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Schneider Electric

APRIL 2012

Smartgrid solutions on show in Slovenia

Late last year, Schneider Electric joined forces with system integrator Altens to exhibit at the first National Smartgrids Technology Platform Conference in Slovenia.

The theme of the conference was 'Slovenian industry solutions for SmartGrids' and included a presentation by the Honourable Speaker, Mr Janez Potocnik, European Commissioner for Environment.

The conference attracted more than 140 people, primarily from power utilities, universities, government agencies and the industry. There were 12 exhibitors at the show, with equipment and solutions on display, as well as educational offerings.

The Altens/Schneider Electric stand included displays of Schneider Electric's ADVC2 controller connected to a Text-To-Speech switch simulator, a live example of Schneider Electric's DNP3/IP data radio connection from ADVC2 to a partner company's SCADA computer in the neighbouring hall, and a locally connected Windows Switchgear Operating System 5 (WSOS 5).

The show was held at the Chamber of Comerce and Industry of Slovenia, Ljubljana.

Customers attend the Schneider Electric/Altens stand at the National Smartgrids Technology Platform Conference

The Schneider Electric/Altens stand with Schneider Electric's ADVC Controller on display

Attendees enjoyed a presentation by Janez Potocnik

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Resonant-earthed system provides earthing alternative

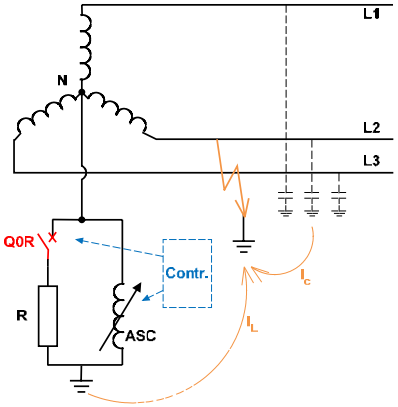
Use of a Nu-Lec W27 single phase recloser at earthing of a 110/20 kV power transformer secondary neutral.

Earth fault magnitudes depend on the distribution system earthing method – i.e. earthing of a 110/20 kV power transformer secondary neutral. Solidly and low-impendance earthed systems may have high levels of phase-to-earth fault currents. These high levels typically require line tripping to remove the fault from the system.

In order to minimise the effects of earth faults, the method of earth fault compensation is being used successfully. This means that the system neutral is earthed through a high-impedance reactor, a so called Arc Suppression Coil or Petersen Coil, which is continually adjusted to the earth capacitance of the network.

The advantage of this over the low-impedance earthed system is that it provides self-extinction of the fault arc in overhead lines for up to 80% of temporary earth faults. The downside is, that it requires highly reliable and selective protection relays in order to detect and locate permanent phase-to-earth faults.

Until recently, the Slovenian distribution network was typically earthed over an 80 Ohm resistor. All phase-to-earth faults were tripped by an earth overcurrent or directional overcurrent relays. With a goal of reducing a number of outages caused by phase-to-earth faults, a shift towards a resonant-earthed system was considered. In order to reduce investments in installing highly selective protection relays and maintain compliance with existing safety and operational rules, a combination of both systems was adopted.



An example of the earthing alternative

Under normal circumstances, the system is earthed through a Petersen Coil controlled by an earth fault compensation controller. When earth faults occur, there is a great chance that the fault arc will self-extinct due to a relatively low, compensated fault current. In this case, the network would continue to operate without a trip. In case of a permanent fault, after a certain delay an existing resistor is switched in parallel to a Peterson Coil by a Q0R switch – in our case this is a W27 vacuum switch. The system becomes low-impendance earthed so the fault will be cleared by an existing earth fault protection relay on the faulty feeder.

System installation at Elektro Ljubljana, Slovenia.

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Loop automation a priority for Iberdrola USA

Spanish private multinational electric utility company, Iberdrola, is based in Bilbao, Basque Country, and has a workforce of around 33,000 employees in over 40 countries, with revenues exceeding 32 billion euros. Iberdrola provides energy to 28 million customers worldwide.

In the United States, Central Maine Power (CMP), New York State Electric and Gas (NYSEG) and Rochester Gas and Electric (RG&E) are subsidiaries of Iberdrola, USA. NYSEG and RGE were looking to increase their feeder reliability and contacted Schneider Electric to help them with the project.

The initial contact came when the customer required some maintenance work to be done for their non-Schneider Electric products. The service they received from Schneider Electric employees was of a very high standard, and subsequently, when the customer needed some product a couple of years later, they choose Schneider Electric to supply these goods.

Iberdrola NYSEG/RG&E wanted to increase their feeder reliability (SAIDI and SAIFI). To do this, they wanted to increase the number of loops they had as well as apply loop automation to create a self-healing grid.

The advantage of a self-healing grid (with loop automation), is that when a fault occurs, the disturbed part of the grid will automatically be isolated and the healthy part stays energised or will be re-energised automatically, with no communication. This means that customers can be affected by an outage time which is very short (<1 min), rather than the longer outage times that are more traditionally associated with power failures.

To help Iberdrola achieve this goal, Schneider Electric supplied 140 reclosers, 50 of which were also fitted with radios, the first feeder devices to be integrated on their SCADA system. This is one of the first steps Iberdrola is taking to move towards a smart grid distribution system.

Schneider Electric completed the work on time and to a high standard, impressing Iberdrola with their abilities. As Iberdrola are looking to standardise their operations, the successful completion of the project by Schneider Electric may lead to implementation of the loop automation scheme at CMP and other electrical distribution utilities in the USA.

W-Series pole mounted installation

RL-Series pole mounted installation

U-Series pole mounted installation

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Gain visibility of your medium voltage overhead network

Schneider Electric's Custom Logic Tool for the ADVC Recloser controller range has been designed specifically to customise system status indication, control and automation functions, in medium voltage overhead networks.

By using the embedded current and voltage sensors in a recloser system, the Custom Logic Tool is used to monitor the load on a feeder. When the load current exceeds a predetermined level, an alarm is raised in the control centre to alert operators. The function also records the maximum current values and duration of the alarm. In addition to the improved visibility of the network it is possible to, for example, adapt the protection characteristics during this temporary overload situation.

Key characteristics include:

- logic functions to monitor digital and analogue system components
- ability to perform selected operator actions automatically
- timers and counters.

The tool optimises operator efficiency by customising local and remote status indication for specific applications. The tool can also monitor a selection of system variables and create customised automation functions, as well as monitoring analogue parameters in the overhead system to raise alarms when the values deviate from the norm.

The Custom Logic Tool for the ADVC Recloser

Ratings

Response time for logic functions	**2.3 seconds**
Response time for analogue functions	**3.2 seconds**
Response time for timer functions	**2.1 seconds**
Expression size limitation	**255 elements**

Compatibility

ADVC Controller firmware:
A45-03.00+

WSOS 5 version:
Version 5.13.01+

Switchgear:
N-Series, U-Series, W-Series, RL-Series

Functionality:
ACR (Automatic Circuit Recloser), LBS (Automatic Sectionaliser).

SetVUE

FlexVUE

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Schneider Electric holds training session in Thailand

Schneider Electric training for ADVC Controller and U-Series Reclosers has been held in the Provincial Electrical Authority's (PEA) state of the art training centre in Thailand.

The objective of the training was to familiarise the PEA engineers and field operators with Schneider Electric's new ADVC controller and to provide them with the required knowledge to migrate from the PTCC controller they have been using in the past.

A total of 35 students, mainly protection engineers and operators, attended the three-day training session which integrated the new products with products the PEA employees were already familiar with.

The students not only appreciated the ease of use in all aspects of the controller, they were also impressed by the new functionality of the ADVC Controller range.

Leon Vermaak, Schneider Electric's Product Marketing Manager Recloser Solutions was pleased with the outcome of the training.

"The students were quick to appreciate the optimised controller layout, especially the ease of accessory device installation and commissioning. Using the very familiar PTCC platform as a starting point, the students easily came to grips with the new operating interface, menu structure and WSOS. Even the advanced features offered on the ADVC platform were mastered with ease. The students were surprised by the ease of operation on the new platform."

The training coincided with the delivery of the first of two massive orders placed by PEA.

PEA employees in Thailand learn about Schneider Electric's ADVC controller.

Schneider Electric's Leon Vermaak (centre) with PEA employees in Thailand.

Custom logic product

New tool has been designed specifically to customise system status indication.

Technical white paper

Offering an earthing alternative.

Case study - overhead transformers

Schneider Electric provides solution for electric utility in the US.

Slovenia conference

Schneider Electric teams up with Altens for conference in Slovenia.

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Contact Energy News Online

comm.info@au.schneider-electric.com

Contact Schneider Electric Customer Service

Tel: 1300 369 233
Fax: 1300 369 288
Email: au.help@schneider-electric.com
www.schneider-electric.com