SIEMENS

CONDITION MONITORING IN ELECTRICAL POWER DISTRIBUTION SYSTEMS

Condition-based maintenance **improves power distribution availability**

Avoid power failure with smart protection devices and switchgear
Every power distribution failure costs money. Communication-capable switchgear and protection and measuring devices can significantly improve the overall availability of an electrical power distribution system.
They provide operators with a constant supply of information about the condition of the system and enable them to apply a condition-based maintenance concept. Impending outages can be recognized at an early stage and can usually be avoided in advance. As a result, system availability can be taken to a level that the electrical configuration alone is unable to achieve. At the same time, adopting a condition-based maintenance concept helps to cut costs, since purely precautionary and time or load-based measures are rendered obsolete.

Slightly higher investment costs, noticeable reduction in operating costs:
A reasonable maintenance strategy requires condition monitoring, but this itself does not lead to relevant savings. Instead, savings are much more a result of the higher availability due to the avoidance of downtime enabled by self-monitoring, communication-capable devices that issue alerts in good time. That's why the primary goal is not so much to reduce maintenance costs, but to achieve a lasting reduction in the cost of outages thanks to higher availability. This must be considered right from the planning stage.

siemens.com/lowvoltage/planning
siemens.com/lowvoltage/implementation

70%

Constant condition monitoring detects malfunctions before they result in system failure. **Up to 70 percent* of all outages can be prevented in this way.**

25%

Condition-based maintenance strategies based on communication-capable devices **reduce maintenance costs by up to 25 percent*.**

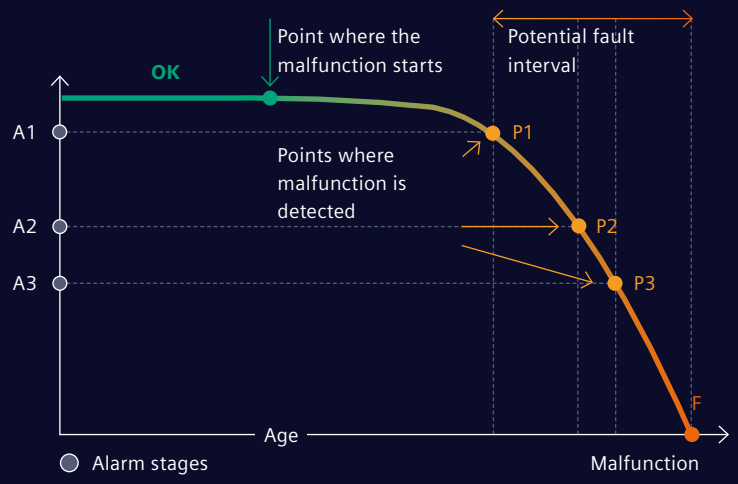
+30%

The use of intelligent, permanently monitored devices **reduces downtimes by up to 30 percent***

Thanks to tool-assisted engineering and tool-based configuration using SIMARIS software and our conceptual consulting, **you can implement condition monitoring with no additional planning overheads.**

* Source: US-Department of Energy

Identify faults before a shutdown happens



The basic technical principle underlying condition monitoring is constant observation and analysis of device condition. An alarm is triggered if actual values exceed or fall below the limit values set for particular parameters (P1, P2, P3). Impending faults can be identified in this way and rectified as part of a condition-based maintenance strategy before they compromise system functionality.

To ensure proper functioning, most of the parameters must be already recorded within the devices and preferably interpreted there. That's why it's important to determine how smart the devices must be when you are first planning your strategy.

We help electrical planners and project managers working for EPCs in selecting the most suitable devices, with planning, and also with commissioning using tools, best-practice examples, and documentation. We will explain the technological context for the key monitoring parameters and clarify in detail how, and by what means, you can improve the availability of your power distribution system without additional investment costs. That's how we help you put a clever strategy for condition monitoring in place for your customers.

Availability planned and easily implemented from the outset

Planning stage

Preliminary planning → **Detailed planning** → **Construction documentation Detailed drawings** → **Design** → **Documentation** → **Operation**

- Power distribution with the right strategy for general and back-up power supply systems

- **Selection of robust products with a high fault tolerance and low maintenance overheads**
- Tool-supported engineering, e.g. using SIMARIS design for fail-safe network dimensioning

- Fully tested system
- Tool-supported configuration of switchgear combination, e.g. SIMARIS configuration
- Trained and certified panel builders

- **Devices with condition monitoring**
- Appropriate maintenance strategy
- Trained personnel
- Fast and reliable support

Planned availability is an important criterion when drawing up a power distribution strategy. Key considerations when selecting system components are the single point of failure and the expected consequences of a power outage. Smart devices can significantly improve overall availability.

Siemens AG
Smart Infrastructure
Werner-von-Siemens-Str. 48–50
92224 Amberg, Germany

Siemens Industry Inc.
100 Technology Drive
Alpharetta, GA 30005
United States

Article no.: SIEP-B10185-00-7600
Printed in Germany | fb 9068