DISTRIBUTION SOLUTIONS

ZX Digital

Intelligent solution for primary switchgear

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ABB's medium-voltage primary switchgear ZX series is well established around the world. The design is based on the fundamental principle of safety, reliability, modularity and scalability. With the increasing demand of digital transformation, the platform is evolving further with ZX Digital including latest digital technologies, communication and data analytic.

Contents

Introduction

ABB's Digital solutions make our proven Gas Insulated Switchgear (GIS) smarter, safer and more efficient by making use of smart automation and control solutions which enable you to efficiently act and quickly react.

ZX Digital takes full advantage of new technologies such as temperature, environment humidity and gas pressure sensors, online condition monitoring and diagnostics provide a new way of working for the electric system.

The solution is available for the latest ZX family with wide coverage of rating:

- 12/24 kV PrimeGear ZX0
- 40.5 kV ZX0.2
- 12 kV ZX2

ABB’s current and voltage sensors offer the futureoriented way of measuring primary current and voltage. Its linear characteristic and dynamic range outperform conventional instrument transformers. Relion® protection relays provide native IEC 61850 support, including GOOSE (Generic Object-Oriented Substation Event) and sample values on the process bus for a fast and reliable data/information exchange.

The condition monitoring system allows secure access to condition and operation data. Data analysis on-site ensure optimal switchgear operation and minimized maintenance costs.

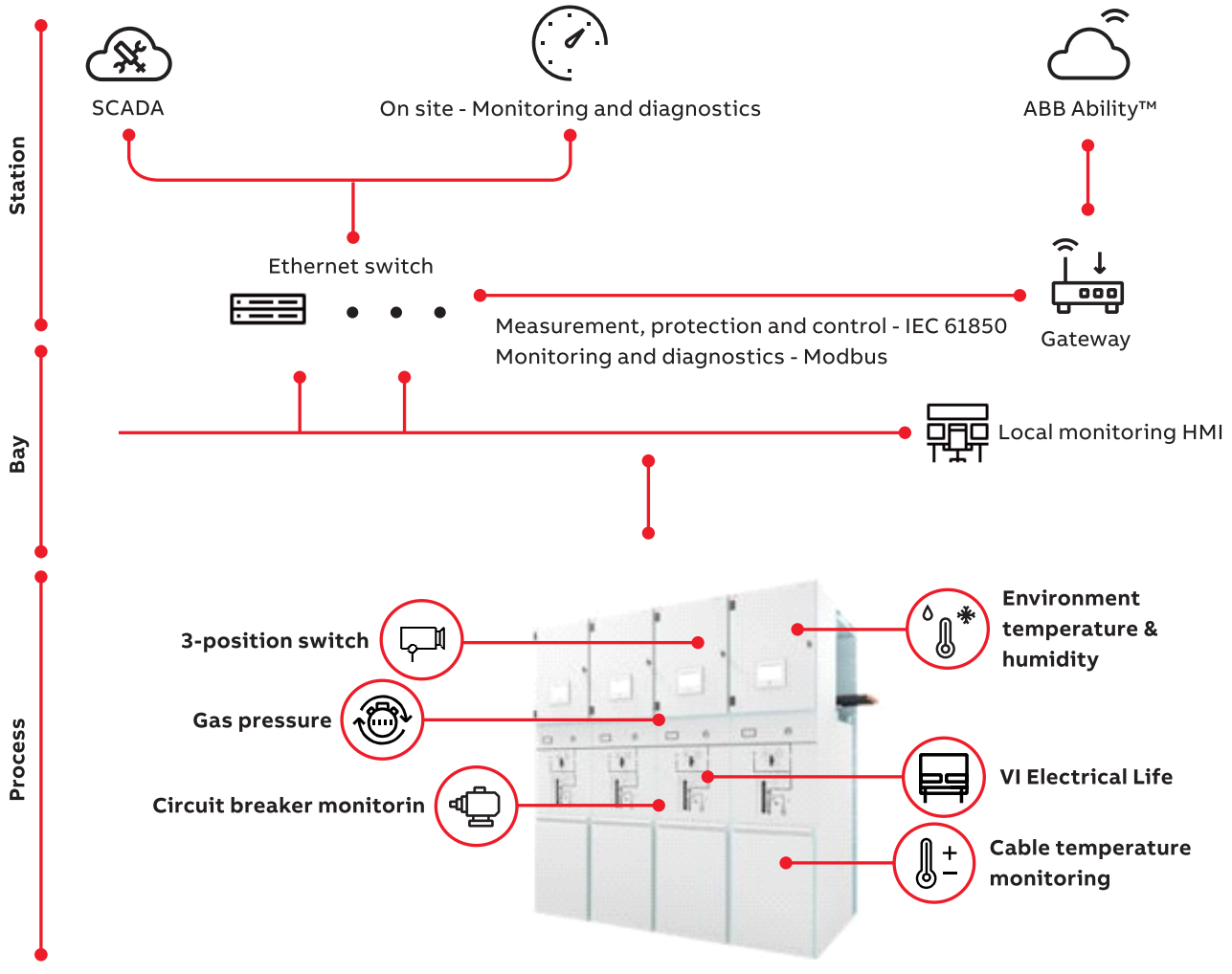
ZX Digital is ready for cloud connectivity offering further data analysis and predictive maintenance.

Customer Value

- More reliability and fewer faults that could cause service downtime
  Through monitoring and diagnosis the real-time status of the temperature of cable connection continuous monitoring of temperature at cable connection, gas pressure of the secondary switchgear, prevents potential risks and avoids unexpected power outages.

- Lower operation and maintenance costs
  Achieve a leap forward from passive maintenance to active predictive maintenance, make operation and maintenance easier.

- Long life cycle of secondary switchgear
  Through the self-inspection algorithm, the service life of secondary switchgear can be extended and guarantee customer's benefits.



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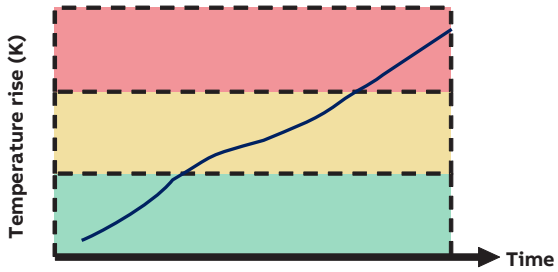
ZX Digital architecture

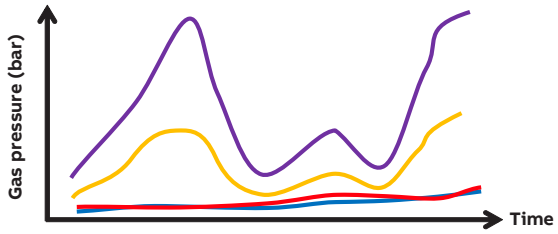
Note: The picture shows various options, while actual implementation depends on the selected features.

Monitoring



Cable temperature monitoring

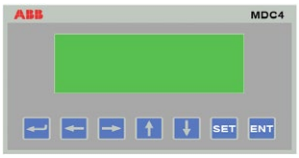
- Based on the environment condition, the temperature rise and three-phase temperature imbalance warning and alarm algorithm provides the effective assessment of switchgear condition
- Self-powered temperature sensor, maintenance-free, IP54
- Dual-2.4GHz bands wireless data transmission with stable communication quality



Purple: Direct gas pressure P value from manometer
Yellow: Calibrated P20 based on manometer on-board temperature
Blue: P20 based on thermocouple temperature in SF_6 tank
Red: P20 based on calculated temperature in SF_6 tank

Gas pressure monitoring

- Real-time gs status monitoring
- Early warning and alarm for abnormal gas leakage and low gas pressure fault
- Temperature calibration algorithm accurately reflects the P20 state of the insulating gas, fully adapting to different environment
- Effective on-line monitoring and management of insulating gas density, pressure and leakage rate



LHMI

APP

Nearby Display
Real-time nearby monitoring of temperature , environment temperature & humidity and gas pressure by LHMI or mobile phone App at the panel.

Angle and hall sensor for CB monitoring

Circuit Breaker monitoring
Hall sensor(electrical type entry level solution): mounted in low-voltage compartment Close/Open/motor charging wire will pass through these sensors to measure closing/ opening/charging time and motor current. shows CB status Close/Open

Angle sensor (mechanical type solution):
Used alternatively for CB mechanism monitoring more advanced solution to monitor close speed and open speed.

Hall sensor for VI Electrical Life monitoring

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Electrification Distribution Solutions

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