Overview
- Customer: ElectraNet
- Sector: Electricity Transmission
- Project name: Clare North Substation
- Country: Australia
- Highest system: 145 kV

Facts about the project
Siemens has delivered an Australian first in substation automation for the South Australian transmission company ElectraNet. ElectraNet owns, operates and manages the South Australian transmission system, which is part of the National Electricity Network covering the East Coast of Australia and Tasmania. The project comprised of a full turnkey control/protection system with portable building, protection and control panels (SIPROTEC 4 and various 3rd party IEDs (Intelligent Electronic Devices)), SICAM PAS substation automation system and all other substation related auxiliary equipment for ElectraNet's Clare North Project. In addition, Siemens has supplied the entire high-voltage, highly integrated gas-insulated switchgear (HIS) for Clare North.

This is Electranet's first IEC 61850 project, and in fact the first IEC 61850 project to be ordered by any Australian transmission utility.

The Clare North project was based on a 'functional' or outcomes based specification. Siemens and ElectraNet worked in close collaboration to develop the detailled design and ensure the design of the Clare North control system met the desired design outcomes.

IEC 61850 is the communication standard for substation automation as a basis for protection, control, measurement and monitoring functions. It also provides the means for high speed substation protection applications, interlocking and intertripping. The implementation of the IEC 61850 protocol provides ElectraNet with a fully integrated electrical system that meets local and international standards.

Description of overall system
In this ENEAS (Efficient Network and Energy Automation Systems) solution, Siemens designed, manufactured, supplied, installed and commissioned all components, including a substation automation system, ancillary equipment and portable switchroom. As an additional benefit, ElectraNet used the control room as a training facility for staff before its final installation at Clare North substation.

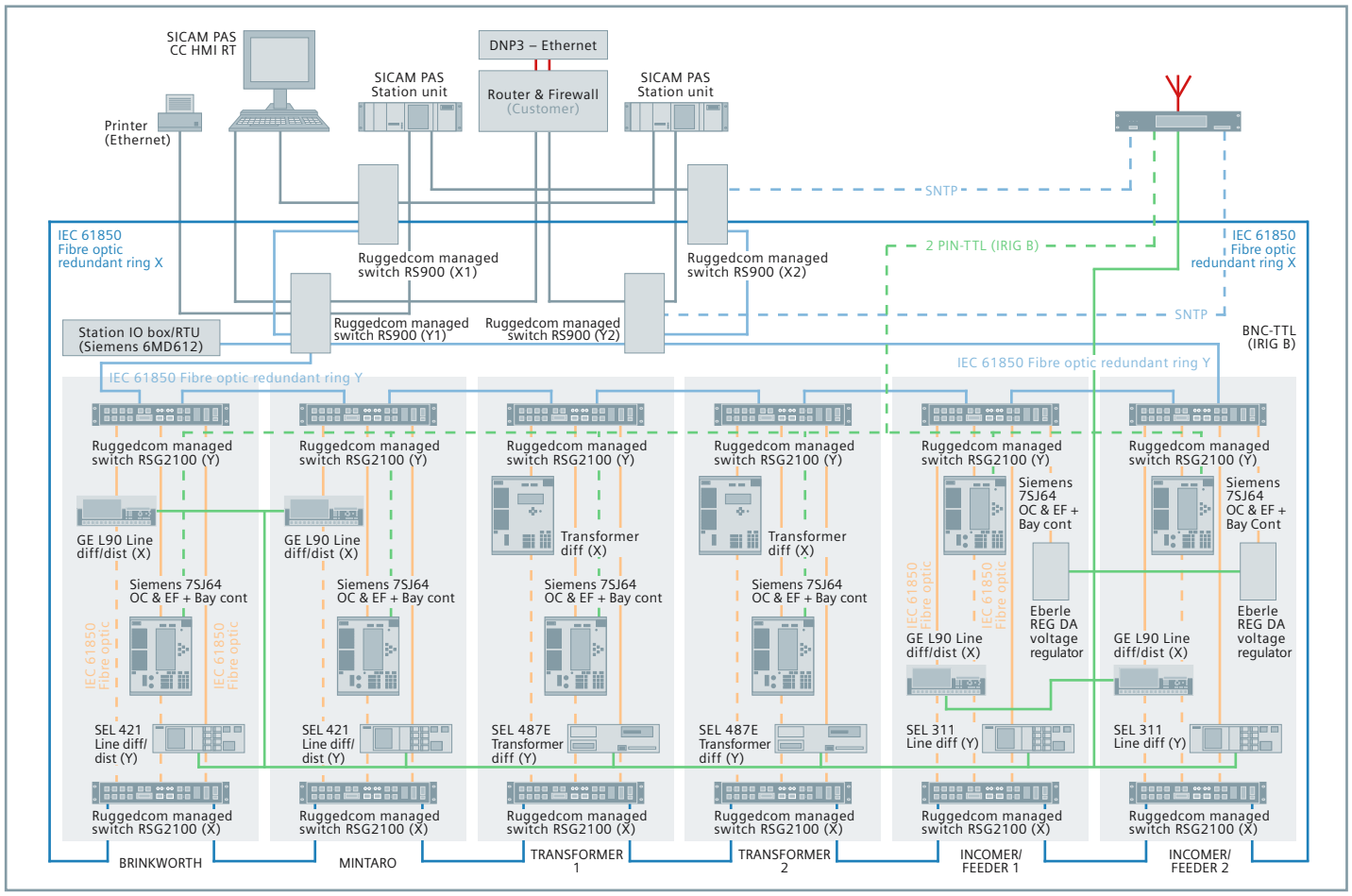
The control system is based on the SICAM PAS substation automation system and includes the SIPROTEC range of IEDs as well as various 3rd party IEDs. In the project, the capabilities of the existing Ethernet communication network were also maximized to provide the highest levels of security and stability for all of the IT architecture. GOOSE messaging was used extensively in the design of the Clare

ElectraNet – Electricity Transmission, Australia

ENEAS – Reference

Answers for energy.

SIEMENS



North control system. Bay and Station Intertripping, Auto-reclose, CBF, CB Status and IED Isolation were all implemented via GOOSE. The required engineering was completed using resources at both Siemens Ltd. Australia (Energy Division) and Siemens in Germany. The implementation of Siemens' modular and specifically configured 145 kV 8DN8 outdoor gas-insulated switchgear (HIS) has enabled ElectraNet to maximize the use of space within the substation's perimeter. ElectraNet will reap the cost benefits by it's application of the Siemens HIS equipment due to the low lifecycle costs, as this equipment is essentially maintenance-free when compared to the air insulated (AIS) equivalent. The corrosion-free enclosures and self-lubricating motor drives ensure a long service life – the first major maintenance inspection of the switchgear is not due until 25 years into its service life.

Customer's benefits

ElectraNet has a leading edge on the Australian continent and profits from numerous advantages such as:

- Efficient solution for highly integrative system thru IEC 61850 communications standard
- IEC 61850 covers all protection and control functions and thus enables utmost security
- Substantially lower investments thru integration of existing IEDs
- One substation automation system for all requirements
- Future-oriented network protocol IEC 61850
- Hands-on training of operators completed before commissioning
- Lower maintenance costs and less space requirements of the HIS equipment

Published by and copyright © 2010:
Siemens AG
Energy Sector
Freyeslebenstrasse 1
91058 Erlangen, Germany

Siemens AG
Energy Sector
Power Distribution Division
Energy Automation
P.O. Box 4806
90026 Nuremberg, Germany

For more information, please contact
our Customer Support Center.
Phone: +49 180/524 70 00
Fax: +49 180/524 24 71
(Charges depending on provider)
E-mail: support.energy@siemens.com

Power Distribution Division
Order No. E50001-E720-A231-X-4A00
TH 345-100244 0910