Surge arrester’s leakage current monitoring with harmonics analysis, surge counter and event recorder with time stamp SLCM

The POWER VIEW SLCM is a solar-powered, maintenance-free monitoring system installed on surge arresters to accurately detect insulation issues in real time by analyzing leakage currents and filtering out interference. It also features surge counter wit programable threshold and event recorder with timestamp

PowerView
Testing & Monitoring Equipment

Pioneering the future of power testing and monitoring

Surge arrester analyzer SLCM

Easy fault management

Less than 30 min installation, ultra-long-range wireless communication and the most advanced software integrated.

Surge arrester Counter built in with time stamp

Calculates the number of times Surge arrester worked >100A

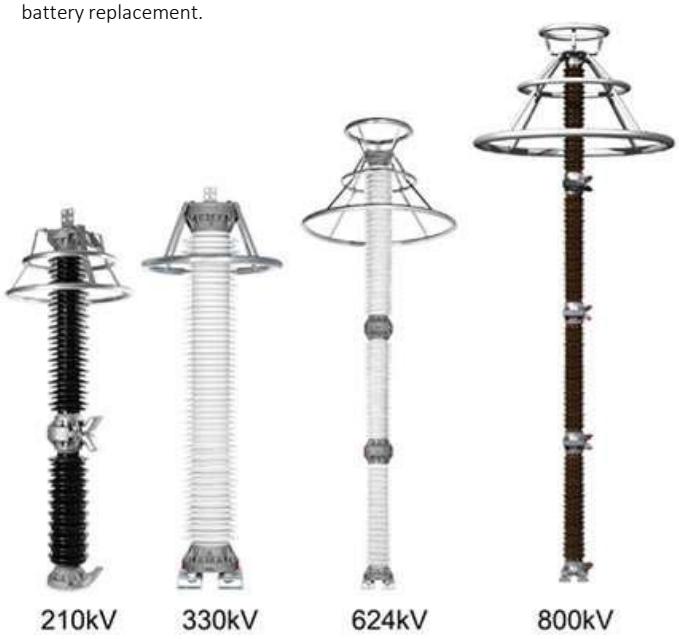
Surge Arresters faults

Faults in Surge Arresters occur due to insulation degradation and imperfection, corona , aerosols and moisture. Although the surge arresters are cheap to replace, troubleshooting and finding faults in surge arresters is nearly important as the equipment they are protecting. Most of the surge arresters nowadays have counters which can help in some lifetime calculation, but the real condition of the Surge arrester is the one you have tested. The most common test of surge arrester is leakage current measuring (on the grounding point) with 3rd harmonics analysis. The SLCM does constant monitoring on leakage current and harmonics analysis with wireless comunication and most advanced notifications and trending.

Description

The POWER VIEW SLCM is permanently installed on a Surge arrester grounding conductor. Monitors and analyzes real time insulation leakage currents and harmonics under load conditions. This helps in early detection of all insulation problems. Using smart algorithm and additional sensors the interferences are eliminated for correct insulation analysis.

The monitoring system is available is available in several configurations and versions with IP protection classes starting from IP65. The power supply is Solar on a battery back up supply unit suitable for unattended 5 years operation with no maintenance and battery replacement.



IEC60099-5 compliant

Measures leakage current on the Surge arrester grounding.

Event correlation with time stamp

Corelates surge activity across entire fleet and other monitoring data.

Ultra-long wireless communication and low power consumption

Wireless communication at ultra-long-range of several tenths of kilometers

Easy fault management

The Surge arrester's leakage current monitor comes with powerful wireless software which integrates all substation elements. Users can view history and trending and be notified by individual alarms once fault is detected. All the alarms are fully configurable according Users needs.

Mobile app

The software comes with a powerful Mobile app (Android IOS) for a complete substation analysis , monitoring and inspection .

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Surge arrester analyzer SLCM

Technical specification

■ **Alarms, notifications and reporting**
Fully customizable alarms , email and SMS notification and trending

■ **Low ownership Smart substation integration**
Easy installation (Clamp on box) takes less than 30 minutes to completely integrate the system

■ **Advance Measurement Technology**

■ **Open circuit protection** and nonflammable material CT

■ **Aluminum diecast enclosures** with more impact resistance then ABS enclosures

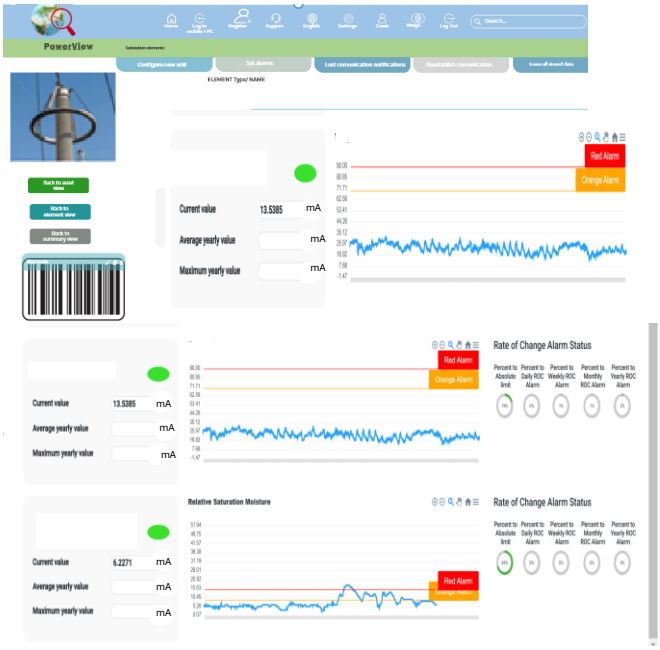
■ **Neoprene seal** to obtain IP-65 Protection class

■ **IP-65 protection class enclosures** protects from dust, liquid, impact and moisture which are needed for durability on outdoor conditions

■ CAT IV 600V

■ **EMI shielded housing**

■ **Heavy duty outdoor**



Technical Specification

Rated Primary Current	**IAC5A（50/60Hz）**
Monitoring range	2.5mA～5A
Max. Capable Current	5A
Nominal CT Ratio	4500:1
CT Inside Diameter	ϕ22mm
Applicable Frequency	10Hz～5kHz

Rated Category	**CAT IV 600V**
Withstanding Voltage	AC2200V/1 minute (between output terminal and CT)
Insulation Resistance	More than 100MΩ by 500V insulation tester (between output terminal and CT)
Operation Temperature	-30～60℃, less than 80%RH w/o condensation
Dimension	57.5×66.3×22mm
Standard **Accuracy** **Power supply**	Compliant with RoHS directive 5% full range 5V battery DC solar option or 180-260V AC 50Hz

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Pioneering the future of power testing and monitoring

Surge arrester’s and Overhead lines leakage current monitoring and insulators analyzer SLCM

Easy fault management

Less than 30 min installation, ultra-long-range wireless communication and the most advanced software integrated.

Surge Arresters faults

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Mobile app

The software comes with a powerful Mobile app (Android IOS) for a complete substation analysis, monitoring and inspection.

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

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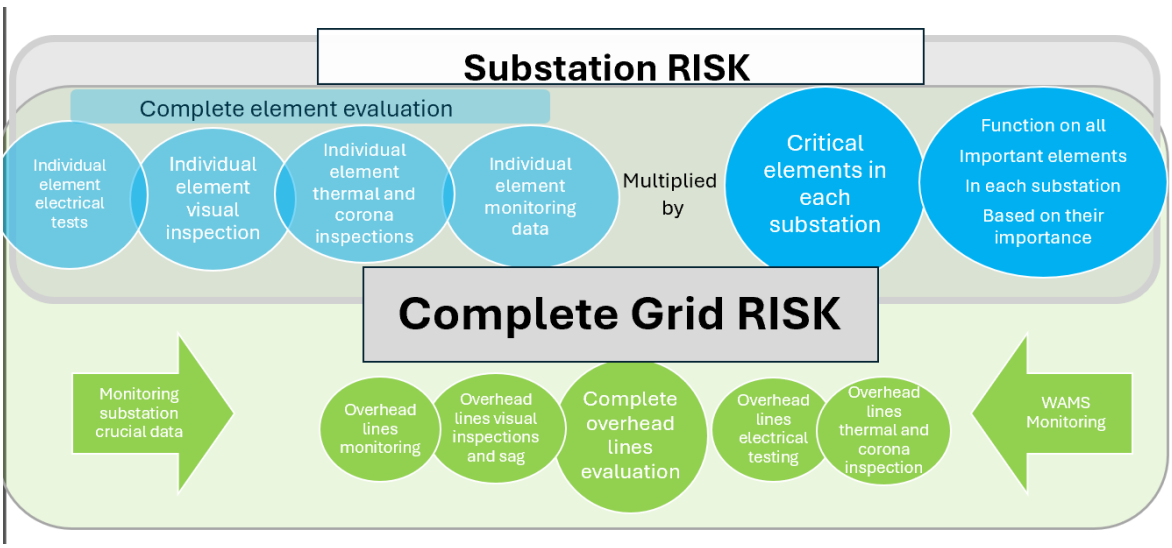
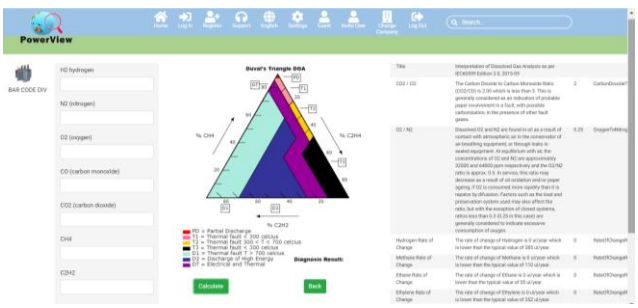


Comprehensive risk = $\int all\ elements\ (electrical\ test + \ visual \ + \ thermal + monitoring) +$ $corona$ inspection + overhead lines $\int\ (electrical\ test + \ visual \ + \ thermal + monitoring) +$ WAMS + other substation monitoring data

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

PowerView
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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

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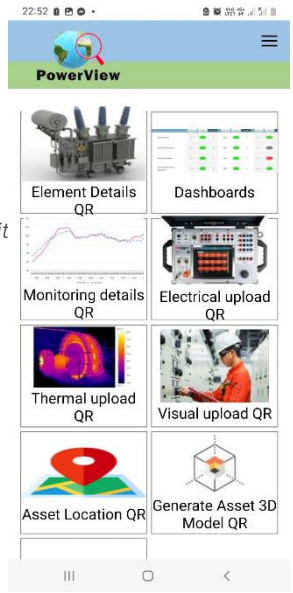
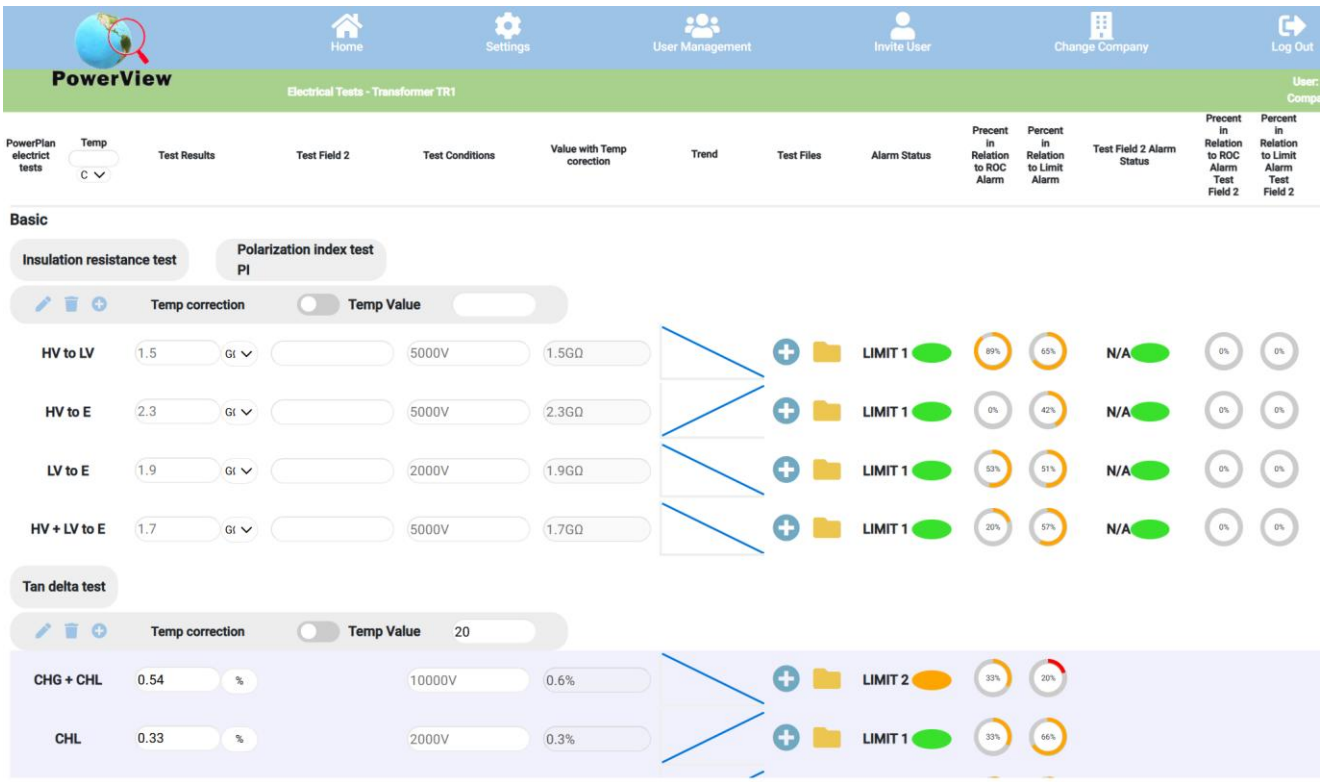
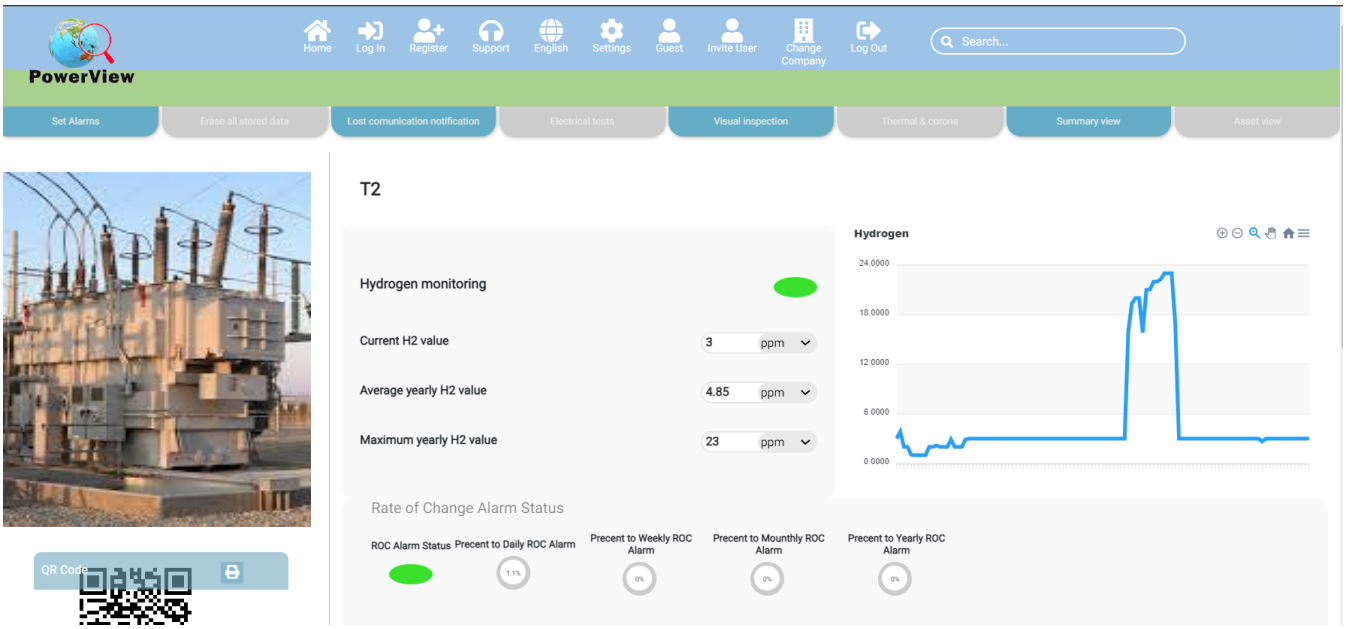
Download on App Store



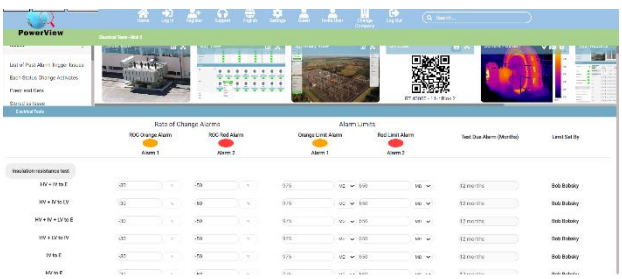


- **Combined monitoring view on all existing elements**
- **Simple 3 step monitoring connection in less than 10 minutes**
- **Monitoring integration of more than 1000 existing monitoring devices from various manufacturers such as ABB, Siemens, Iris POWER, Doble, POWER VIEW with alarms integrated**
- **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 .

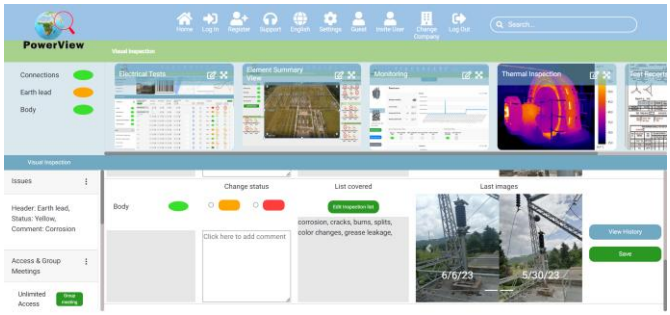
SUBSTATION DIGITAL

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.

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.

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.

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