efficiently and effectively collect, consolidate, centrally store, analyze, and act on data to make timely and informed maintenance decisions. The platform helps you mitigate risk while lowering costs.

Bentley's application enables a risk-based, reliability-centered approach early in the asset lifecycle to ensure operational readiness and optimal performance. Once in operation, you can detect potential failures early to assist with timely and informed maintenance decisions. AssetWise provides a unique combination of rigor, speed, and risk-sensitivity to help you develop a cohesive strategy across an entire equipment base, multiple sites, and fleets of assets. The asset health dashboard promotes a proactive daily process by changing the way operations, engineering, and maintenance work together to manage production assets. AssetWise becomes the control room for asset care, recommending what actions to take and when to prevent asset failure.

## Digital Twin Environment

Bentley's approach to asset performance management provides immersive visualization and analytics visibility through digital twins, which create an immersive experience that aids in safety, training, and efficiency.



Monitor degradation of asset conditions and view potential failures and corrective actions taken.

## Mobile Inspection Platform

AssetWise helps you achieve quick results and build momentum toward operational excellence. When assets are spread across a wide geographic area, AssetWise's remote capabilities allow users to work disconnected from the network for extended periods of time. Users always have direct access to the information required for the tasks they need to perform their jobs.

When used in conjunction with EAM systems such as SAP EAM, AssetWise provides visibility to the asset hierarchy, work, and asset health history with the ability to create corrective work orders while in the field.

## Eliminating Islands of Data

The Industrial Internet of Things (IIoT) provides more data about the condition of your assets. As IIoT adoption increases, data will grow exponentially. However, the data needed to improve equipment performance and reliability might be housed in many disparate databases, spreadsheets, SCADA, DCS, and data histories, preventing automatic analysis and actionable insights. AssetWise evaluates all condition data from all sources, leading to trends, alarms, and recommendations or the automatic creation of corrective actions necessary.

Tracking an asset's reliability program with a dashboard showing current asset health provides valuable digital line of sight. You can improve decision-making with accurate information about the current status of assets, and workers can comply with regulations by providing the motivation for their daily actions.

## Benefits

- Reduce risk and ensure safety
- Ensure predictable production
- Eliminate unexpected downtime
- Increase availability and asset utilization
- Reduce costs
- Ensure compliance with standards and regulations
- Meet quality targets
- Eliminate data silos
- Retain workforce knowledge

## System Requirements

### Deployment Options

- Hosted by Bentley
- On-premises or self/third-party hosting

### Databases Supported

- Microsoft SQL Server and Oracle

### Technical Architecture

- Microsoft.NET
- Winforms user interface components
- Load balancing, application server management, hosted under IIS
- Unified deployment and migration capabilities
- Encrypted secure https communication between client and application servers
- OpenID authentication, Active Directory federation, multifactor authentication, or Windows authentication

### Mobile workforce

- Mobile inspection apps
  - iOS 8.0 or later
  - Android KitKat 4.4 or later
- Remote computing
  - Windows tablet
- All users have login and disconnected modes
- Device independent
- Some drivers are specific per device for bar/QR code scans and photos

Find out about Bentley at: [www.bentley.com](http://www.bentley.com)

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# AssetWise Asset Health Monitoring At-A-Glance

## Asset Hierarchy

- Manage high volumes of assets from multiple sites with unlimited hierarchy levels
- Spatially navigate assets, including alarm indications, in a geographical map
- View 2D and 3D visual representations of assets in the hierarchy
- Track to level required to monitor condition indicators
- Quickly identify poor performers out of very large asset populations

## Digital Twin

- Provides immersive visibility of asset performance and alarms within the 3D model
- Visualize and search for bad actor assets by alarm severity, asset type, or other criteria
- Acknowledge alarms directly from the digital twin

## Condition Indicators

- Supports descriptive and numeric indicators
- Apply calculations and rules
- Normal and non-normal states, multiple alarm thresholds such as early warning, urgent, critical, etc.

## Reliability Strategy/Program Implementation

- Ensure newly developed strategies are followed
- Wizard-based route creation
- Quickly identify inspection points for an asset or group of assets, then automatically create a route per the action plans
- Execute lubrication routes in addition to basic care, preventive maintenance, and CBM
- Instructions to user included for each inspection
- Routes may be downloaded to mobile devices

## Smart Copy

- Templates for copying indicators
- Apply a consistent reliability program strategy across sites
- Copies components and assemblies, systems, and entire site hierarchies including condition indicators and maintenance plans
- Reduces implementation time and effort

## Current Practices Review (CPR)

- Used when quickly initiating change from a highly reactive environment to a proactive culture
- Validate existing practices
- Automate existing valid paper-based programs
- Implement a mobile approach to inspection and work management

## Asset Health Dashboard

- One central view of asset health with flashing alarms in graphical dashboard in the context of asset hierarchy
- Consolidate and analyze condition data from all sources
- Monitor asset condition trends
- Detect the onset of failure early
- Link directly to individual failure modes

## Alarm Management and Triggering of Proactive/Corrective Work

- Make timely and informed maintenance decisions before equipment fails
- Automatic email notification when alarm threshold is exceeded

- Alarm acknowledgement can automatically enable corrective work in enterprise asset management (EAM) system, which can suggest specific corrective work to be performed

## Asset Health Indices

- Leverage condition indicators to quantitatively score and assess overall current asset health for the purpose of long-term capital planning and maintenance work prioritization
- Quickly and easily capture multiple modes of degradation and failure by asset class
- Automatically calculate indices for immediate access and proof of regulatory compliance

## Mobile Inspections & Maintenance

- iOS and Android mobile inspection apps for collecting qualitative and numeric inspection and condition data, including photos
- Ensures consistency between inspectors with instructions, guidance photos, and drop-down lists for data entry
- Remote computing version includes access to assets, work history, and calculations, and allows for creating follow-up work in the field

## Total Cost of Ownership and Replacement Decision Support

- Projection of future costs based on history and trends
- Project future risk, asset health index (AHI), and asset design life
- View each recommended option for asset replacement as a visual graph and a recommended best option based on the lowest total cost point

## High Volume IIoT

- Collect high volumes of indicator readings from data histories and run calculations
- Determines when alarm thresholds are crossed and sends indicator readings in alarm to AR for acknowledgement
- Millisecond time stamp support

## Artificial Intelligence and Machine Learning

- Connector to sync in AI/ML inferences as failure events

## Key Performance Indicators

- Ensures accountability at all levels of the organization
- View leading and lagging KPIs, and drill down to access details
- KPI templates and personalized dashboards
- My Desk keeps daily work on track with personalized dashboard

## Production Loss Accounting

- Take action to achieve predictable production
- Calculate lost production costs due to plant stoppages and delays
- Focus improvement efforts on the assets with the greatest impact on production

## Failure Tracking

- Full, partial, and potential failure tracking
- Failure events created from EAM work history via interoperability
- Track mean time between failures (MTBF) and repairs (MTBR)

## Integration to EAM

- Ensure the right work is enabled at the right time on the right equipment
- Certified integration with SAP EAM, IBM Maximo, Oracle EAM