

# POWER DISTRIBUTION DIGITAL MONITORING SOLUTION

Centralized monitoring of power distribution for fast fault localization and electrical default isolation for factories and nuclear power plants

## Challenge

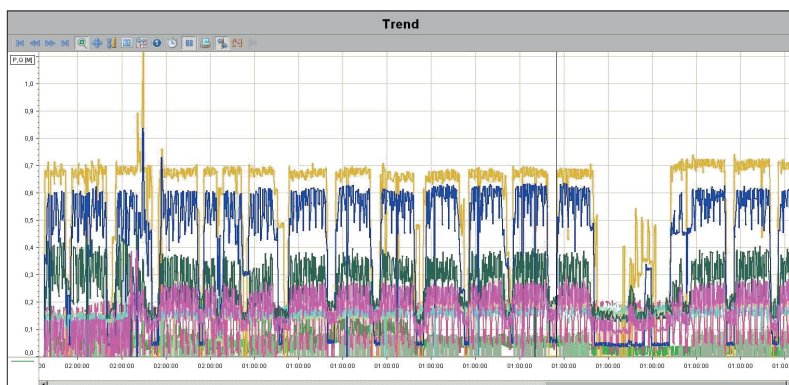
Electrical installations in large industrial facilities and power plants require constant monitoring in order to prevent disruption in production processes. Without digital monitoring solutions, plant operators must rely on manual inspections and adjustments to find faults and correct or prevent potential electrical issues. This requires increased plant staffing and training, increasing costs and potentially decreasing production quality. Additionally, plant owners are unable to predict accurate electricity consumption trends which could lead to considerable savings in operational cost.

## Solution

Framatome power distribution digital monitoring solution (PDDMS) monitors electrical installations at all types of industrial facilities by retrieving information from smart power lines and connected smart devices (i.e., power supply, smart relays, etc.). The PDDMS centralizes this information in real time and displays it to an operator who can quickly see if there is a fault on a power line. The PDDMS allows the operator to isolate the fault remotely through the human-machine interface (HMI) within the tool, including actions like opening and closing circuit breakers. The solution also enables the collection and archiving of data that can be used to predict accurate electricity consumption during operations. Access to these data trends allows plant operators to more strategically plan the use or purchase of electricity resulting in additional operational cost savings.

## Customer benefits

- Fast fault localization and switchgear telecontrol provides quick electrical default isolation and intervention, minimizing downtime
- Remote monitoring and corrective action capabilities allow for reduced staffing and faster response times
- Improves plant reliability while reducing O&M costs
- Constant, real-time monitoring reduces risk of human error
- Energy distribution surveillance through a main control room improves device management efficiency and makes monitoring easier
- Implementation of this solution can lead to accurate prediction of electricity consumption trends. This is the first step toward improved negotiations for better electricity pricing resulting in additional operational cost savings.



Measurement trend sample showing plant electricity consumption

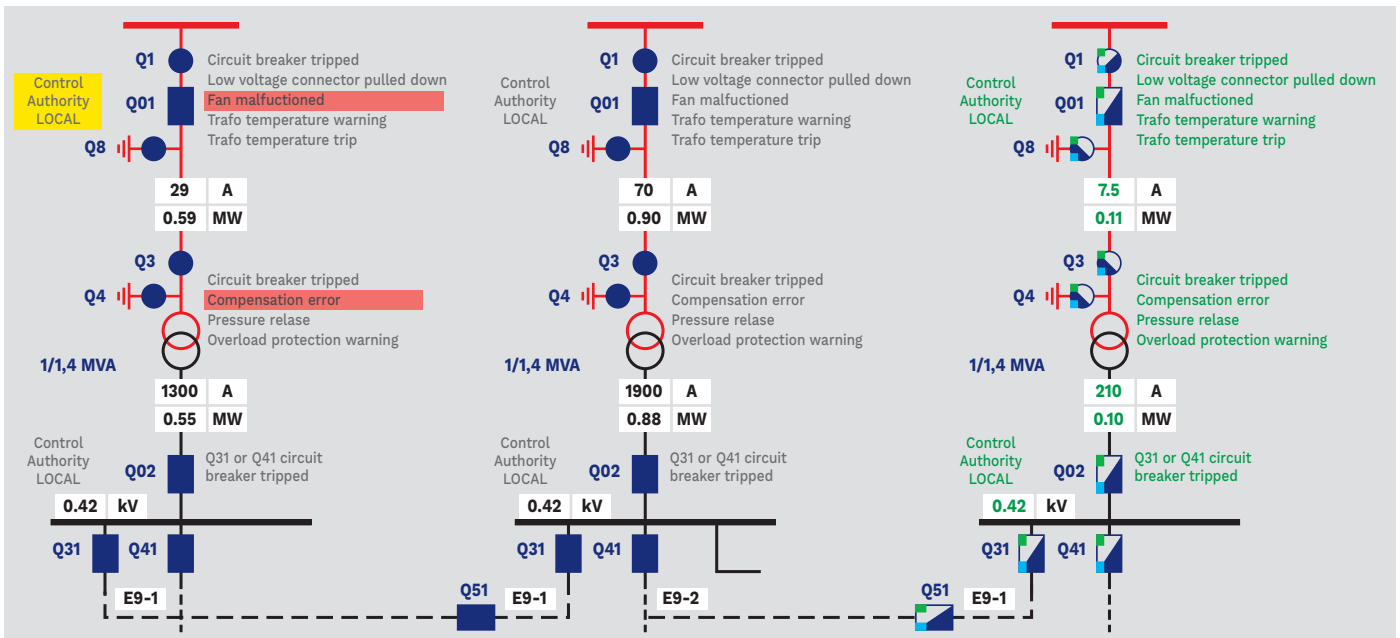
## Key figures

Platform has more than **50** years of operating experience

**65 536** PDDMS data points monitored thanks to modular & flexible architecture

Global team of more than **2 000** I&C experts

**Your performance**  
is **our** everyday **commitment**



This illustration shows a simulated network image of a low voltage subnet displaying the position indications of the branch switchgear (circuit breaker, disconnector, earthing disconnector OUT/IN). The error messages for each cell are also displayed, e.g., circuit breaker tripped, protection trip, overload warning, temperature protection warning, temperature trip, etc. In addition, if the device is suitable for it and implemented at the software level, the switching devices can also be controlled.

## Technical information

- Framatome PDDMS provides centralized monitoring of the power distribution from low to high voltages including transformers, switchgears, protection relays, energy meters, insulation monitoring systems, DGS and others, in all types of industrial settings.
- Load flow control, energy consumption follow-up and optimization
- Industrial protocol compatibility (MODBUS TCP/IP, IEC 61850, IEC 60870-5-103, 60870-5-104)
- Modular, flexible architecture (up to 65,536 data points)
- Customized solution designed for each client-specific application
- Common HMI for SICAM and SIMATIC SICAM SCC is based on the SIMATIC WinCC system. That means customers can add the functions required to use it as substation operating system of the electric process in high-voltage and medium-voltage systems.

## References

Project	Object of the project	Technology
Selected for Power Distribution Monitoring System <b>for a new nuclear plant in Finland</b>	PM, Design, FAT, support to commissioning, Training (12,000 datapoints, 6 workstations, connected to substations up to 400 kV)	SICAM A8000, SICAM Device Manager, SICAM SCC, OPC-UA, Meinberg NTP
<b>Electrical substation automation</b> (Greenfield project)	Parameterization and configuration of the SCADA system and communication with higher level systems	MAB bay units, IEC 61850 protocol, Citect SCADA system
Car manufacturing plants – Preventive <b>maintenance of the substation automation system</b>	Maintenance of 6 substation automation systems (connected to 120 kV, 20 kV substations), archived measured value, redundant server pairs and time synchronization	SIPROTEC protection devices, SICAM 230, SICAM TM 1703 RTU, DIGSI SW, UPS, IEC 60870-5-103, IEC 61850

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