NovaTech®

Tucson Electric Power Co.

Customer

Tucson Electric Power Co., Tucson, AZ. Rancho Vistoso Substation (one of six automated substations)

Type of Substation Automation Project
- Smart RTU (connected to IEDs)
- Remote Engineering Interface to protective relays
- Substation HMI
- 1mS High Resolution SER
- Equipment Monitoring
- Automatic LTC control
- Capacitor Bank Monitoring and Switching
- Substation Control; above plus bus restoration and fault isolation

NovaTech Hardware, Software, and Service Products
- Wonderware InTouch Substation HMI configured by NovaTech
- NovaMux (BM85 Bridge Mux) with protocols: L&G 8979, SEL® Relays, NovaHost, Modbus Plus
- Monaghan SER System in Modicon PLC with SER PLC loadable software function
- Momentary Change Detect Software Loadable for PLCs
- LTC TAPP and LTCC sensing and control Loadables for PLC
- Custom PLC 984 Ladder Logic Programming
- Systems Engineering
- Commissioning
- Training

Responsibilities of NovaTech, Other Vendors, and Utility

NovaTech engineered complete system and provided a factory acceptance test, on-site commissioning services and training. TEP personnel were responsible for installation and energization for the initial system implementation. Two subsequent system upgrades have been performed with engineering provided by the factory and installation provided by TEP utility personnel.

In-Substation Wonderware InTouch HMI Details:
- L&G Telegyr 8979
- Sequence of Events capture and retrieval
- Pass-through engineering access to SEL® protective relays
- Display of Breaker and LTC Usage and Maintenance Data (Op Counters, I2T)
- Oscillographic file retrieval
- Alarm display and logging
- Station One-Line Diagrams
- Historical Data Logging
- Breaker Trip/Close; Select Before Operate
- Reclose Block; Ground Trip Block
- LTC Raise/Lower
- Alarm/Event Reporting & Logging
- Pseudo-Point Processing
- Multiple Drill-Down Levels
- Dial-up Remote Access

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Substation Local Area Network(s)
• Modbus Plus

SCADA Network and Protocol
• L&G Telegyr 8979

Other Notable System Functions
• Local and remote engineering access to SEL® relays
• Breaker and LTC maintenance data captured and annunciated

IED INTERFACE DETAILS:

IED (connected to NovaMux)	Number	Interface Protocol	Data Retrieved	Control through IED?	Other
Modicon PLC (1 Quantum, 3 Compact)	4	Modbus Plus to PLCs	Breaker status, 1mS SER time stamps, XFMR LTC Tap Pos.	Yes, breaker trip/close , LTC Raise/Lower	Modicon Remote I/O LAN
NovaMux with SEL® Protocol	9		SCADA status and analog data, fault data	Yes	Connected to various SEL® relays
NovaTech Orion16	1		SCADA status and analog data, fault data	Yes	Connected to various SEL® relays
Bitronics Meters	8		Feeder Analog Values	No	

L&G 8979 to SCADA Master

NovaMux (BM85 Bridge Mux) Data Concentrator and Smart RTU

Substation HMI Running Wonderware

Quantum PLC with Monaghan SER

Modbus Plus

Three Compact PLCs for transformer LTC control and position

Eight Bitronics Instruments for feeder and transformer analogs

One Orion16 and nine NovaMux BM85s attached to distributed SEL® relays. (engineering access to SEL® relays available)
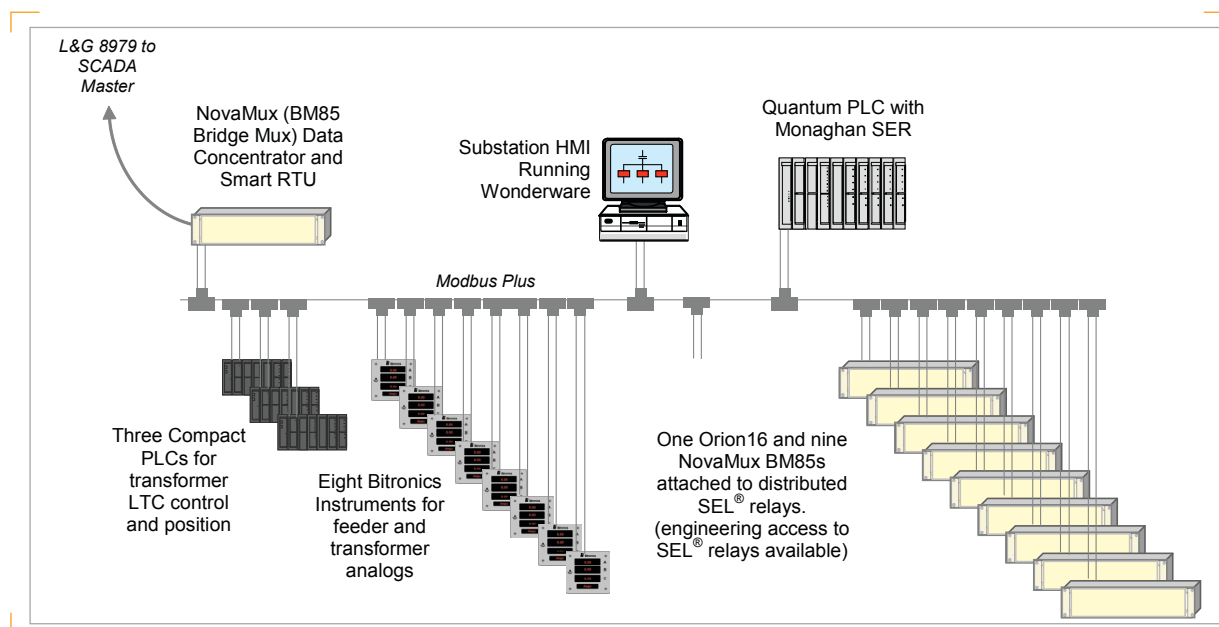
Diagram of Tucson Electric Power Company, Rancho Vistoso Substation

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