Sensor technology

With modern protection and control IEDs

Providing you with…

…superior protection performance

ABB offers a measurement technology package which combines the benefits of modern current and voltage sensors with intelligent protection and control IED solutions. The current sensors are based on the Rogowski coil – a magnetic current transducer – in which the iron core has been replaced by non-magnetic material. The measuring principle for voltage measurement is based on a resistive or capacitive voltage divider, which results in a wide dynamic range and high linearity. The signal produced by the sensors can easily be verified by an off-the-shelf multi-meter. As a result, the sensors ensure high protection performance throughout the whole range without saturation.

…a high degree of accuracy

Together with our advanced protection and control technology, these sensors provide an ideal solution for power quality measurement with a high frequency bandwidth. Sensor measurements enable the accurate and reliable monitoring and registering of the network harmonics and high-frequency disturbances. The data collected can then be used for various disturbance analyses and for accurate harmonic readings.

…safety

Using sensor technology helps protect both your staff and your substation equipment against accidents. With their remarkably low measuring signals (between 0 to 10 VAC), the sensors reduce the risk of component breakdowns and grid shutdowns. They are also resistant to secondary short circuits and open windings, and are not prone to ferroresonance.

Improved efficiency for your installations

Printed in Finland by Waasa Graphics/9/2001 1MRS 752201-MDS

Savings through...
Life-cycle analyses indicate that sensors provide over 90% higher efficiency compared with instrument transformers. What is more, due to the fact that no order-specific actions are needed, the logistic process is decidedly short. This means that a single type can cover a wide range of applications, including both voltage and current measurements. As a case in point, the same sensor can be used from 7.2 to 24 kV rated system voltages and from 4 to 1250 A feeder currents.

...smart integration
Further savings can be achieved thanks to the compact size of the sensor, which also has a direct impact on the entire switchgear dimensions. The sensors can easily be integrated into other switchgear components, as well as future products.

...scheduled maintenance
By taking advantage of advanced condition monitoring of your network equipment, you can attain significant savings in both regular and preventive maintenance costs. ABB's modern solutions for protection and control feature dedicated functions for condition monitoring. This means they can provide your operators with constant real-time information about the network equipment and enable you to optimize your maintenance planning at the same time.

Technology summary

Sensor technology
- No saturation as the current is linear over the whole measuring range
- No ferroresonance effects on voltage measurement and equipment
- Actual short-circuit currents can be measured
- Smaller dimensions and lower weight enable more compact panel construction compared with conventional instrument transformers
- Excellent solution for new switchgear and refurnished substations
- Sensors such as the KEVCD Combi can be applied to any switchgear with voltage range from 7.2 to 24 kV when conventional CT and VT are replaced
- Easy installation and connection to secondary devices (connector)
- Improved personnel and equipment safety
- Low operating losses
- Short logistics process and fast delivery times
- Environmentally friendly technology
  - due to the construction of the sensors less raw material is needed
  - the power consumption of sensors is negligible
- Applicable with
  - feeder protection and control (e.g. with REF 541/543/545)
  - feeder protection (e.g. with REX 521)
  - machine protection and control (e.g. with REM 543/545)
  - remote monitoring and control of feeders (e.g. with REC 523)

Protection and control IED features enhanced by sensor technology
- Optimized maintenance of primary equipment due to advanced condition monitoring
- Prompt protection operation
- Improved fault location
- More accurate data for disturbance analysis
- Support for power quality measurement

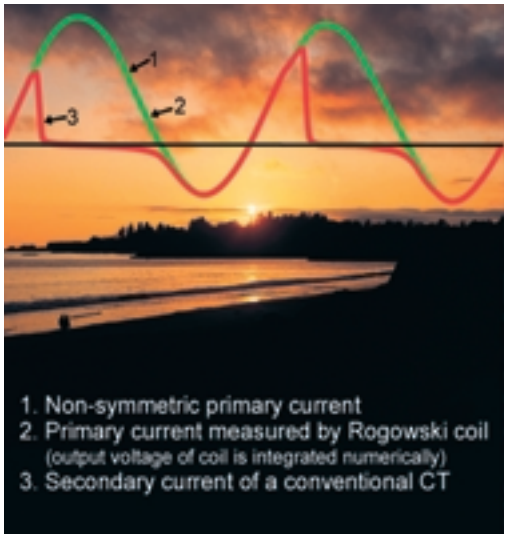

ABB Substation Automation Oy
P.O. Box 699
FIN-65101 VAASA
Finland
Phone: +358 10 22 4000
Fax +358 10 22 41094
www.abb.com/substationautomation

ABB Transmit Oy
Medium Voltage Technology
P.O. Box 613
FIN-65101 VAASA, Finland
Phone: +358 10 22 4000
Fax +358 10 22 42616
www.abb.com