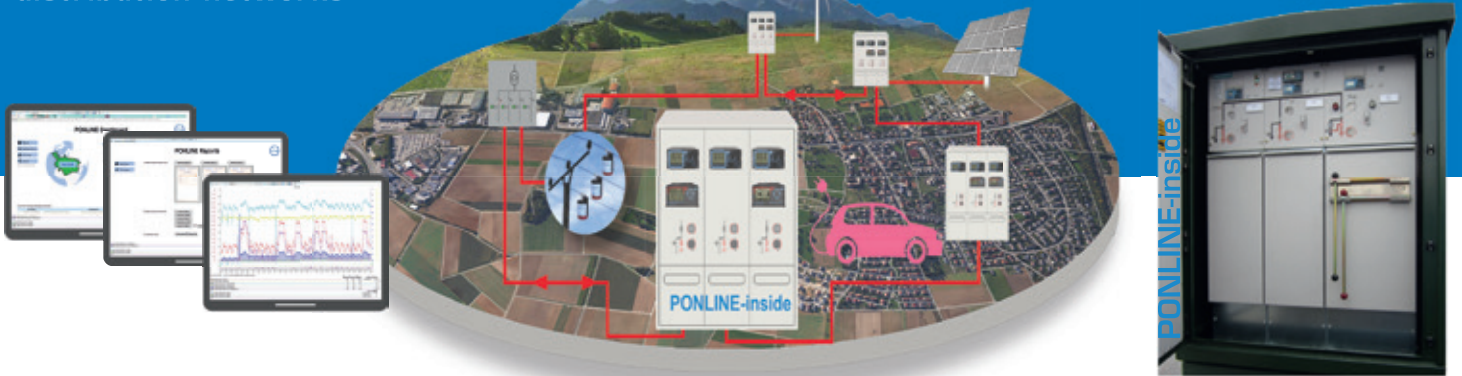


Operating system for maximum availability in municipal and industrial power distribution networks



Electric power distribution is part of the critical infrastructure.

Whether energy transition or electromobility: our power grids are facing completely new stress tests. Only those who monitor their networks know their load reserves and can minimize the blackout risk. The intelligent operating system **PONLINE®** for optimal use of network capacities was developed especially for municipal and industrial distribution networks. With **PONLINE®** your distribution network becomes transparent and network failures can be reduced to the technical minimum.

Advantages with **PONLINE®**

3 combinable and scalable systems guarantee you maximum ONLINE times:

1. **PONLINE-Monitoring:**

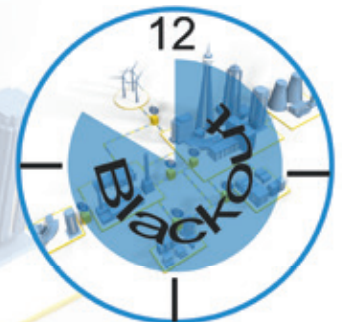
- Cost savings: Monitors network capacities and avoids unnecessary network expansion
- Savings potential through SAIDI reduction: Halves blackout time compared to networks without monitoring
- Avoidance of follow-up costs: Failure forecast system detects overloads and insulation faults before an outage occurs

2. **PONLINE-Remote-Control:**

- Savings potential through SAIDI reduction: Reduction of downtimes below 15 minutes
- Reduction of network losses: network sections can be controlled remotely and thus loads can be actively shifted

3. **PONLINE-Autopilot:**

- Savings potential through SAIDI reduction: Automated restoration of the power supply in seconds
- Network automation by means of automatic switchover or relocation of normally open points for highest availability requirements



PONLINE detects load and failures and minimizes the Blackout-Time



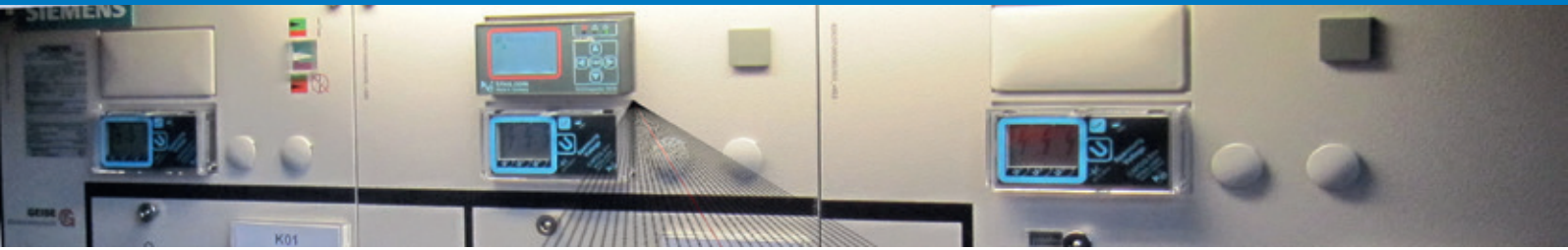
Good to know!

Project planning, installation support, commissioning, training and service are carried out by the Kries-Solution partners - this guarantees a cost-effective, fast and smooth process!

Would you like to learn more about **PONLINE®**? Then contact us directly at Phone +49 (0)7151 96932-0 or send an e-mail to service@kries.com.

PONLINE on-site technology for transformer stations

Whether new switchgears or retrofitting - the **PONLINE** on-site technology can be quickly and easily integrated into the switchgear of many well-known manufacturers. Here is a brief overview:

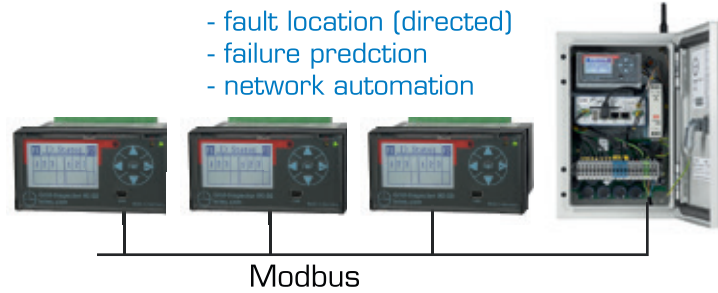


The Core Part: IKI-50 feeder controller

The IKI-50 feeder controller is the core part of the **PONLINE** system. All other components are connected here. The controller for 1 to 2 feeders is integrated directly into the switchgear or into the **PONLINE-Butler-light** telecontrol unit. Additional feeders can be connected at any time via additional IKI-50.

Network communication is realized via Modbus.

- IKI-50:**
- load flow measurement
 - fault location (directed)
 - failure prediction
 - network automation



The Base Elements: **PONLINE-Sensors**

Sensors form the base for all **PONLINE** systems. They can not only be installed in new systems, but can also be retrofitted in existing switchgears. The following sensors are used:

a) Sensors for air-insulated switchgears

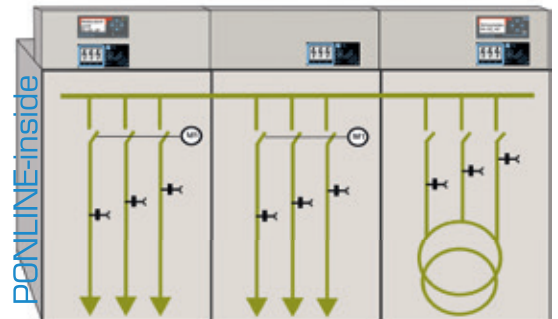
- a1) Voltage sensors and voltage detecting system CAPDIS
- a2) Current sensors as split-core CTs

b) Sensors for gas-insulated switchgears

- b1) Voltage detecting system CAPDIS for retrofitting or installation in the front panel
- b2) Current sensors as split-core CTs or bushing CTs

The All-Rounder: **PONLINE-inside switchgear**

The **PONLINE-inside** switchgear is the all-in-one switchgear ready for connection and includes the IKI-50 feeder controller, sensors and actuators. This gives you a tailor-made complete solution that fits perfectly into your distribution network and ensures trouble-free operation and maximum availability. While the **PONLINE** sensors can also be retrofitted in existing systems, systems that are to be operated remotely or automatically have to be modified more profoundly and completely tested. Among other things, motor controls and a UPS must be installed in the switchgear.



Good to know!

PONLINE sensors and **PONLINE** actuators can be installed in certain switchgears of different manufacturers. Ask us about suitable switchgear brands.

1. PONLINE Monitoring: maximum transparency and efficiency

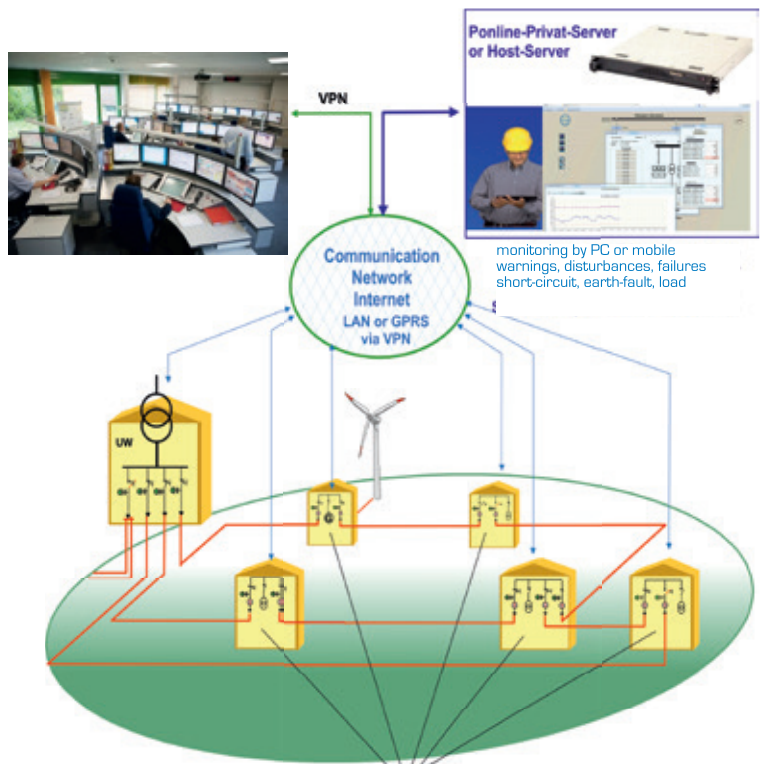
With PONLINE monitoring, you always have all relevant data about the network load at a glance. Status and load of the distribution network are monitored in real time.



Load monitoring and failure prediction enable network operation with maximum efficiency and transparency. All measured load values are permanently transmitted. Faults are immediately detected and localized. The network operator is informed within seconds and can immediately isolate the faulty section from the rest of the network. Thus, faults are quickly eliminated and power failures are prevented at the outset.

Advantages

- Intelligent failure forecast system
- Real-time load monitoring
- Reaction in seconds to disturbances in the distribution network
- Fast and reliable fault location with direction indication of short circuit, earth short circuit, earth fault,
- Intermittent ground fault detection
- Reduction of outage time and failure clearance times by at least 50%.



The Technical Details

For PONLINE monitoring, the PONLINE sensors and the IKI-50 feeder controller are installed in the distribution network stations. The IKI-50 is connected via the Butler-light telecontrol unit to a server that works with the PONLINE-connect evaluation software. Of course, retrofitting is also possible.

PONLINE-Sensorik



Good to know!
 The installation, commissioning and service of the PONLINE monitoring can be carried out on request by the Kries Solution partners. You don't have to worry about anything. We do the work for you and ensure that everything runs smoothly right from the start.

2. PONLINE-Remote control: Outage times less than 15 minutes!

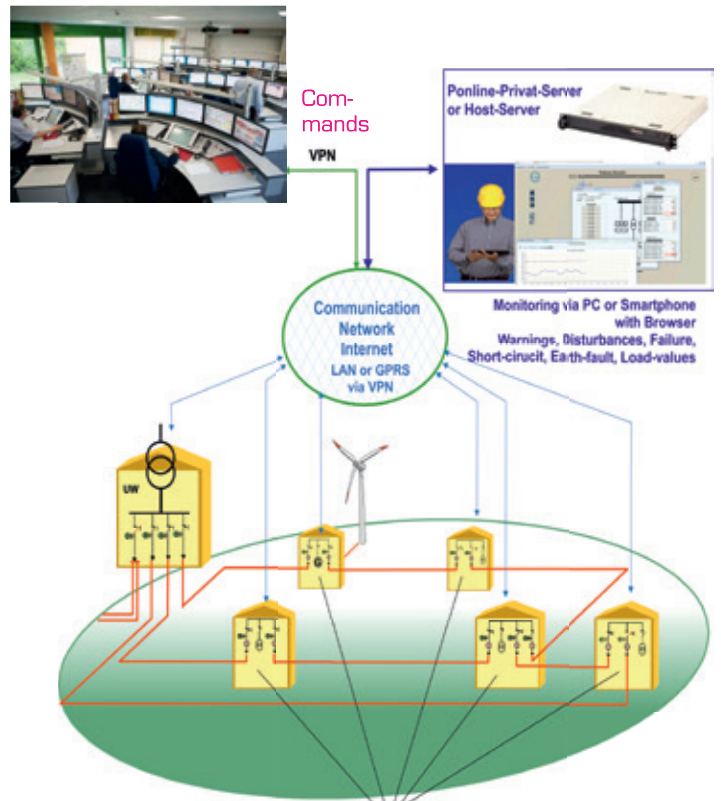
The PONLINE remote control is used to control and monitor switchgears via a control centre. Load shifts or disconnections can be carried out remotely.



Through dedicated switching, the PONLINE remote control is able to reduce the power outage time to less than 15 minutes. In the event of a fault, both the network operator and the control centre are informed immediately. The control centre immediately isolates the faulty network part. The network operator takes care of fault clearance. In this way, faults are not only detected immediately, but also removed from the network in the shortest possible time.

Advantages

- Remote monitoring and control of switchgears
- Targeted load shifting and activation via a control centre
- Immediate, independent notification in the event of a failure
- Complete monitoring through PONLINE-connect parallel to the control center
- Drastic reduction of power outage times



The Technical Details

The PONLINE remote control can be easily installed in new or existing distribution network stations. For this purpose, the control panels are equipped with PONLINE sensors and the IKI-50 feeder controller. In addition, motorised switchgears are used and the PONLINE actuators are integrated. The IKI-50 is connected to a server via the Butler-light telecontrol unit. The server is equipped with the evaluation software PONLINE-connect. A connection with a control centre is established in parallel.

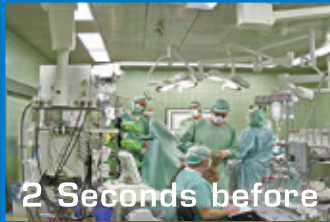


Good to know!

Tailor-made PONLINE-inside switchgear with remote control function are available from our Kries Solution partners. The trained specialists not only take care of the installation and commissioning, but also the service.

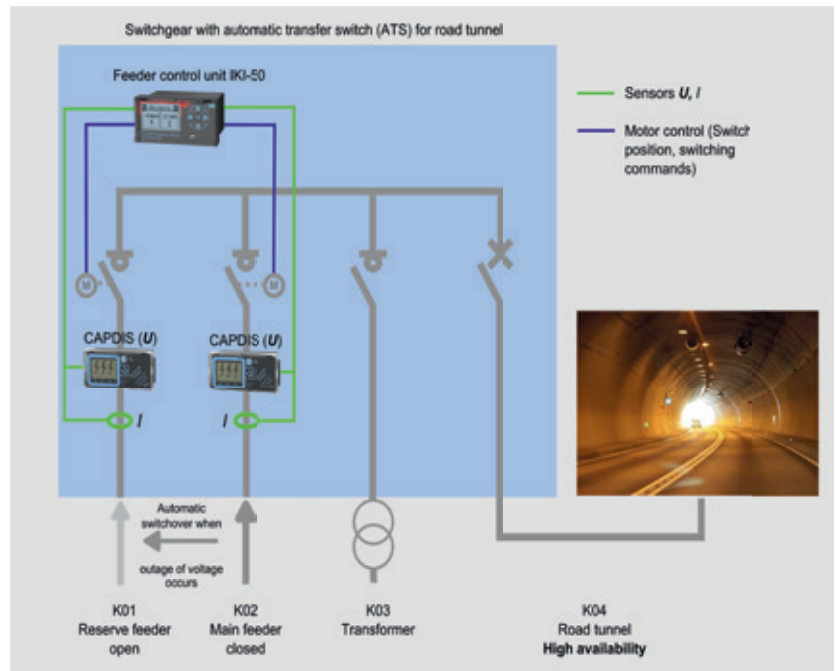
3. PONLINE-Autopilot: Power restoration in 3 seconds!

The intelligent solution for distribution networks with the highest availability requirements!



The PONLINE-Autopilot is suitable for the relocation of normally open points in open ring networks or as automatic transfer switch at customers with reserve feeder.

The distribution networks are controlled automatically or semi-automatically with a switching proposal. In the event of a fault, the power supply can be automatically restored - within a few seconds! The network operator receives a message, but the fault clearance is completely automated. Of course, the autopilot can be deactivated at any time. If required, the system can also be operated remotely or directly on site.



Blackout time reduced to seconds thanks to PONLINE-Autopilot with automatic transfer switch

Advantages

- Highest availability for power supply
- Network recovery in seconds in the event of a failure
- Automatic fault isolation
- Automated control of distribution networks
- Choice between autopilot, remote control and on-site operation

The Technical Details

For the PONLINE autopilot, the feeders of the switchgear are connected to the PONLINE sensors and equipped with the feeder controller IKI-50.

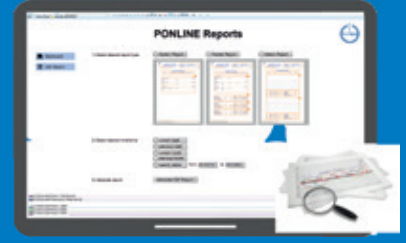
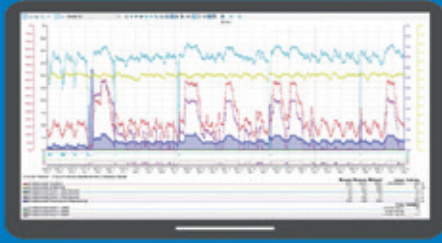
In addition, the switchgear is equipped with motors to which the PONLINE actuators are connected. The intelligent core part of the PONLINE system is the IKI-50 feeder controller, which is connected via the Butler-light telecontrol unit to a server with the PONLINE-connect evaluation software.

Good to know!

We offer PONLINE-inside switchgears with pre-installed autopilot function via selected Kries Solution partners. This way you can be sure that installation, commissioning, service and maintenance are carried out exclusively by experienced professionals. In the event of a fault, this guarantees that the power supply will be restored within seconds!

PONLINE-connect:

The intelligent evaluation software shows everything at a glance and monitors the condition and load of the distribution network for all PONLINE systems.



PONLINE-connect makes every distribution network transparent. From condition to load conditions up to threshold value exceedances - all information from the network stations are clearly displayed. An failure forecast system shows threatening error conditions within seconds. In case of alarms, PONLINE-connect is automatically activated. The operators are informed by e-mail or SMS and guided directly to the fault location. Even creeping insulation losses are detected. This allows to rectify faults immediately and to avoid failures.

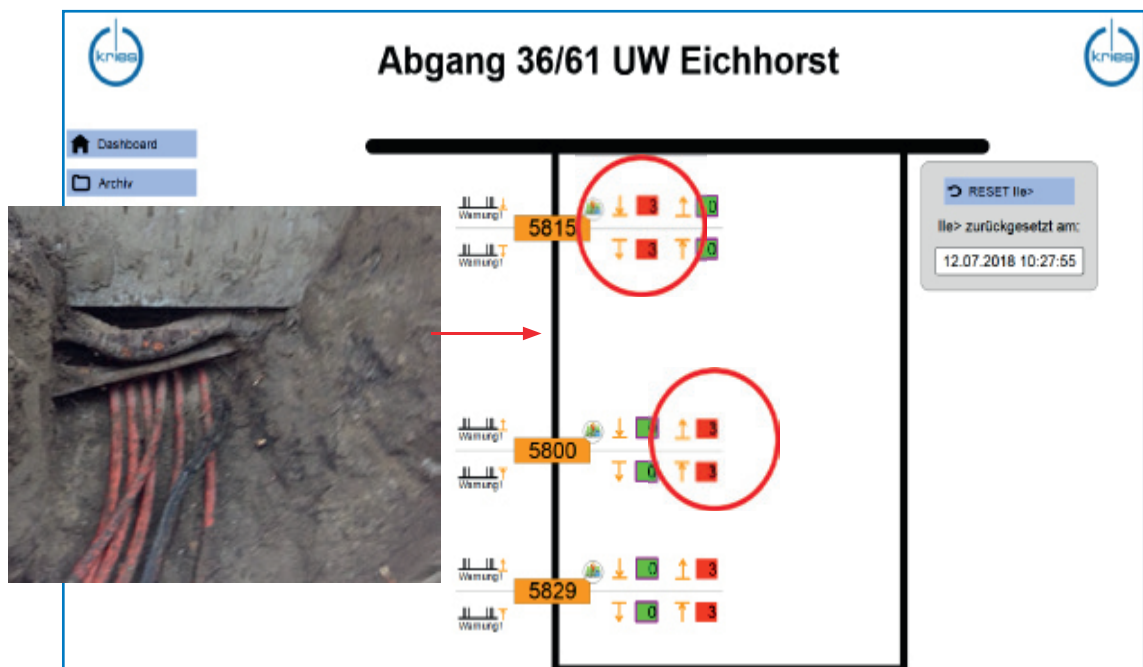
Advantages

- Failure Prediction system detects overloads and insulation losses before real faults occur
- Information of the network operators by e-mail or SMS
- Complete load monitoring provides network transparency
- Browser-based software - no installation required on user PCs
- Server either hosted or operated directly by the customer

The Technical Details

PONLINE-connect can be used for network operation, load monitoring and load management and can be easily extended. The intelligent evaluation software is browser-based. This means that it can be operated from any computer with an Internet browser. PONLINE-connect clearly displays all relevant data, identifies failure situations in an early stage and automatically sends warning messages by e-mail or SMS..

Insulation losses due to aging and damage to cables or cable joints are detected at an early stage before protection trips the whole feeder.



Good to know!

The PONLINE-connect software works with all PONLINE systems. It is scalable and is designed for the respective data point requirement and adapted if necessary.