✅ **The MLS High-Voltage Motor Monitoring solution uses machine learning to track the motor's known good condition and continuously monitor key parameters. Turning the motor into a precise sensor, this advanced system detects issues early with exceptional accuracy—enabling proactive maintenance, reducing downtime, and protecting valuable assets.**

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Pioneering the future of power testing and monitoring

MLS High-Voltage Motor Monitoring
(using the motor as a sensor with basic Machine learning)

High-voltage motors are the beating heart of industrial operations, powering critical processes across industries such as manufacturing, energy, oil and gas, mining, and utilities. Their reliable performance directly impacts productivity, safety, and operational efficiency. However, high-voltage motors are subject to various stresses and wear over time, leading to performance degradation, unplanned downtime, and even catastrophic failures. This is where our innovative High-Voltage Motor Monitoring MLS steps in, offering a cutting-edge solution to monitor, diagnose, and safeguard these vital assets.

This monitoring device employs basic machine learning to revolutionize traditional motor maintenance strategies. By leveraging algorithms, it learns the motor's "known good condition" during normal operation and continuously monitors key parameters . Unlike conventional monitoring systems, this device transforms the motor itself into a highly precise sensor, enabling unparalleled accuracy and efficiency in detecting potential issues.

Basic Learning and Comparison Mechanism

At the core of the monitoring device is a basic machine learning engine that establishes a detailed baseline of the motor's healthy operating state. This baseline is created by gathering extensive data on the motor's electrical performance during its optimal condition. The system learns how the motor behaves under normal operating loads, capturing intricate details. These parameters are meticulously analyzed to form a reference point that reflects the motor's unique characteristics.

Once the baseline is established, the monitoring device begins its continuous comparison process. Real-time data from the motor is matched against the known good condition, with any deviations instantly flagged. This constant comparison allows the device to detect and diagnose a wide range of potential problems, offering early warnings before they escalate into costly failures.

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Electrical Issues

Phase Imbalances: The device identifies any inconsistencies in phase angles that could lead to uneven loading and efficiency losses.

Overcurrent Conditions: It detects situations where the motor is drawing excessive current, often a sign of electrical faults or mechanical overloads.

Insulation Degradation: Changes in power factor and current draw may indicate deteriorating insulation, a common precursor to motor failure.

Power Supply Issues:. Fluctuations in voltage or frequency are quickly identified, helping mitigate external electrical disturbances.

Environmental Factors

Temperature and Humidity Effects: External environmental changes can impact motor performance, and the system provides insights into how these factors affect operations.

Contamination: Signs of contamination, such as dirt or moisture affecting insulation and bearings, can be inferred from parameter shifts.

One of the standout features of the device is its ability to detect an extensive range of problems across various domains, including:

Mechanical Problems

Misalignments: Subtle deviations in load behavior can indicate shaft or coupling misalignments.

Bearing Wear: The system detects patterns consistent with bearing degradation, allowing for timely replacement before catastrophic failure.

Rotor Bar Damage: Abnormal variations in phase angles and current draw may signify rotor bar defects.

Shaft Vibrations: The device can identify unusual vibrations caused by imbalances or worn components.

Load-Related Anomalies

Unusual Load Variations: Sudden changes in load current can signal blockages or inefficiencies in the driven equipment.

Mechanical Blockages: Deviations in motor performance often reveal obstructions or restrictions in connected machinery.

Process Inefficiencies: The device highlights trends that point to inefficiencies in the overall process, enabling corrective actions.

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When the device detects a deviation from the established baseline, it immediately triggers real-time alarms. These alarms are designed to be clear, actionable, and customizable, providing operators with detailed information about the nature and severity of the detected issue. By offering specific diagnostics, the system empowers maintenance teams to address problems proactively, preventing costly downtime and extending the generator's lifespan.

Benefits of the High-Voltage Generator Monitoring Device

By adopting this innovative monitoring device, organizations can unlock a host of benefits:

1. Enhanced Reliability: Early detection of potential issues ensures that motors operate reliably, minimizing unexpected failures.

2. Reduced Downtime: Proactive maintenance scheduling eliminates unplanned outages and keeps operations running smoothly.

3. Cost Savings: Identifying and addressing problems early reduces repair and replacement costs while optimizing energy efficiency.

4. Improved Safety: Real-time monitoring minimizes the risk of catastrophic failures, protecting personnel and equipment.

5. Sustainability: By extending the lifespan of motors and improving energy efficiency, the device supports sustainability goals and reduces environmental impact.

Invest in the future of your operations with a monitoring device that sets new standards for performance, reliability, and innovation. Experience the power of a system that not only monitors but also understands your motors, ensuring they continue to drive your success.

The system's user-friendly interface ensures that operators can easily access and interpret the data. With both a local display (for basic data) and a cloud-based dashboard—Substation Digital—capable of analyzing vast amounts of data and integrating with existing SCADA systems, the device delivers insights in a format that suits operational needs. Historical data and trend analysis further enhance decision-making, allowing for predictive maintenance strategies that optimize performance and reduce costs.

Seamless Integration and Scalability

Our monitoring device is designed for easy integration into existing motor systems. It is compatible with a wide range of high-voltage motors and can be deployed across single motors or entire fleets. The device's scalability ensures that it grows with your operational needs, providing consistent and reliable monitoring across your facilities.
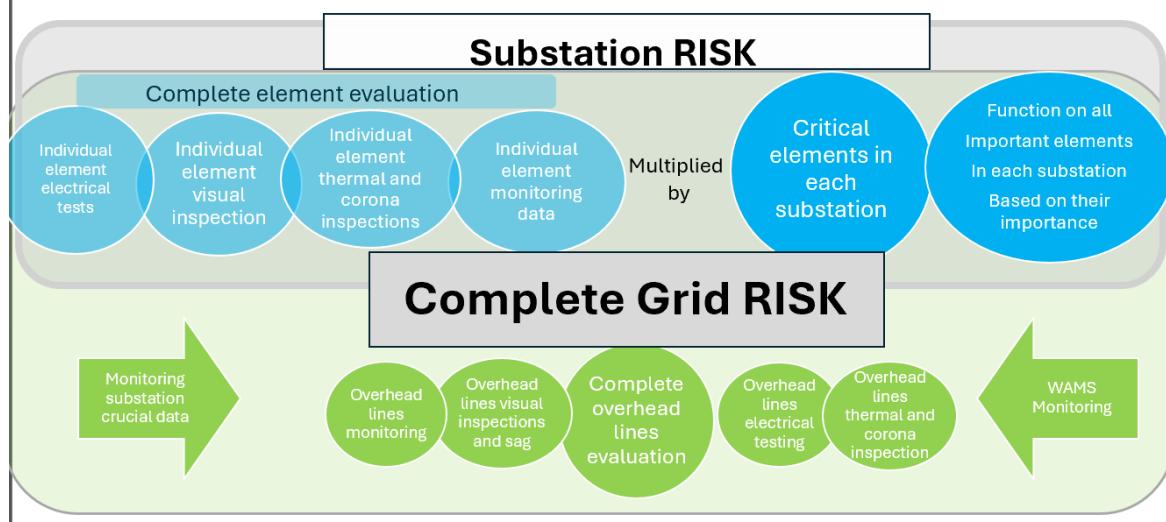
The Future of Motor Monitoring

The High-Voltage Motor Monitoring Device represents the next generation of motor monitoring technology. By combining machine learning, real-time analytics, and actionable insights, it transforms traditional maintenance practices into a proactive and data-driven approach. Whether you are looking to enhance operational efficiency, reduce costs, or improve the reliability of your high-voltage motors, this device is your ultimate solution.

PowerView
Testing & Monitoring Equipment

Pioneering the future of power testing and monitoring

Software for monitoring asset management , risk assessment , complete inspections analysis and grid digitalization

Substation RISK

Complete element evaluation

Individual element electrical tests — Individual element visual inspection — Individual element thermal and corona inspections — Individual element monitoring data — Multiplied by — Critical elements in each substation — Function on all Important elements In each substation Based on their importance

Complete Grid RISK

Monitoring substation crucial data — Overhead lines monitoring — Overhead lines visual inspections and sag — Complete overhead lines evaluation — Overhead lines electrical testing — Overhead lines thermal and corona inspection — WAMS Monitoring

Comprehensive risk $= \int all\ elements\ (electrical\ test +\ visual\ +\ thermal + monitoring) + corona$ inspection + overhead lines $\int\ (electrical\ test +\ visual\ +\ thermal + monitoring) +$ WAMS + other substation monitoring data

Risk assessment and automated asset Diagnostics

Risk assessment and digitalization of all data includes analysis and manages all substation data such as electrical tests, monitoring, visual and thermal inspections for the most comprehensive asset assessment. It includes trending each individual parameter of the Electrical tests and analyzing the results of electrical tests performed on each element (comparing them with preset editable limits) depending on the element characteristics (like voltage level, type of insulation media etc.). It also includes managing of all other types of inspections and analyzes all the possible monitoring values (and compares to preset editable limits).

Predictive maintenance stands for knowing your high voltage assets condition while it is still in service. Smart substation maintenance is based on smart decisions. Smart decisions are based on individual elements condition holistic evaluation (monitoring electrical tests and other inspections such as thermal and corona). This kind of evaluation of your substation results in asset performance at its optimal maximum with minimum downtime. Comprehensive risk assessment means analyzing all important parameters in advance so actions can be taken at the optimal timing with minimal. repair and downtime costs .
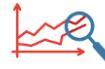
The test reports and inspections data are processed and automatic results analysis is performed with recommendations using artificial intelligence for further tests (if needed) or course actions

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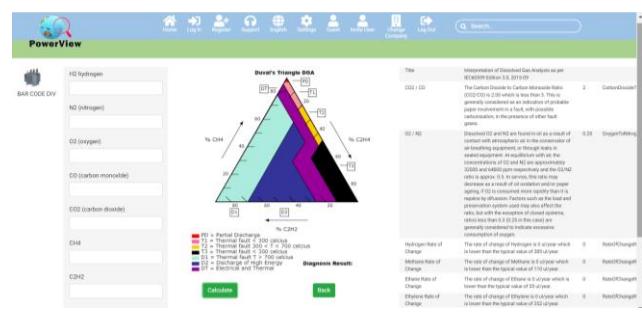
Build your digital substation

QR codes containing all the relevant data for all electrical elements

True Digital Electrical Substation with all existing substation element real electrical test, visual inspection, thermal and corona inspection and monitoring.

Substation Digital is integrated smart substation maintenance web application for digital HV asset management , risk assessment, inspections management , electrical tests management, processing and automated analysis according international standards and records keeping. A wireless maintenance Scada is also integrated in the app capable of connecting more than 1000 existing monitoring devices   with alarms distribution . The app also features   notification and access management for all elements. Everything can be arranged digitally as existing originally in HV substations. The features are also available as IOS and Android mobile app .   The application functionalities are being divided as electrical tests, monitoring , visual, thermal and corona inspection on a cloud platform or on premises installation . This application allows power and big industrial companies to set up a virtual substation, assign authorizations within the company (staff can have different authorizations similar to the ones they have in maintenance such as: upload electrical tests, analyze tests, change limits, connect monitoring devices, analyze monitoring data, upload visual , thermal or corona status, comments and pictures, arrange meetings, edit inspection lists,

SMART decision making

Access for all the relevant information to the relevant people anytime anywhere. This app makes all information related to substation maintenance, inspections and monitoring available on web and mobile app from server access. This helps decision making , records keeping , information availability and ease of access .

Costs reduction

Cost reduction in monitoring installations, and HV assets life extension.

Down time reduction

The system evaluates all the data in a matter of seconds and does the most advanced artificial intelligence analysis and limits comparison to international standards.

The Smart affordable wireless monitoring enables commercially viable monitoring on all relevant parameters on one platform irrelevant of the equipment manufacturer with integrated alarms and notifications with single click and virtual intelligence data evaluation

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Testing & Monitoring Equipment

Cloud digital substation

True Digital Electrical Substation with all existing substation element real electrical test, visual inspection, thermal and corona inspection and monitoring and asset monitoring

Issues history

The first system offering one click specific element data upload, the first system which integrates different parameters (electrical, monitoring, visual ,thermal and corona inspections).

Electrical tests

This software can directly import test reports from existing manufacturers, process the test reports and analyze test results and compare to preset limits against international standards. For each element there is a complete list for all possible electrical tests created according nameplate information (example voltage category , vector group and connections type etc) . All tests are divided depending on importance and the system only trends ones that user actually tests.

Special algorithms do most accurate temperature correction of the results and on import results from test reports. The software automatically compares all test results against international standards recommendations , rate of change limits , testing intervals performs risk assessment and automatically suggests further tests (if necessary)

Results upload permissions are arranged in the most natural way and are editable by account administrator.
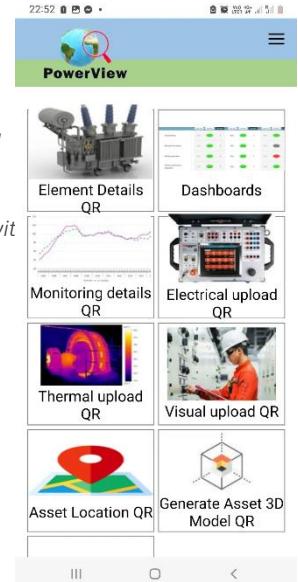
Integrated diagnostic tools

**Integrated automatic element analysis
And data evaluation**

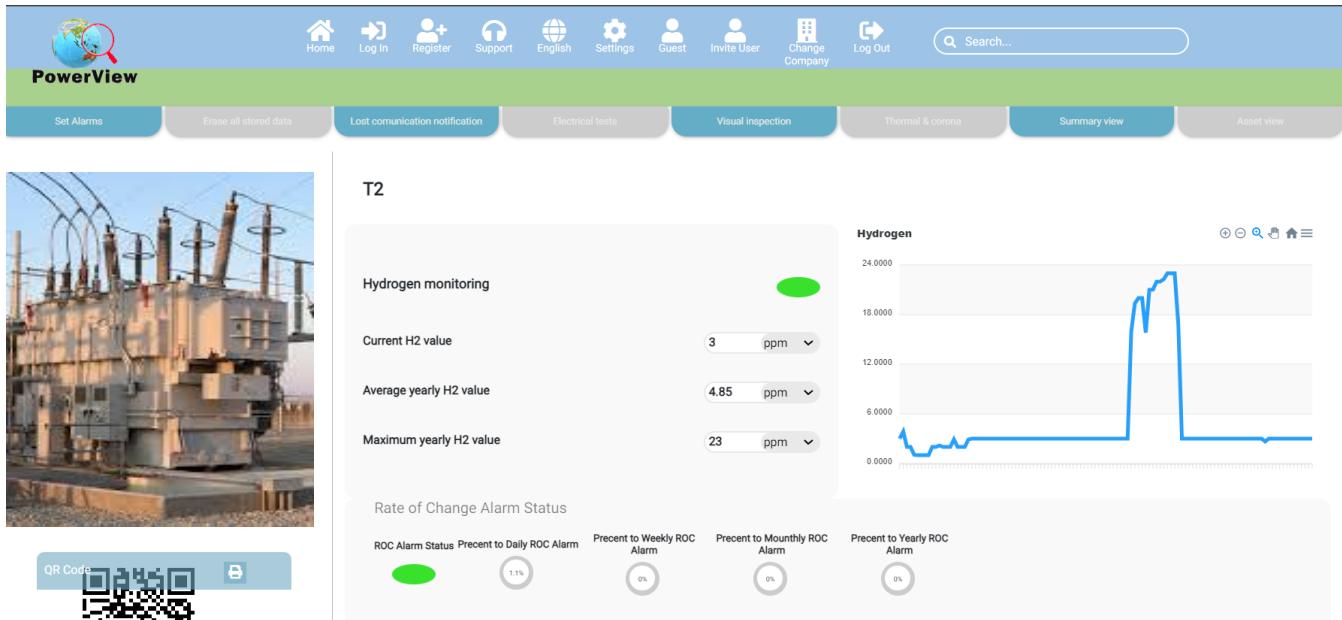**Preset editable lists for visual, thermal and corona and electrical tests**

Integrated 3rd party limited or unlimited substation data analysis

Mobile app

Complete substation maintenance application software with all electrical tests with diagnosis , all inspections and wireless monitoring cloud SCADA wit diagnosis for complete reliable HV asset risk assessment

GET IT ON
Google Play

Download on
App Store

PowerView

Element Details QR	Dashboards
Monitoring details QR	Electrical upload QR
Thermal upload QR	Visual upload QR
Asset Location QR	Generate Asset 3D Model QR

PowerView

Home | Settings | User Management | Invite User | Change Company | Log Out

Electrical Tests - Transformer TR1

PowerPlan electrict tests	Temp C	Test Results	Test Field 2	Test Conditions	Value with Temp corection	Trend	Test Files	Alarm Status	Precent in Relation to ROC Alarm	Percent in Relation to Limit Alarm	Test Field 2 Alarm Status	Precent in Relation to ROC Alarm Test Field 2	Percent in Relation to Limit Alarm Test Field 2

Basic

Insulation resistance test | Polarization index test PI

✏ 🗑 ➕ | Temp correction | Temp Value

HV to LV	1.5 GΩ		5000V	1.5GΩ		➕ 📁	LIMIT 1 🟢	89%	65%	N/A 🟢	0%	0%
HV to E	2.3 GΩ		5000V	2.3GΩ		➕ 📁	LIMIT 1 🟢	0%	42%	N/A 🟢	0%	0%
LV to E	1.9 GΩ		2000V	1.9GΩ		➕ 📁	LIMIT 1 🟢	53%	51%	N/A 🟢	0%	0%
HV + LV to E	1.7 GΩ		5000V	1.7GΩ		➕ 📁	LIMIT 1 🟢	20%	57%	N/A 🟢	0%	0%

Tan delta test

✏ 🗑 ➕ | Temp correction | Temp Value 20

| CHG + CHL | 0.54 % | | 10000V | 0.6% | | ➕ 📁 | LIMIT 2 🟠 | 33% | 20% |
| CHL | 0.33 % | | 2000V | 0.3% | | ➕ 📁 | LIMIT 1 🟢 | 33% | 66% |

- **Combined monitoring view on all existing elements**

- **Simple 3 step monitoring connection in less than 10 minutes**

- **Monitoring integration of more than 1000 existing monitoring devices from various manufacturers such as ABB, Siemens, Iris POWER, Doble, POWER VIEW with alarms integrated**

- **Simple notification divided by elements**

- **Types , type of inspection Editable' access list and online monitoring meeting platform**

- **Most advanced integrated power grids evaluation monitoring reporting, management and remote support solution**

Limits

Preset limits are assigned in the software for each element type according International standards (having in mind elements nominal characteristics such as operating voltage, type of insulation, connection type etc.) These limits are automatically assigned to each new element. Users with adequate permissions can edit these limits. There are several million different models (with different limits which can be assigned to an element.

This software can also integrate and communicate with big number of existing monitoring devices. This was particularly important for users that already have monitoring equipment from different manufacturers. The software was developed in a way which made it possible for them to continue using the equipment that they already use .

SUBSTATION DIGITAL

Complete substation maintenance application software with all electrical tests with diagnosis , all inspections and wireless monitoring cloud SCADA with diagnosis for complete reliable HV asset risk assessment

**Thermal and corona inspection
With history, comparison, meeting
options, comments, predefined
inspection lists and
recommendations
due, alarming and meeting options .**

**Mobile application for IOS and
Android**

**Direct thermal pictures upload from
existing thermal and corona cameras .**

Visual inspection

A smart visual inspection app (integrated into the web app and mobile app) offers users the ability to keep track of visual inspection , and integrate the data into the asset records. With simple QR code scan user can directly upload a picture , change status and report an issue for visual inspection directly from the field . This application has dynamic preset editable list of visual inspections for each particular HV element in relation to it's nameplate (such as voltage level insulation type etc) . There is also help for each inspection which guides operators with suggestions and recommendations.

Monitoring

Centralized wireless monitoring, data management alarms and notifications. This feature currently integrates over 1000 different commercially
 available monitoring units from different manufacturers into the software. The wireless electronic
devices communication includes one router which covers the entire substation and reads data from up to 1000 devices installed in the substation (area of several square kilometers).

This dramatically reduces expensive installations from several thousand EUR per unit to several hundred of thousand EUR per unit in terms of shielded cabling, expensive SCADA RTU's, and installation costs and reduces waist.

Thermal and corona inspection

A smart thermal and corona inspection app (integrated into the web and mobile app) offers users the ability to keep track of thermal and corona inspection and integrate the data into the asset records. With simple QR code scan user can directly upload a picture, change status and report an issue for thermal and corona inspection directly from the field.

This application has dynamic preset editable list of visual inspections with help for each particular HV element in relation to it's nameplate (such as voltage level insulation type etc) . There is also help for each inspection which guides operators with suggestions and recommendations.
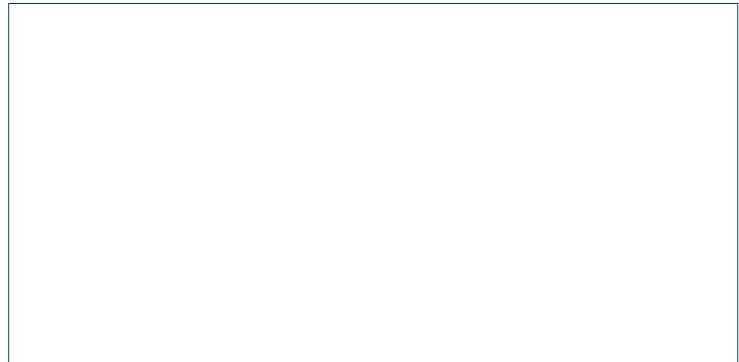
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