



# Manage and Reduce Your Risk with Condition Monitoring for Motors and Generators

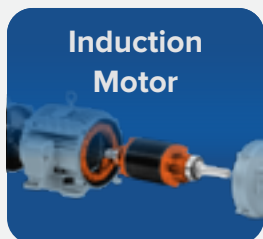
Constantly monitor the critical parameters of your rotating machines now from anywhere

# RM's Solution for Motors and Generators



Motors and Generators are complex electro mechanical systems exposed to different stress factors. Condition Monitoring of high voltage motors and generators which are in continuous operation is very important. Any fluctuation in Voltage, Current and Frequency leads to damage of the rotating machine with unplanned outages as well as cost and resources. Continuous monitoring and tracking the performance of heavy-duty motors and generators are important for an efficient and increased asset lifetime.

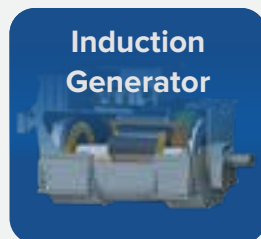
Rugged Monitoring offers an advanced comprehensive condition monitoring solution for your motors and generators. The specifically designed algorithms analyze the data, providing deeper insights into the condition and performance of the monitored asset. The solution includes precisely designed sensors, monitors and comprehensive monitoring software that provides online, offline data, alarms and analytics. Depending on specific operating requirements and application, we customize our condition monitoring solutions for:



**Induction Motor**



**Synchronous Motor**



**Induction Generator**



**Synchronous Generator**



**Variable Speed Drives**

## What Can Be Monitored

### Load, Power

- Load/ Over Current
- Active/ Reactive Power
- Power Factor

### Temperature Monitoring

- Bearing Temperature
- Ambient Temperature
- Winding Temperature
- Cooling Air Temperature

### Partial Discharge Monitoring

- PD Localization
- PD Detection
- PD Severity Analysis

### Winding Temperature

- Inlet Temperature
- Outlet Temperature
- Intelligent Cooling Control
- Cooling Efficiency

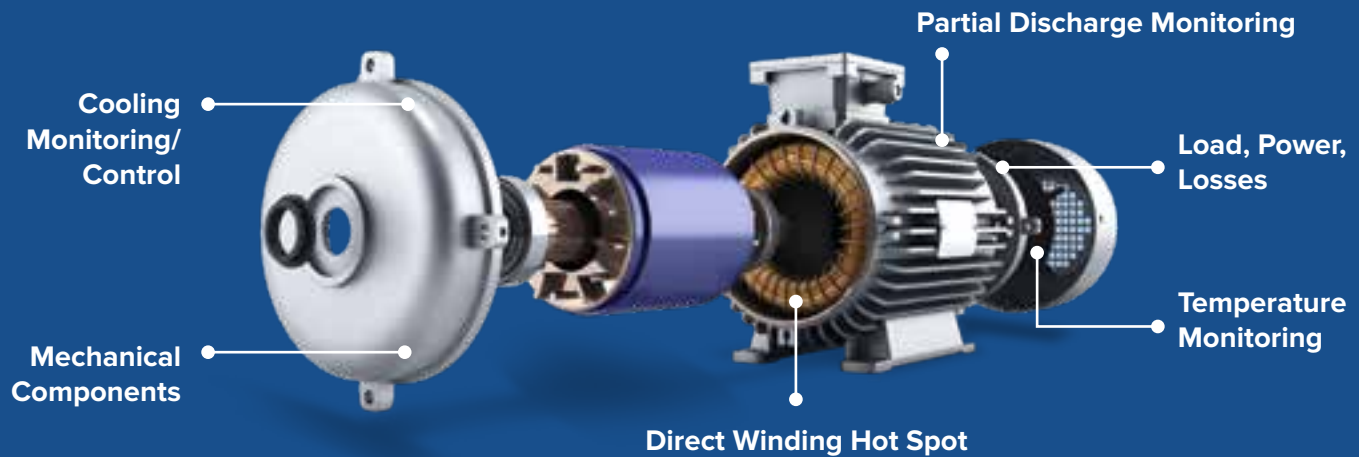
### Direct Winding Hot Spot

- Stator Winding Hot Spot

### Mechanical Components

- Machine Vibration
- End Winding Vibration
- Current Signature Analysis
- Flux Monitoring
- Greasing condition of bearings, bearing & driven application vibrations

## Schematic Diagram of Induction Motor



## Types of Monitoring in Rotating Machines

### Partial Discharge Monitoring

Insulation related faults (Stator insulation, end winding, slot discharges, contamination, micro sparking, etc.)

### Current Signature Monitoring

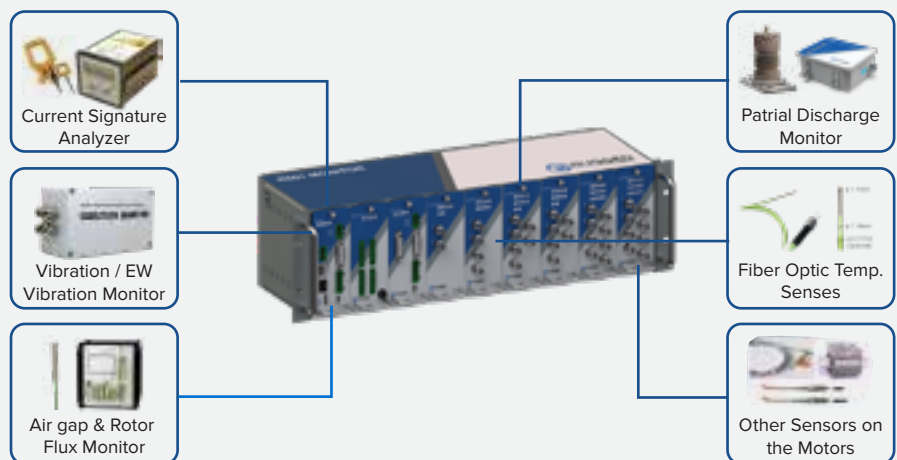
Entire machine faults (Rotor faults mainly, stator faults, looseness of wedges, power monitoring) except insulation condition)

### Other Monitoring

Noise measurement, alignment measurement, greasing monitoring, running hour monitoring, etc.

### Flux Monitoring

Magnetic field measurement between stator & rotor or say rotor flux monitoring



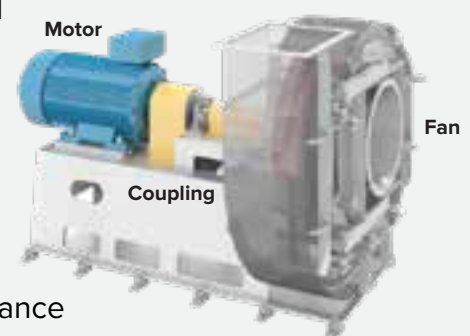
### Temperature Monitoring

All phases of the winding, DE side, NDE side, terminal box, coupling, etc.

### Tri Directional - Vibration Monitoring

DE side, NDE side of machine & applications, coupling, gear box

Monitoring will help to identify and to implement the right operation and maintenance strategy consequently preventing any break down of the machine before the end of the design life. The real time monitoring can monitor, diagnose, and predict failures on less critical but widely utilized rotating equipment, such as generators and motors. The system will help in proactive life cycle planning, minimizing maintenance costs & unplanned outages. The detailed trends from the solution help the user to get the deep insight of the system performance and aids in taking actionable decisions before a catastrophic failure occurs.



## Features

- Intelligent and customizable solution
- Unique and Reliable Prediction
- Alarms and Alerts for any potential mechanical problems
- Built on well-established remote and cloud-based monitoring technology
- Realtime Process parameters monitoring

## Benefits

- Extended Asset Lifecycles
- Turnkey solution with Remote Condition Monitoring
- Capture Trends and Increase Return on Investment
- Different dashboards for different user roles and levels
- Greater diagnostic capability
- Ability to monitor multiple rotating machines with one software



# RM EYE Enterprise APM Suite

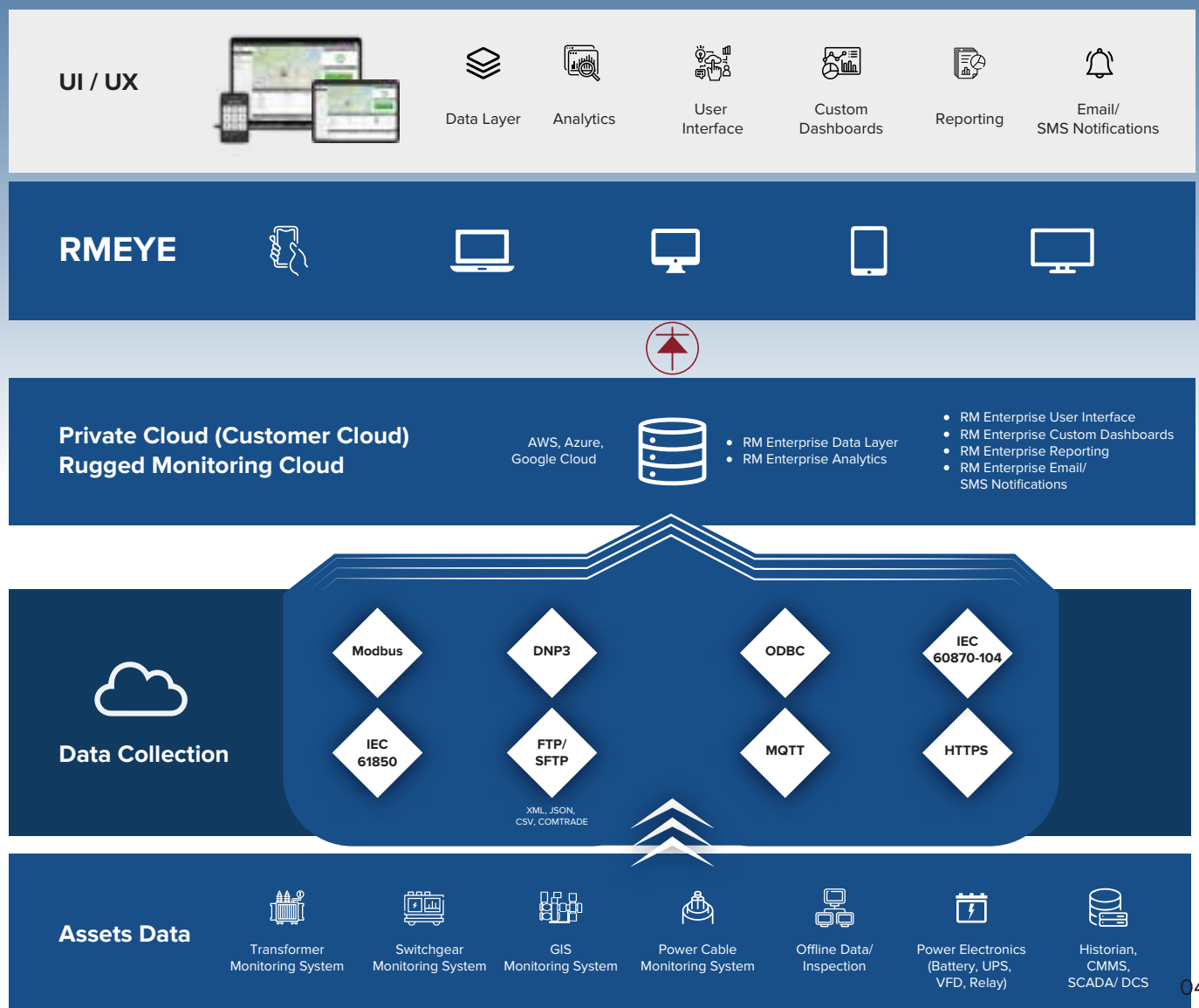
RM EYE is our advanced Asset Performance Management (APM) system designed to provide a scalable and future-ready solution undergoing digital transformation.

With AI-powered data intelligence, it offers comprehensive health indices for various assets across multiple locations. RM EYE surpasses traditional condition monitoring and facilitates a shift from reactive maintenance to predictive maintenance, maximizing asset lifespan and boosting ROI.

With its real-time remote monitoring capabilities, RM EYE equips experts, operators, SMEs, and engineers with real-time insights that support more informed, data-driven decisions. Through a combination of offline, periodic, and online assessments, it effectively lowers maintenance costs, helps avert unexpected failures, and enhances overall operational efficiency.



## RM EYE' Architecture



# One Solution for Multi-Site Multi Asset Monitoring

Manage different industrial assets on one platform without human intervention

## Features

- **Advanced and Exceptional Reporting** Technology with automated alerts
- **Modern remote monitoring solutions** provide valuable insights to Multiple Assets at Multiple Sites on real-time
- **Robust asset health monitoring** with analysis and recommendations support asset effectiveness in addition to maximizing equipment uptime
- **Establish a real time and consistent monitoring** by getting the right information into right hands
- **An efficient, reliable partial discharge monitoring** for all the assets
- **A detailed comprehensive DGA Analysis**
- **Lifetime Consumption details.**
- **Built on well-established remote and cloud-based monitoring technology**
- **Simple user-friendly interface** providing fast access to all the features and commands
- **Quick and easy 1 step configuration setup**
- **Encompasses a secure access to data and configuration**
- **Advanced asset algorithms** based on standard ones with new ideas
- **Systematic fleet management and analysis**
- **Extended multilingual support** to handle product inquires or troubleshoot problems proactively
- **Up System Level Reporting**
- **Industrial IoT**

## Features Specific to PD Monitoring

- Partial Discharge monitoring and Analysis
- PRPD : Phase resolve partial discharge
- Partial Discharge Amplitude and Discharge rate trend analysis
- Partial Discharge Fault localization
- Artificial Intelligence based PD fault Identification
- Realtime PD Alarm system
- Get Alarm notifications for individual bushing parameters over Email, sms and push notifications
- Analytics on Online, and offline partial discharge test data

### A plan for Success

Our Customers are well satisfied with the advisory services that we offer to help them with best in class technological performance and a long durable life.



#### Experts only

We bring-in our diversified experienced team with over 100+ years of experience in Asset Monitoring

## Why Customers Choose Us?

RM solution, the trusted monitoring solution for over 10000+ assets across 50+ countries. We are a leading High Value Electrical Asset Monitoring Company integrating fibre optic technology to the assets.



#### Money Matters

We protect you against currency fluctuation with competitive and fair market prices



#### Meeting Deadlines

Work with us, and you'll work with seasoned professionals – vigilant of deadlines, and committed to exceeding client expectations.



# Our Presence **Across the Globe**



## Head Office

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## Certification



ISO 9001



ISO 14001



ISO 45001/  
OHSAS 18000



Lloyd's  
Register



ATEX  
Certification



NIST  
Certification

## Rugged Monitoring Services

Rugged Monitoring provides customization of sensors, monitors & software. In addition we offer on-site commissioning services, maintenance contracts and technical support to all customers worldwide.

## About Rugged Monitoring

Industry's leading team of asset condition monitoring experts with 100+ years of combined experience committed to delivering customizable solutions for challenging applications. We offer a range of reliable, high performance, customizable sensors and monitoring solutions that are immune to external influence.



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