Asset Health Management

for business critical assets

Why Asset Health Management?

Pragma provides an engineering support service that provides:

All businesses are dependent on the reliability and availability of critical assets for the smooth running of their operations. The impact of asset failure ranges in severity, and can include a total loss of production, inefficient service delivery, loss of income, damage to brand equity, or a breach in legislative compliance. What if you could use technology to give these assets a voice to provide vital information for fast and accurate decision making?

Main challenges addressed

Unreliable assets

Critical assets not being available when needed impacts your income, operational safety and reputation

Unpredictable costs

Reactive maintenance is expensive and difficult to plan for

Poor work practises

Incorrect maintenance tactics increases statutory risk, and reduces asset life span

Measurable benefits delivered

Improved availability

Assets are monitored in real time, pro-actively maintained and always available

Transparent information

Asset performance and costs are benchmarked, planned and controlled

Business sustainability

Operational disruptions are reduced, incident response improved, and risk* is reduced

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asset management | engineered

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Enabling Asset Health Management

What is Asset Health Management?

By definition it integrates the benefits of IIoT sensors, data capturing, visualisation and analytics to improve the reliability and availability of physical assets.

Asset health is monitored on line and in real time, allowing the use of advanced asset management techniques such as:

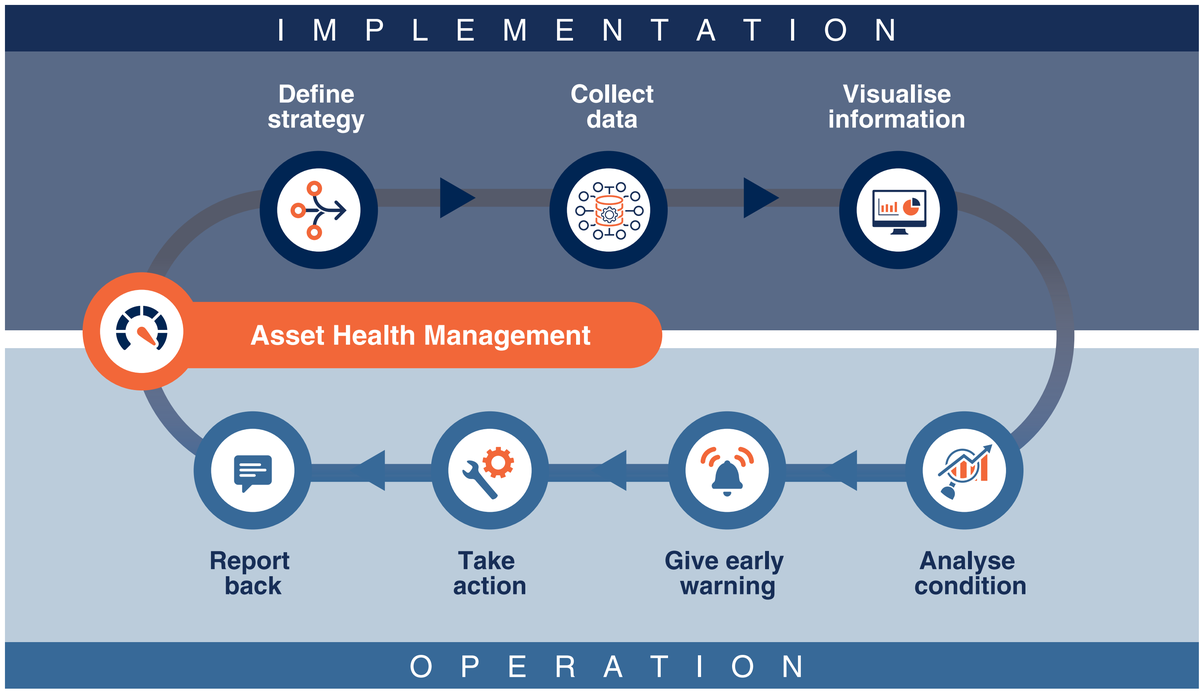
- Predictive work forecasting, use of the optimum
- Maintenance activity mix, and allowing owners to take
- Corrective action before failure occurs.

24/7/365 availability of asset performance information

The Pragma Way | More than just Monitoring

We deliver asset type specific performance management solutions for your business critical assets.

A dedicated team of specialised engineers are ready to support you around the clock, helping you to optimise asset performance through the implementation of the necessary predictive asset management business processes and technologies.



This model illustrate the full solution.

Key Features | End-to-End Solution

- **Focused on business critical** assets
- **Risk analyses** using FMEA techniques
- Effective **Asset Care Plans** to describe optimal maintenance practices
- **Edge-to-Cloud** technologies applied to give assets a voice
- Access to **visualisations and "Digital Twin"** performance information
- **Expert analysis** of asset performance data and information
- **Early warning** of eminent functional failures
- **Effective mobile** work management
- **Incident investigation** and improvement recommendations
- **Optimisation** of asset care plans and predictive maintenance strategies
- Management of **contractor performance** to optimise cost and risk

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24/7 monitoring and management service

Asset Health Management on Transformers

Want to mitigate the risks posed by your Transformer failing and leaving your plant without power when you need it most?

Pragma provides an engineering support service that provides:

- Improved Transformer availability
- Extended asset life
- Reduced business interruption risk
- Increased cost transparency and predictability
- Lower business risk

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Transformer

Our scope

Assets we cover

- Transformer

Industries we serve

- Utilities
- Generation and Transmission
- Mining
- Manufacturing
- Renewables

"All electricity users and plant owners are dependent their transformers to keep their plants or networks in operation. Transformer failures can be catastrophic and dangerous and lead to a loss of revenue, products, service delivery, income, brand equity and much more. By continuously monitoring these assets you have factual and in-time information about their condition and are able to make quick decisions and take actions, to ensure their availability."

Your challenges

Transformer reliability

- Degradation or contamination of oil insulation
- Overheating and thermal degradation
- Low insulation and cooling oil levels
- On load tap changer failure

Transformer risk

- Business interruption and long repair/ replacement lead time in case of failure
- Potential for catastrophic and harmful failures
- Lack of redundancy or mitigation plans

Impact vs Probability

- Complacency due to low frequency and high reliability of transformers
- Limited consideration for the high impact in case of failure

Impact of poor maintenance practices

- Statutory compliance work not tracked
- Remedial work not managed
- Maintenance work quality not confirmed
- Reduced asset reliability

Value add

Improved business sustainability

- Risk of failure reduced due to early detection of potential faults
- Business interruption risk mitigated through in-time monitoring and expert reliability advise
- Accurate and reliable information delivered to the right people, in the right format in-time

Improved cost transparency

- Maintenance spend planned, benchmarked and controlled
- Reduced fixed interval maintenance - only act when required
- Asset life-cycle cost managed based on reliable information
- Consolidated monitoring, reliability, advisory and maintenance service

Best-in-class monitoring solution

- Intelligent Gateway that bridges the gap between edge devices and the cloud
- Web-based IIoT monitoring platform for easy and remote access to condition parameters

Transformer availability assurance

- Transformer health parameters monitored and early warning provided
- Reactive and predictive maintenance work identified, planned and executed by expert field technicians
- Contractors dispatched to perform work under agreed SLA
- Maintenance work inspected to ensure quality
- Effective management and control of maintenance contractors
- Critical information provided to enable agile decision making
- Advanced diagnostics on-site to support fault finding efforts and take corrective action before failure
- RCM based maintenance plans

Transformer

We monitor

Temperatures
- Top and Bottom Oil
- Cooler Oil / Water
- Winding Hot Spots
- Ambient

Bushing Health Tan Delta and Capacitance

Partial Discharge

Cooling System
- Fan/Pump Current
- Status Inputs
- Loss of Power

System Health
- Internal Self-Checking

Voltage Regulation

Tap Changer
- Position
- Operation Counters
- Temperature Differential
- Drive Motor Monitoring
- Contact Wear
- Reversing Switch Operation

On Line DGA and Winding Temperature
- DGA and Moisture
- Fiber Optic Temperature

Harmonics and Fault Occurrences

Load