



Transformer Monitoring Solution

Elevate Transformer Performance with Advanced Monitoring Solutions

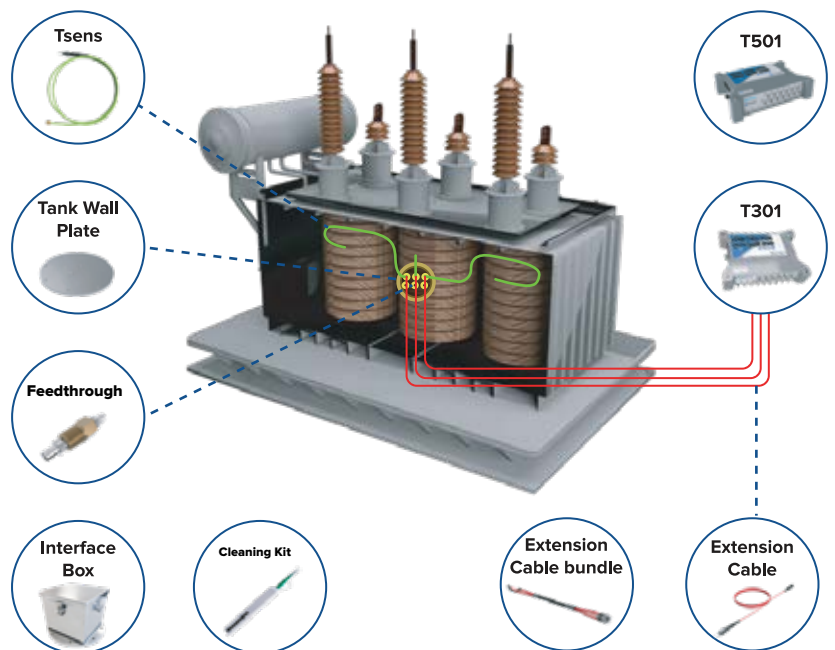
Power transformers are indispensable components in a wide array of industries, spanning from power generation to commercial applications. They operate tirelessly from the moment they are commissioned, gradually aging towards their end of life—a natural process that cannot be circumvented. Predicting the condition and estimating the remaining lifespan of a transformer is crucial for achieving uninterrupted operations. A transformer's longevity is primarily determined by its thermal constraints.



RM's Hotspot Monitoring Solution

Rugged Monitoring's hotspot temperature monitoring replaces manual diagnostics with a fully-automated, high-resolution solution. By utilizing fiber optic monitoring systems with IIoT Sensors, Edge Devices and Software sensing technology, our solutions offer direct measurement of internal hotspot temperatures at critical points within transformer windings.

With Rugged Monitoring's real-time monitoring system, businesses can now minimize risks and maximize uptime, aligning their proactive strategies with modern asset monitoring frameworks.



- Increase Accuracy of "Heat Run" Tests
- Detect Early Life Failures
- Transformer Dynamic Loading Response
- Transformer Performance Optimization
- Thermal Model Reflects Operating Conditions
- Enable Preventive Maintenance

RM's Partial Discharge Solution

Partial discharge measurements on power and distribution transformers are proven tool to identify and locate insulation defects. The sensors installed on the transformer body, acquires High Frequency (HF) and Ultra High Frequency (UHF) PD signals and the PD monitoring system provides reliable diagnosis and recommendations.



What can be tested:



Maintank



Winding Insulation



Bushings



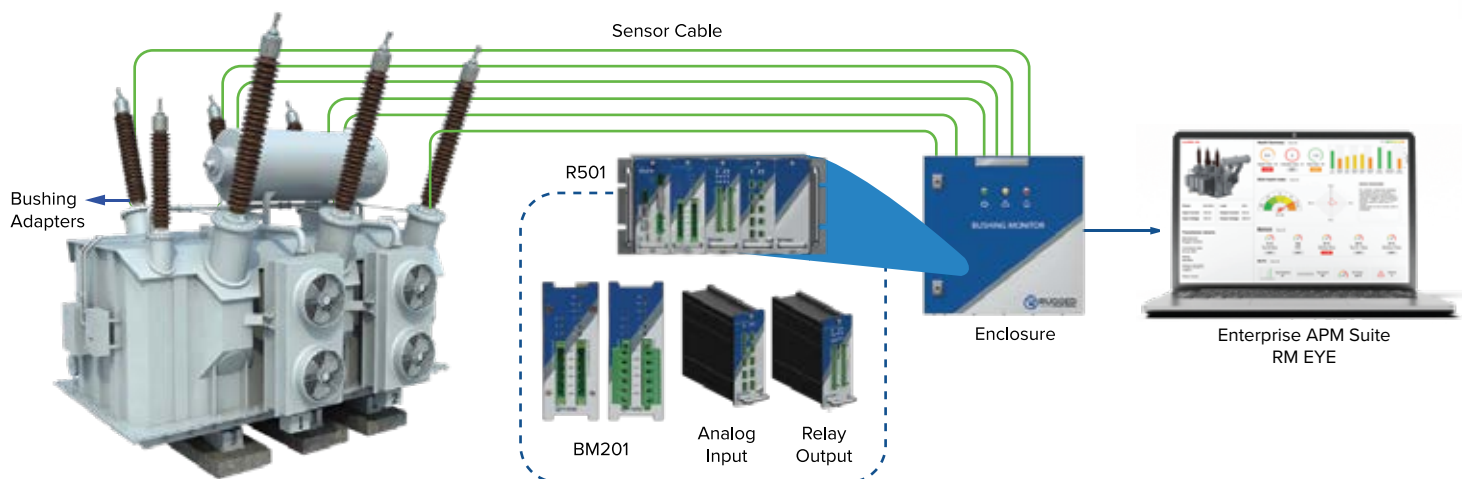
OLTC Insulation

RM's Bushing Monitoring Solution

Rugged Monitoring presents an advanced bushing monitoring solution that gives predictive diagnostics to help users prevent malfunctions or breakdowns in wide range of power transformer bushing equipment. Our self-operating system and remote monitoring solutions present real-time diagnosis and allow utilities to work towards solving problems rather than finding them.

Routine maintenance, early replacement and traditional off-line testing have been used to address difficulties in bushing failures in the past. With the recent technology asset owners can detect failures and can directly reduce their maintenance downtime and costs.

RM's Comprehensive Bushing Monitoring Solution



Option 1: R501 Comprehensive Electrical Asset Monitoring System

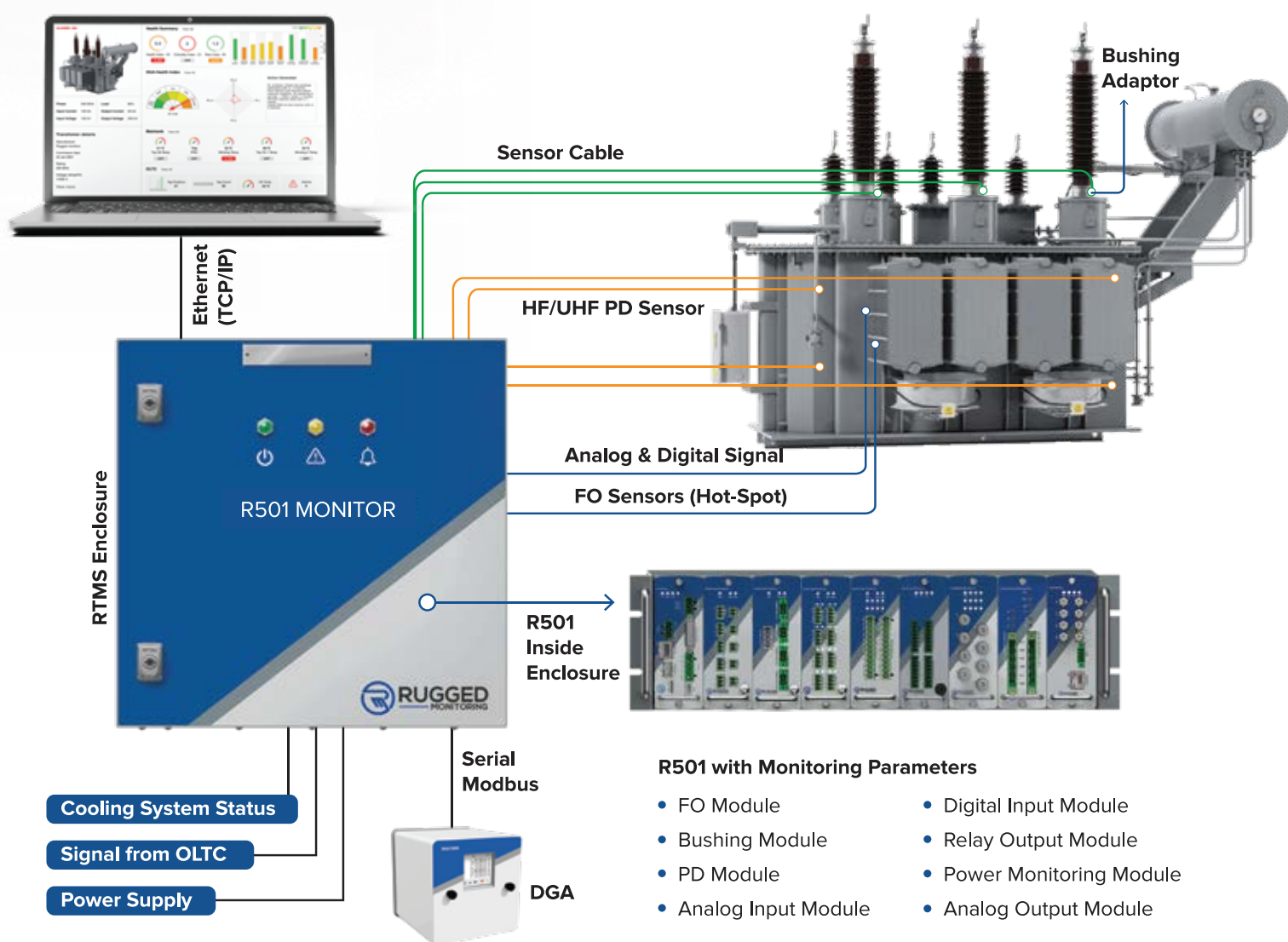
Option 2: BM201 as a Standalone Bushing Monitoring Module

We at Rugged Monitoring are motivated to provide innovative and exceptional quality products, our vision remains focused on meeting customer requirements while anticipating and exceeding the needs of a continuously changing dynamic market.

RM's DGA Monitoring Solution

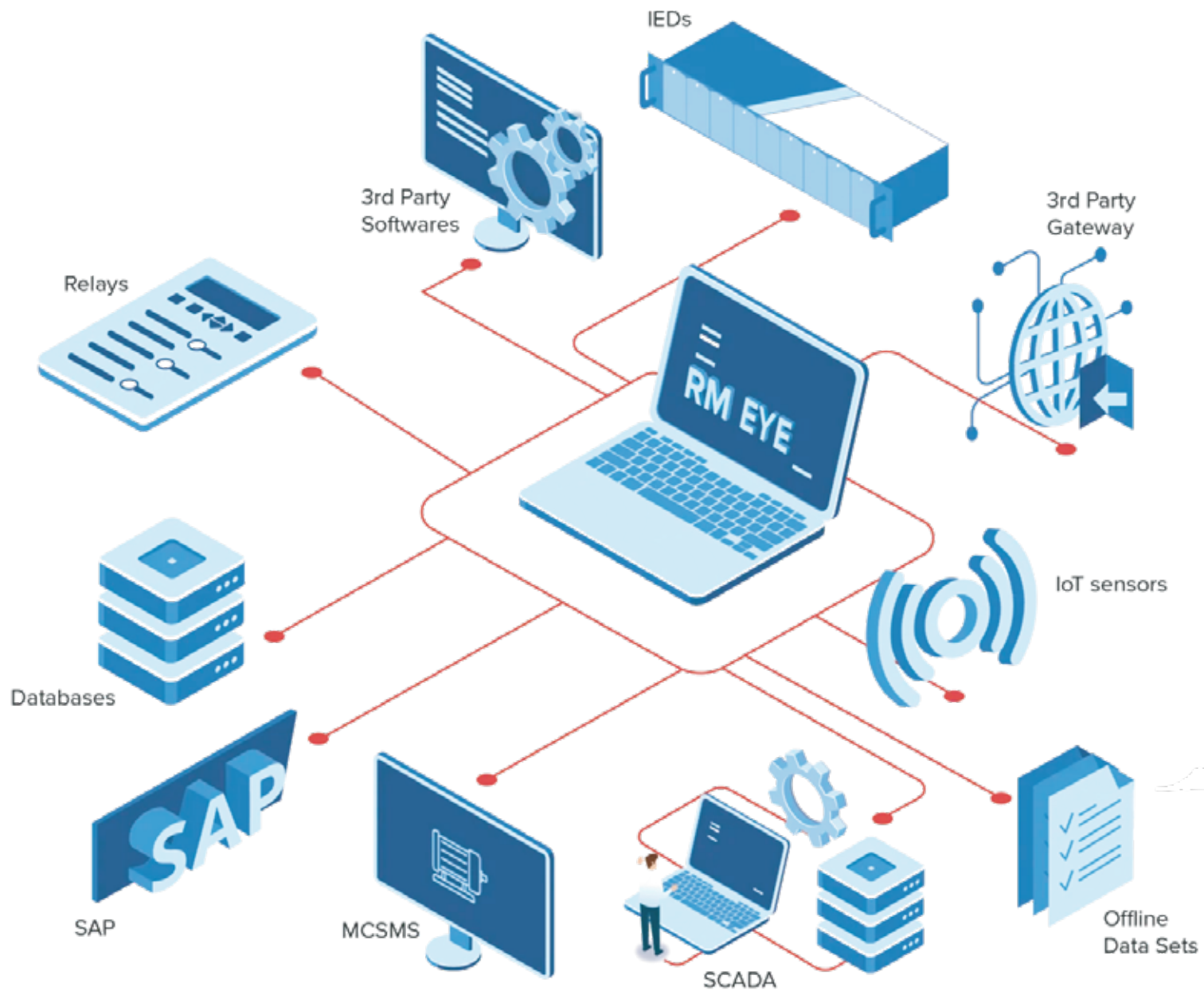
The evolution of transformer maintenance has witnessed a profound shift, transforming from a mere cost obligation to a pivotal strategic tool in the management of electrical transmission and distribution networks. In this dynamic landscape, the precise assessment of fault gases, moisture levels, and oil temperature within the transformer's insulating oil holds paramount significance. By meticulously monitoring the oil's condition, potential faults can be detected in their early stages, offering a preventive measure against unforeseen outages. This proactive approach not only ensures operational efficiency but also empowers decision-makers to optimize replacement intervals judiciously. Embracing DGA (Dissolved Gas Analysis) emerges as a pivotal advancement in this pursuit of efficient maintenance practices.

System Architecture for Transformer



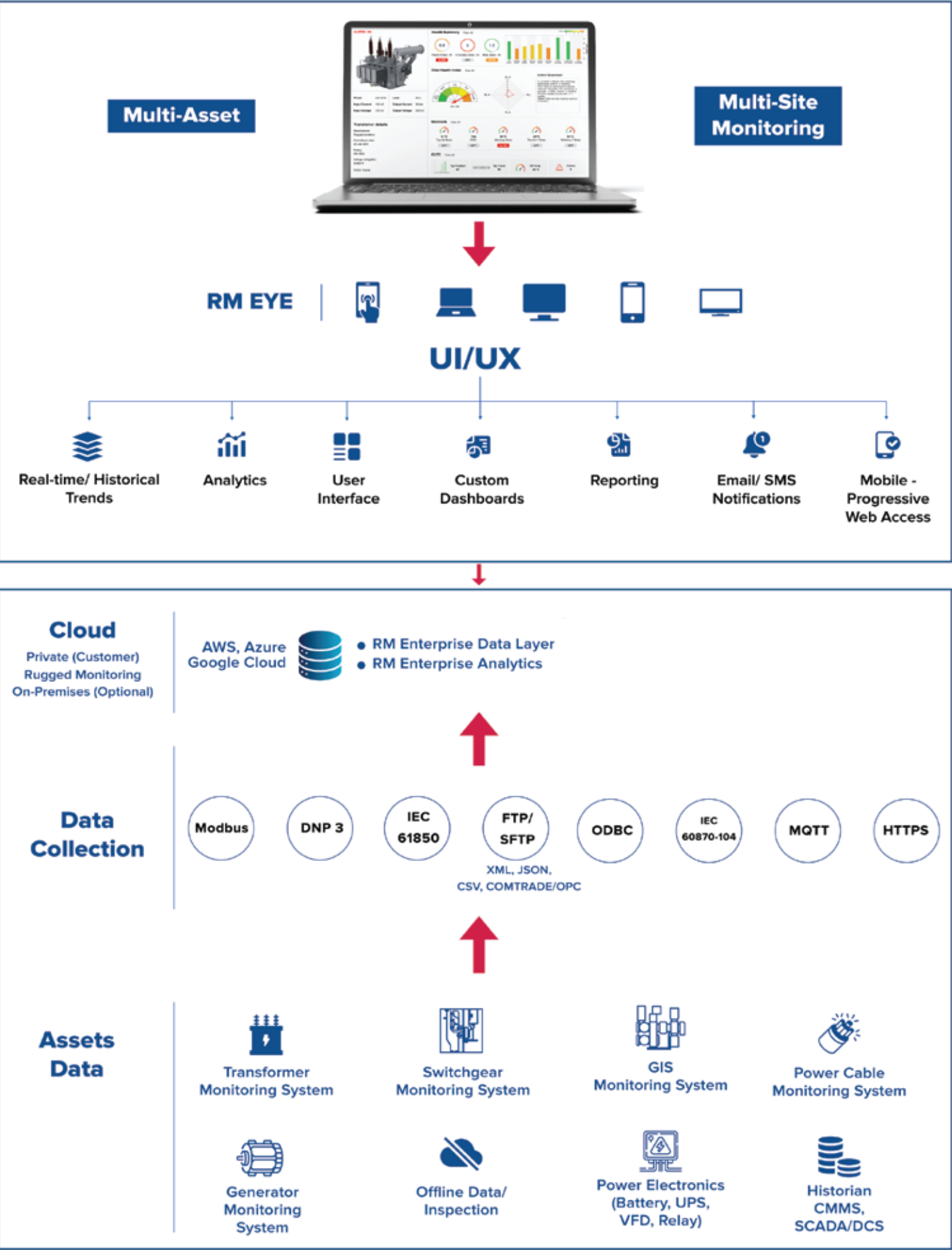
Enterprise APM Suite: RM EYE

RM EYE represents a paradigm shift in enterprise asset performance management through the condition monitoring of electrical assets. It uses an AI-driven approach to assess the health and performance of diverse assets, delivering transformative and sustainable outcomes related to their health, performance, energy efficiency, and integrity.



Rugged Monitoring's RM EYE transforms traditional time-based maintenance into a proactive approach, equipping businesses with real-time insights into the health of their electrical assets. By detecting potential issues early on it helps create a dependable and efficient predictive maintenance system.

RM EYE Architecture



One Solution for Multi-Site Multi Asset Monitoring

RM EYE - Unified platform to monitor entire network of electrical assets

Features

- **Advanced asset health monitoring** with analysis and recommendations to increase asset effectiveness in addition to maximizing equipment uptime
- **Modern remote monitoring solutions** provide valuable insights to Multiple Assets at Multiple Sites from time to time
- **Establish a real time and consistent monitoring** by getting the right information into right hands
- **Simple and user-friendly interface** providing easy and fast access to all the features
- **Everything about the asset at one place**
The raw data, analysis and recommendations
- **Advanced asset algorithms** for electrical assets to evaluate asset health
- **Advanced reporting technology with automated alerts**
- **An efficient, reliable partial discharge monitoring for all the assets**
- **A detailed comprehensive DGA analysis**
- **Built on well-established remote and cloud-based monitoring technology**
- **Quick configuration** so that you are not required to configure separately.
- **Protocols: MODBUS, MQTT, IEC61850**
- **Robust integration with 3rd party systems and devices** with industry standard protocols
- **Bulk configuration imports for fast deployment**
- **Encompasses a secure access to data and configuration**
- **QR code scanner on mobile devices**
- **Accessible on web browser and mobile app**
- **Historical data storage and on demand access** via export feature
- **Extended multilingual support** to handle product inquires or troubleshoot problems proactively
- **Systematic fleet management analysis**
- **Offline test data integration and analysis**

Why Customers Choose Us ?



Expertise You can Trust

Backed by 100+ years of experience, we understand the unique demands of critical asset management across diverse industries.



Focus on Sustainability

Our Solutions are designed to help you reduce energy consumption, minimize waste, and align with your sustainability goals.



Money Matters

We offer competitive and transparent market pricing to protect you from currency fluctuations.



Customer Centric Approach

From consultation to deployment and beyond, we are committed to delivering exceptional support, personalized service, and timely project completion.

CERTIFICATIONS



ISO 9001:2015



ISO 14001:2015



ISO 45001:2018



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