

# NOJA POWER<sup>®</sup>

## NEWS EDITION 21

### MISSION STATEMENT

We offer our customers integrated solutions using innovative products, combined with unrivalled service and reliability worldwide.

### NOJA POWER SUPPLIES RELIABLE POWER TO FIFA WORLD CUP TOURNAMENT

NOJA Power's OSM Auto Recloser has been successfully used by Power Technologies Incorporated SA (PTI) to provide reliable power for the FIFA U-20 World Cup Tournament 2011 held in Colombia.

FIFA required all stadiums used in the tournament to have two power sources in case of power failure. EDEQ (Empresa de Energía del Quindío S.A. E.S.P) the power utility responsible for the stadium in the Quindío region, worked with PTI and NOJA Power to supply and implement a solution to automatically switch power source in the event normal supply is lost.

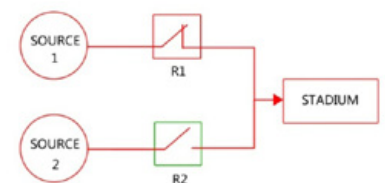


figure 1

PTI successfully designed and implemented a safe, cost efficient solution using NOJA Power's solid dielectric insulation, arc fault contained recloser tanks. NOJA Power's automatic recloser was chosen as a solution due to its ability to sense and measure current and voltage in both directions and its inbuilt Automatic Back Feed Restoration (ABR) feature which allows supply to be restored automatically without a crew or an operator on site.

Figure 1 shows the power network for the World Cup stadium. If normal supply is lost for any reason, the NOJA Power Recloser Automatic Back Feed Restoration (ABR) feature detects a loss of supply and automatically closes to restore supply.

This automation is made possible by the unique design of the NOJA Power recloser which allows the simultaneous measurement of voltage on both sides of equipment (source and load) through its voltage capacitive sensors in all 6 bushings. This makes the transfer fully automatic. The switching time can be set from 0 to 180s which can be used to allow for grading with other switching devices while minimizing the recovery time.



The NOJA Power OSM Recloser and its ABR automation feature allowed PTI and EDEQ to successfully guarantee a reliable power source for what turned out to be a very successful U20 FIFA World Cup Tournament.

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## NOJA POWER OSM AUTOMATIC RECLOSER THE PERFECT BUILDING BLOCK FOR SMART GRID

NOJA Power has been providing Auto Recloser Smart Grid solutions for utilities around the globe. These Automated Reclosers are used as Smart Grid Building Blocks to provide distributed intelligence along the feeders. The Recloser has inbuilt Distribution System Automation (DSA) features which allows changing network configuration automatically or remotely.

The NOJA Power Automatic Recloser is a two directional voltage and current sensing device combined with Intelligent Electronic Devices (IED). This allows the recloser to automatically sectionize the feeder and minimize affected areas when a fault occur on the grid. The automatic reclosers also empower engineers with the ability to monitor power grid parameters and automatically alter these parameters. These automation features reduce time and costs for a field engineer to travel to and from devices and increases the integrity of the power grid.

NOJA Power OSM Recloser is a building block for utilities to implement Smart Grid Philosophy such as Automatic Backfeed Restoration (Loop Automation), Fault Finding and Fault Isolation. The device is also equipped with precise timing parameters allowing protection coordination time between devices to be minimised. 8 protection groups could be configured which will automate according to the scenarios, protecting the grid throughout the seasons.

NOJA Power OSM recloser Smart Grid solutions simulation can be viewed on the NOJA Power website, it is also available as a downloadable pad/mobile application on [www.nojapower.com.au/app](http://www.nojapower.com.au/app)



## NOJA POWER'S NEW RECLOSER CONTROL CUBICLE FOR SMART GRIDS

NOJA Power has released the new RC10 control and communications cubicle with OSM reclosers in English, Spanish and Portuguese language variants. The power and benefits of these cubicles are now available to broader distribution networks and wider engineering communities around the world.

Some of these benefits include upgraded data logging, communication, Smart Grid automation and grading features which are outlined below:

Smart Grid Engineers can now take advantage of the powerful data logging features within RC10. With full event data logging of both voltage and current on all 3 phase, engineers have the information at their finger tips to allow them to better distribute loads and reduces peak demand. This data is readily available and can be remotely accessed from SCADA Control for Smart Grid load distribution and growth planning.

The Communication features within the RC10 allow full remote engineering access through TCP/IP standard protocols, allowing interaction between RC10s and the SCADA master with more ease and flexibility.

RC10 includes new Smart Grid Automation features such as Fault Finding, Fault Isolation and Self-Healing features like Automatic Backfeed Restoration (ABR), 8 Protection groups can be programmed to tailor various scenarios for the grid.



Advance protection grading capability includes Zone Sequence Coordination (ZSC) and Temporary Time Addition (TTA). This allows reclosers in series to keep synchronized during a fault isolation process when they are configured with similar or identical protection curves.

The RC-10 Control Cubicle is a new generation of remote communications control cubicle developed by NOJA Power. The microprocessor based controller combines a directional protection relay, auto reclosing, instantaneous metering, event logging and remote terminal unit for remote control in a single package.

The Cubicle also comes with flexible protection features which include:

- 4 independent protection groups.
- Directional over current and earth fault protection settings.
- Inverse time and definite time protection settings.
- High set instantaneous element settings.
- Directional sensitive earth fault protection settings.
- Voltage protection element settings including phase under voltage balanced, phase-to-phase under voltage element, loss of supply, phase and line-to-line over voltage.
- Frequency protection and zone sequence co-ordination.
- Inrush restraint, temporary time addition duty cycle, reclosing times, auto reclose, live line and hot line tag functions.

These advanced functionality and processing power provides a flexible building block for the smart grid philosophy.

Advanced SCADA communications capabilities are included as standard. Multiple communication protocols and equipment are supported. This remote capability opens the platform to a wide range of online smart grid applications.

USB and RS232 RTU ports are available to provide a flexible method for SCADA communications, data logging and device configuration.

FPGA Parallel processor and more memory have been implemented in the RC10 which dramatically improves the processing speed and increases data transfer rates. This new hardware improvement dramatically increases the processing of critical measurements for reliable protection and allows up to 10000 load profile records to be stored in memory.

A new large LCD display has been included for increased visibility, data presentation and usability in the field. The RC10 cubicle is broken into three distinct modules:

- SIM (Switchgear Interface Module) provides power supply battery charger and the capacitors for tripping and closing the OSM tank.
- Relay Module provide main microprocessor and DSP functionality.
- Operator Panel Module provides the operator interface.

The exterior of the cubicle is constructed out of powder coated stainless steel for a long, maintenance free lifetime; the roof of the cubicle is coated with a ceramic based insulating material that provides a 16 ° C reduction in internal temperature when the cubicle is exposed to 1.1kW of solar radiation. The cubicle can operate over a temperature range of -40 to +55° C.

The entry point for the control cable is housed within a vandal-proof enclosure and

the cubicle door has a three point handle locking mechanism making it extremely difficult to break into.

The quality of the Cubicle has been stress tested using Finite Element Analysis Modelling to examine the mechanical quality of the product. Tests such as Vibration, Impact stress testing and Temperature rise testing have been performed to ensure the cubicles reliability and robustness in harsh environments.

Extensive Type Tests were performed to ensure reliability and its compliance with international standards. The type tests include:

- Extensive EMC testing including compliance with FCC requirements.
- Environmental Type Testing at rated temperature extremes, humidity, IP rating and salt spray.
- Protection Operation and Measurement accuracy at the normal temperature and the rated temperature extremes.
- Accelerated Electronics Life testing at normal and extreme temperatures
- Operation of the recloser at the extreme temperatures
- DNP3 protocol certification
- Extensive firmware testing
- Power Management of the electronics
- Characterisation of the controller after the Interruption testing (fingerprint)

The Smart Grid ready RC10 Communication Cubicles are now in full production, providing more power, control and flexibility to the power grid.



### NOJA POWER OSM38 RECLOSER NOW AVAILABLE IN AN 800A MODEL WITH EXPANDED PRODUCTION CAPACITY

NOJA Power OSM38 Recloser now available in an 800A model with expanded production capacity



NOJA Power has successfully type tested and launched its new OSM38 800 Amp Continuous Current recloser model.

The OSM38 recloser range has been expanded to offer an 800A model in addition to the 630A model. It has been

successfully type tested and is now available to order.

NOJA Power has also responded to demand for the OSM38 by expanding production capacity. A second parallel OSM38 production line has been built and commissioned to double the daily production capacity.

The NOJA Power factory at Murarrie in Brisbane operates two shifts / day from 6am in the morning to 11pm in evening on all four recloser production lines.



### 132KV PROTECTION AND CONTROL ENCLOSURES FOR ENDEAVOUR ENERGY

NOJA Power has been awarded contracts to supply approximately 100 Substation Control and Protection Switchboards to Endeavour Energy (Formerly Integral Energy) in NSW Australia.

These assemblies are for installation to various Transmission and Zone Substation projects within the Endeavour Energy network area, and include the \$36 Million Dollar Penrith Substation upgrade Project. The design, manufacture, testing and delivery of the assemblies includes a custom enclosure fabricated to strict Endeavour Energy specifications.



The assemblies consist of 19” rack and swing frame custom enclosures, which are populated with the latest technology in protection, control and communication equipment. Each switchboard panel is routinely tested and certified, and factory acceptance tested, to ensure seamless integrations into the substation environment upon delivery.

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