

ABB Automation & Power World: April 18-21, 2011

EPO-144-1

ODP New Solutions

GridShield™ and ReliaPad™

EPO-144-1

New smart grid recloser and control and new padmount recloser

- Speaker name: Cleber Angelo
- Speaker title: Global Outdoor Product Manager
- Company name: ABB Inc
- Location: Lake Mary

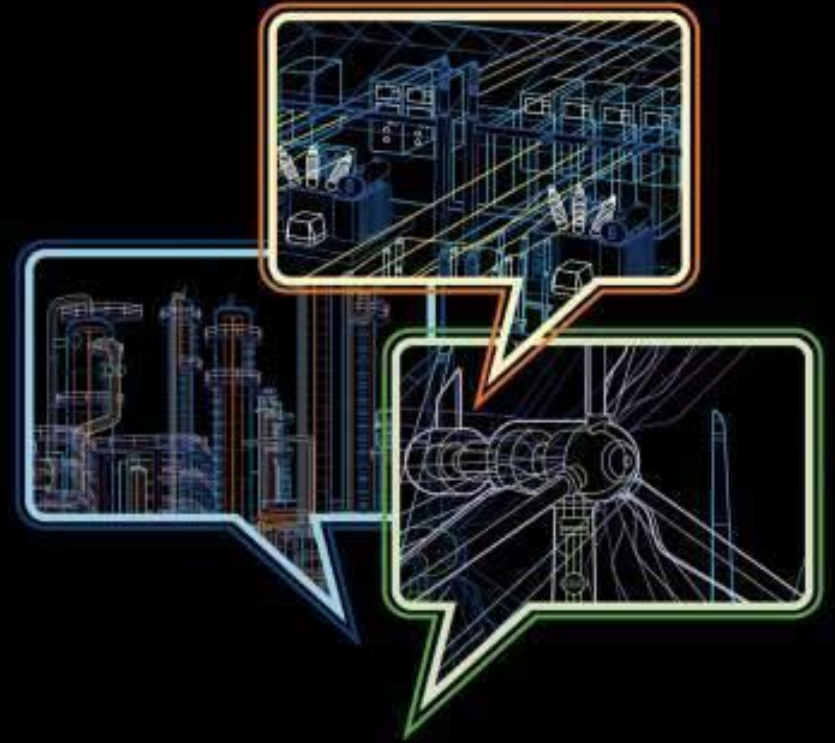


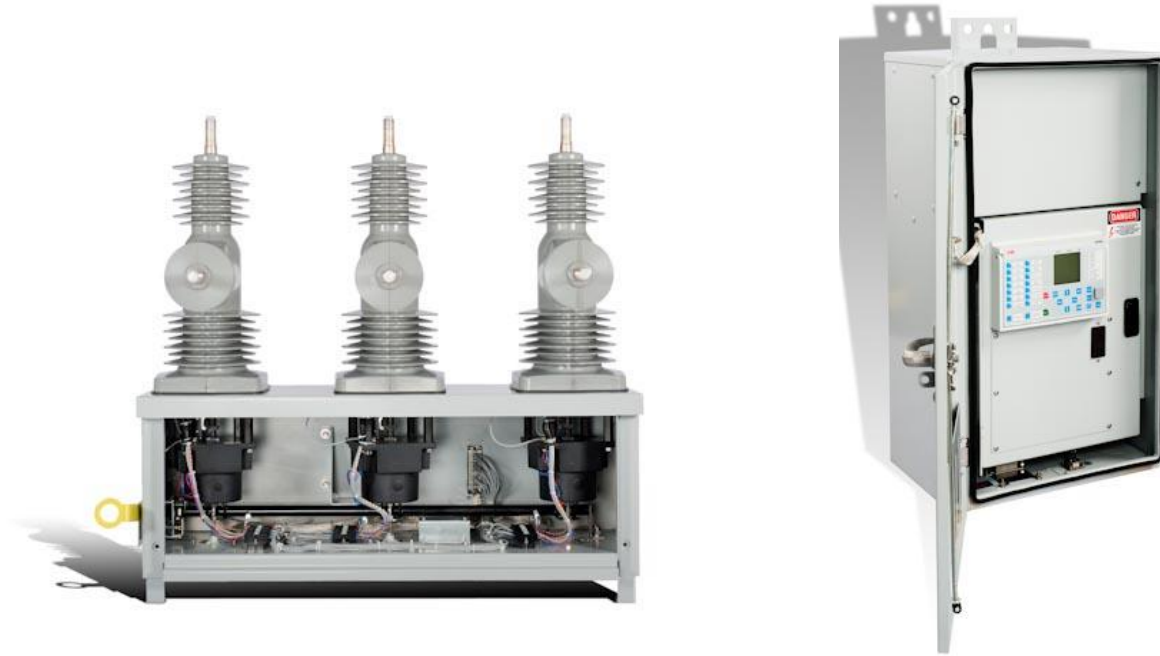
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GridShield

The most powerful Recloser

GridShield Recloser

- GridShield
 - 3 Phase with 1 phase trip capability & RER620 Control
 - Recloser, sectionalizer, and automated load break switch modes



GridShield Recloser Ratings

Rating	GridShield	
Voltage (KV)	15.5	27
Continuous Current (A)	800 / 1000	800 / 1000
Interrupting Current (kA)	12.5	12.5
BIL (kV)	110/125	125/150
Frequency (Hz)	50 / 60	50 / 60
Operating Temperature	-40C to 60 C	-40C to 60 C

- Complete recloser tested to ANSI C37.60 2003
 - Complies with IEC dual logo status - IEC 62271-111
 - Including simulated surge arrestor test ANNEX B
 - Capability to survive fast lightning induced surges
 - More severe than typical IEC & ANSI tests for protective relays

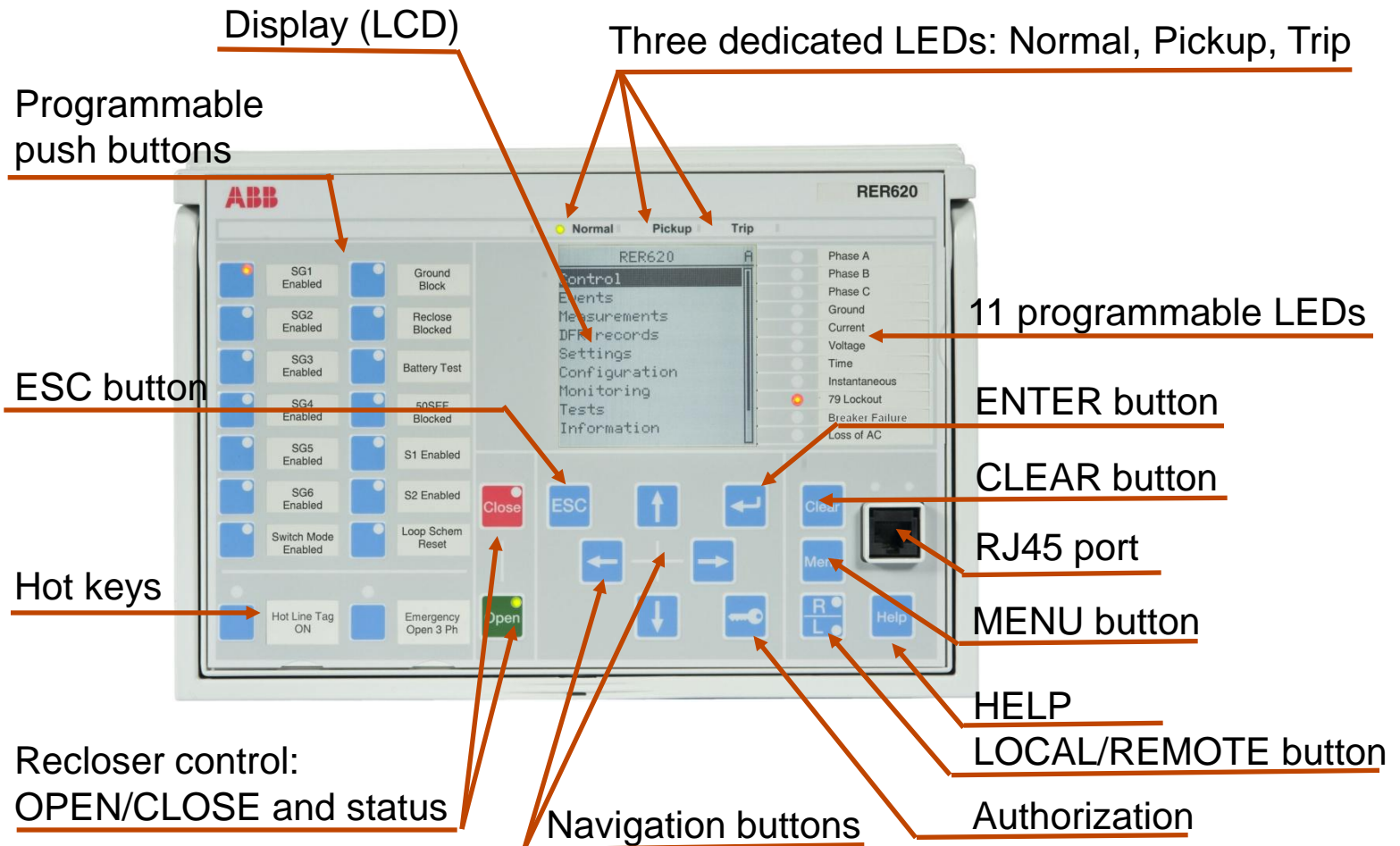
GridShield Recloser

The most powerful recloser control - RER 620



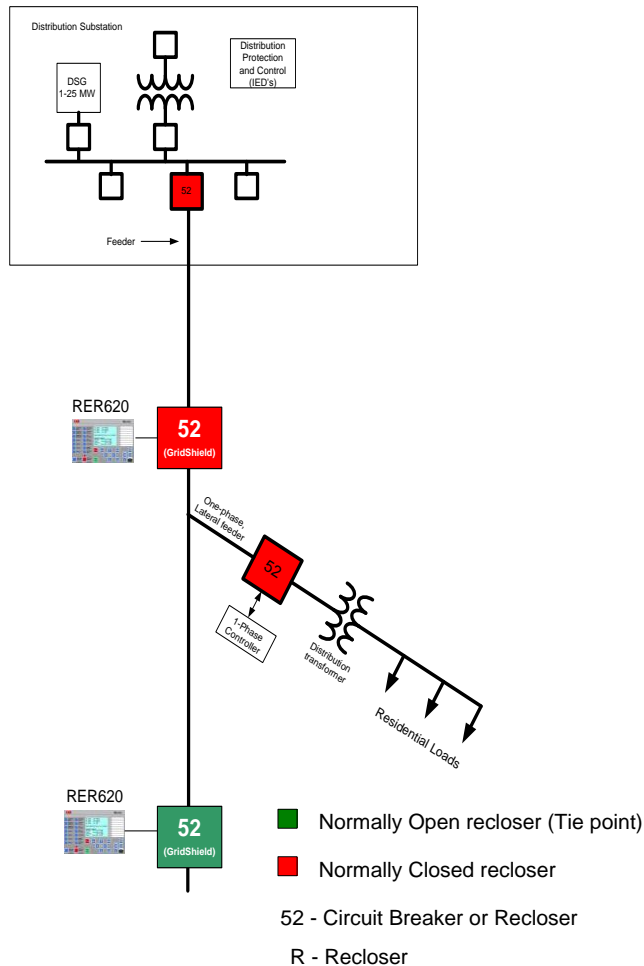
- Designed for over current and ground/earth fault protection
- Loop control module integrated
- Integrated IEC 61850 protocol
- High Impedance fault detection integrated
- Modular hardware design
- Removable case – Plug-in design
- Ideal for distributed generation
- Self Supervision
- Access controlled
- Member of ABB Relion™ relay family

GridShield Recloser RER620 - HMI



RER620

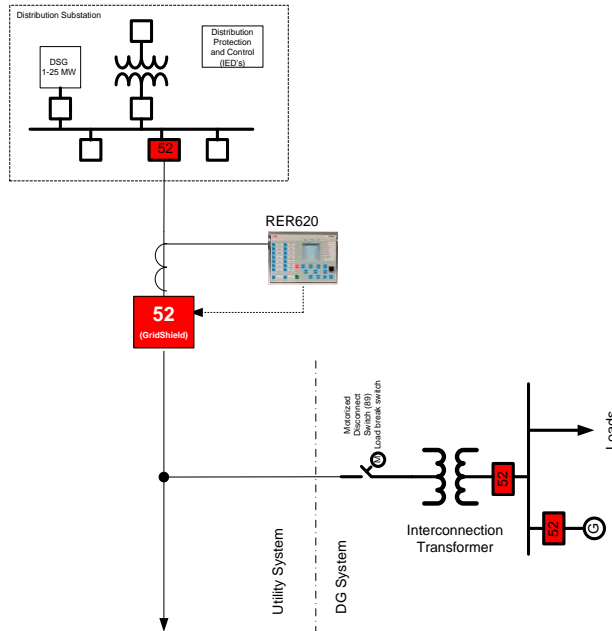
Overhead Line Feeder Application



- Designed for GridShield recloser applications calling for over-current, ground/earth-fault protection and automatic reclosing
- Main application areas:
 - **Recloser in overhead line feeders** in solidly grounded, resistance grounded, isolated or compensated networks
 - GridShield recloser as **substation breaker** in solidly grounded, resistance grounded, isolated or compensated networks

RER620

Distributed Generation Application



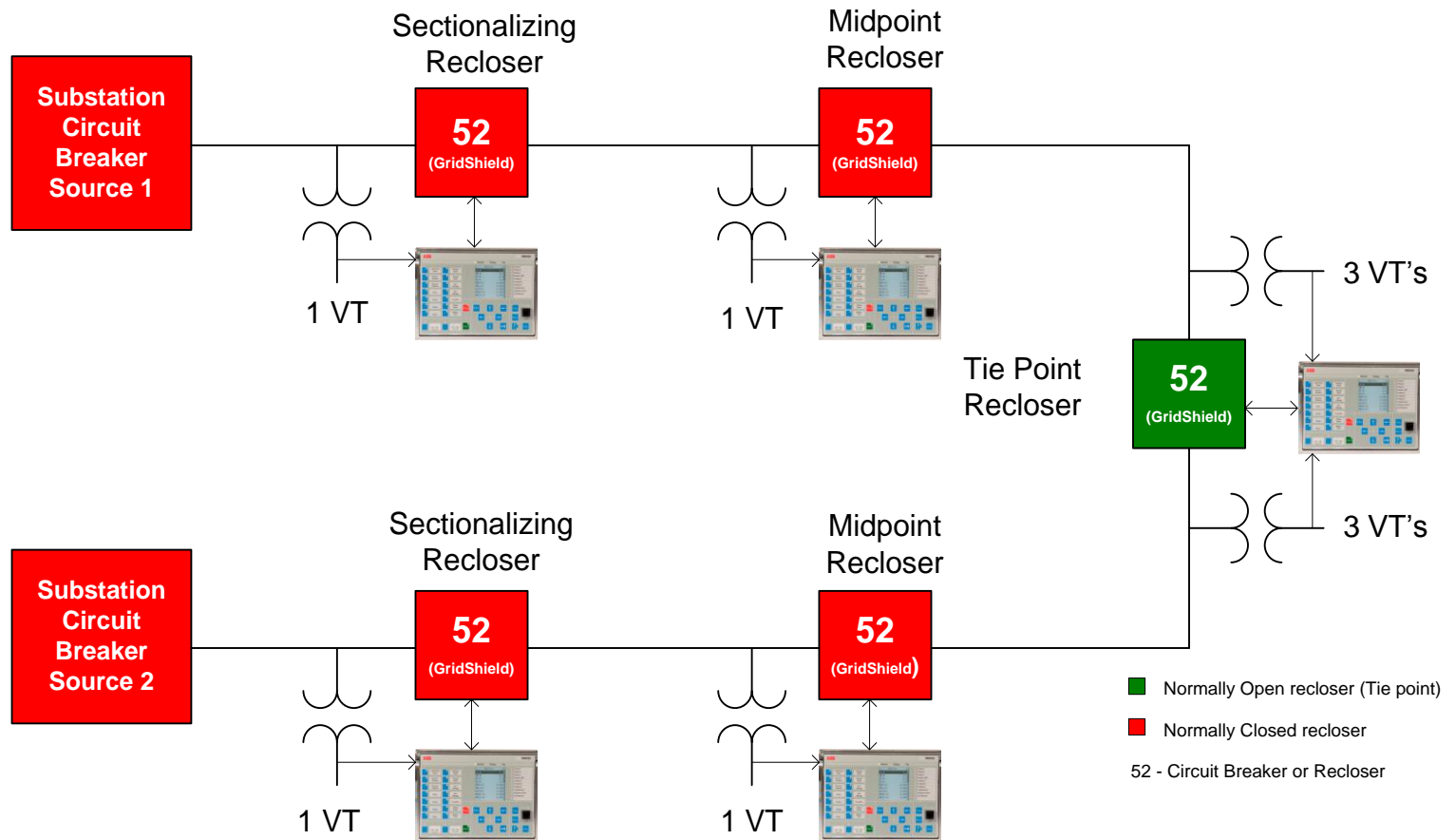
- Designed for recloser (breaker) applications calling for over-current, ground/earth-fault protection and automatic reclosing
- Main application area:
 - **Distributed Generation (DG)** in solidly grounded, resistance grounded, isolated or compensated networks

■ Normally Closed recloser

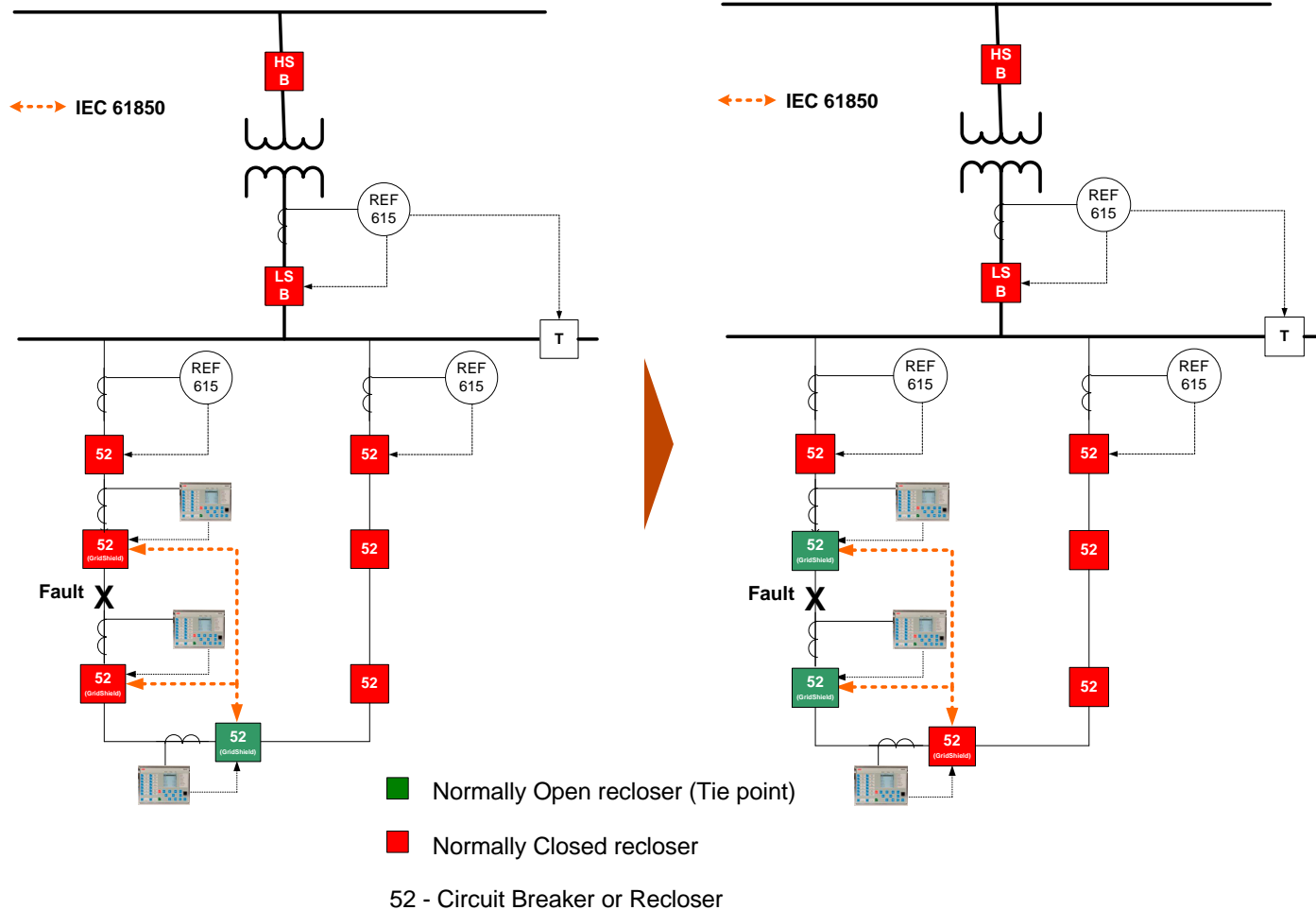
52 - Circuit Breaker or Recloser

RER620

Integrated Loop Scheme



IEC61850 With GOOSE Messaging Loop Control Application



GridShield Recloser

RER 620 - High Impedance Fault Detection



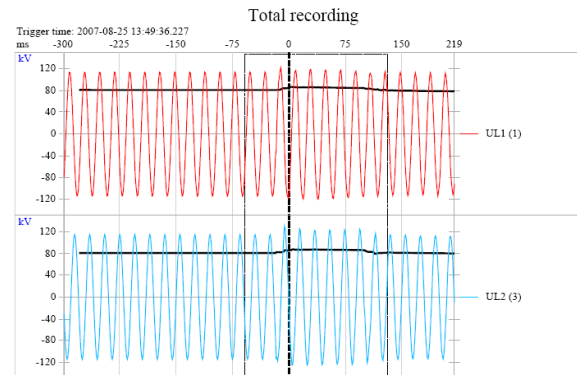
- High impedance faults are manifested with small current magnitudes that are difficult to be detected by standard protection
- Small fault currents do not pose danger to power equipment
- High impedance fault pose danger to humans and animals
- Ground/earth fault current signature used in HIZ algorithm
- Innovation from 7 years of research and extensive field test

GridShield Recloser RER 620 – Disturbance Records

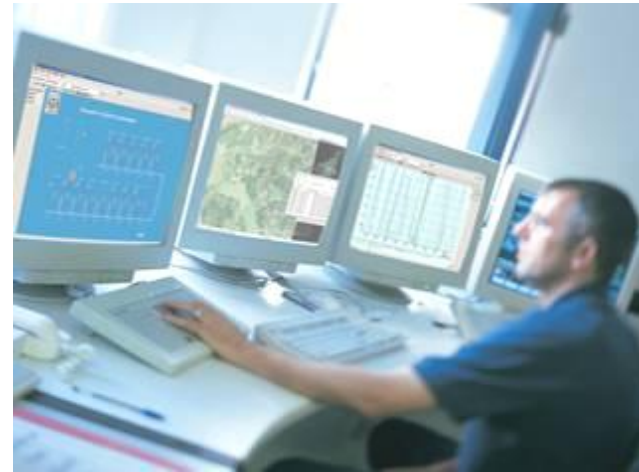
- Records up to 12 analog channels and 64 binary channels
- Records up to 100 individual records
- Triggering by:
 - Analog or binary channel
 - Manual or periodic command
- More time for analyzing complicated disturbances instead of data processing
 - Fast corrective actions enabled by
 - Automatic creation of disturbance reports with user defined layout and content to be immediately sent to the subscribers as an e-mail
 - Scheduler for disturbance file upload



Disturbance Report



GridShield Recloser RER620 – Communications



- Native support for **IEC 61850** communication between IED devices inside and outside of substations
- IEC 61850 enables “GOOSE”(Generic Object Oriented Substation Event) horizontal communication between IEDs
- RER620 can simultaneously report events to five different clients on the station bus
- RER620 can simultaneously communication via 61850 and DNP3 utilizing the front and rear communication ports
- RER620 also supports:
 - **DNP3** TCP/IP and serial
 - **IEC 60870-5-101**
 - **IEC 60870-5-104**
 - **Modbus** TCP/IP and RTU / ASCII

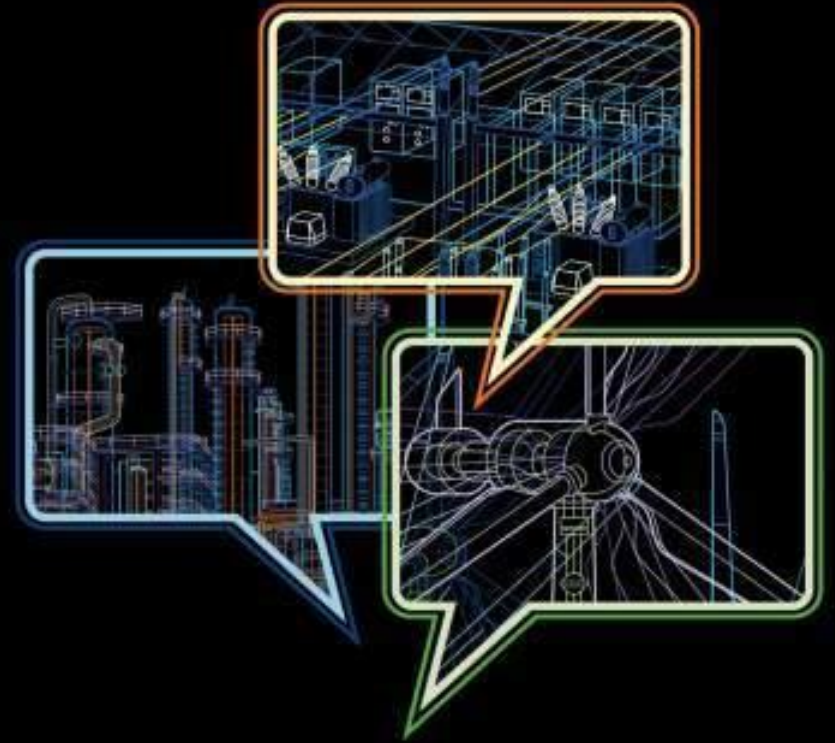


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ReliaPad Underground Smart Solution

ReliaPad

Padmount Circuit Breaker

What is a Padmount Circuit Breaker?

- A Circuit Breaker fitted inside of a padmount enclosure, with the low voltage compartment attached to the outside of the padmount enclosure.

Market needs met by the Padmount Circuit Breaker

- Provide automation for underground distribution systems
 - Remote communication
- Low maintenance requirements
- Energized parts safely enclosed in grounded steel compartments
 - Dead front design.



ReliaPad

Main Features

Padmount Circuit Breaker with vacuum interruption, and VersaRupters switches

- Operate under fault conditions in Electrical Distribution Systems (single-phase trip available)
- Ratings: 15/27kV; 600A; 12.5kA
- PCD or RER620 control cabinet
- Control Power by fused voltage transformer from Incoming side
- Easy fuse replacement for voltage transformer
- Visible break (windows) provided by ABB VersaRupter switches for safety.

ReliaPad Ratings

Nominal operating voltage:	14,4	24.9	kV
Rated Maximum voltage:	15.5	27	kV
Rated power frequency	50/60	50/60	Hz
Rated continuous current:	600	600	A
Rated symmetrical interrupting current:	12.5	12.5	kA
Rated lightning impulse withstand (BIL):	95	125	kV
Power-frequency withstand voltage test design	35	60	kV
Power-frequency withstand voltage production test	34	40	kV
Max. interrupting time:	0.030	0.030	sec max
Max. closing time:	0.055	0.055	sec max
Current sensors:	One per phase encapsulated into the pole		
Voltage sensor:	One per phase encapsulated into the pole		
ANSI: The circuit breaker meets all applicable recloser standards (ANSI 37.60 2003, IEEE, and IEC) and padmounted standard IEEE C37.74 & C57.12.28			
Temperature:	- 40° to 70° for the circuit breaker		
Humidity:	Per ANSI C37.90, up to 95% without condensation **		
Dimensional Information:	99.5" (W) x 82"(D) x 51" (H)		
Weight:	3300 lbs.		

ReliaPad

Main Components



ReliaPad

Front View – Dead Front Design



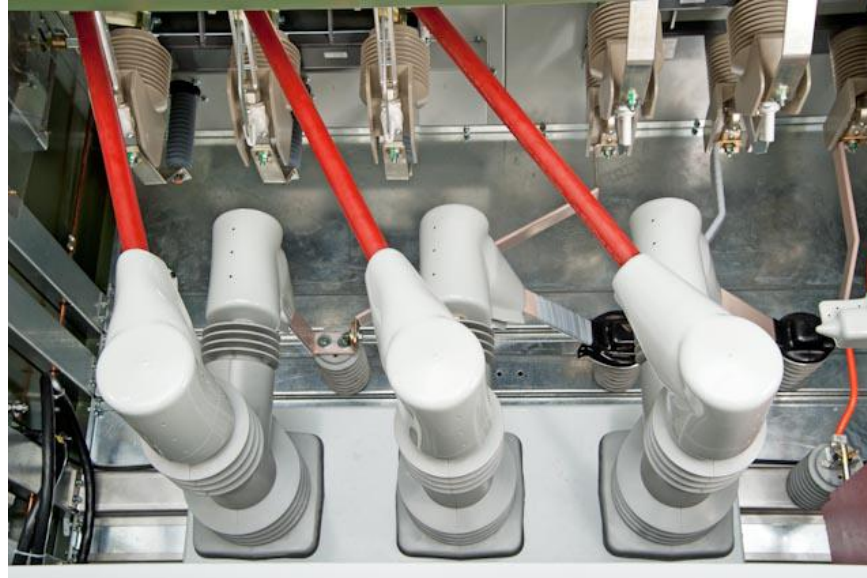
ReliaPad Control Cabinet Options

PCD relay



RER 620 relay

ReliaPad Top View



Circuit Breaker

- No electronics inside of the circuit breaker
- Limits exposure to high voltage conditions that can damage electronics

Value

- Isolating electronics away from high voltage provides Increased reliability & controller lifetime
- Very low maintenance required in the circuit breaker.

ReliaPad

Construction - Advantages



- The integrated potential transformer provides the control power for all of the electrical components installed on the ReliaPad
- Potential Transformer (PT) meets all applicable IEEE and NEMA standards
- The PT fuse is designed for easy replacement in the field.

ReliaPad Insulation

The ABB ReliaPad padmount circuit break is air insulated device, eliminating oil and SF6 out of the streets for padmount switches.



ReliaPad

Typical Configurations

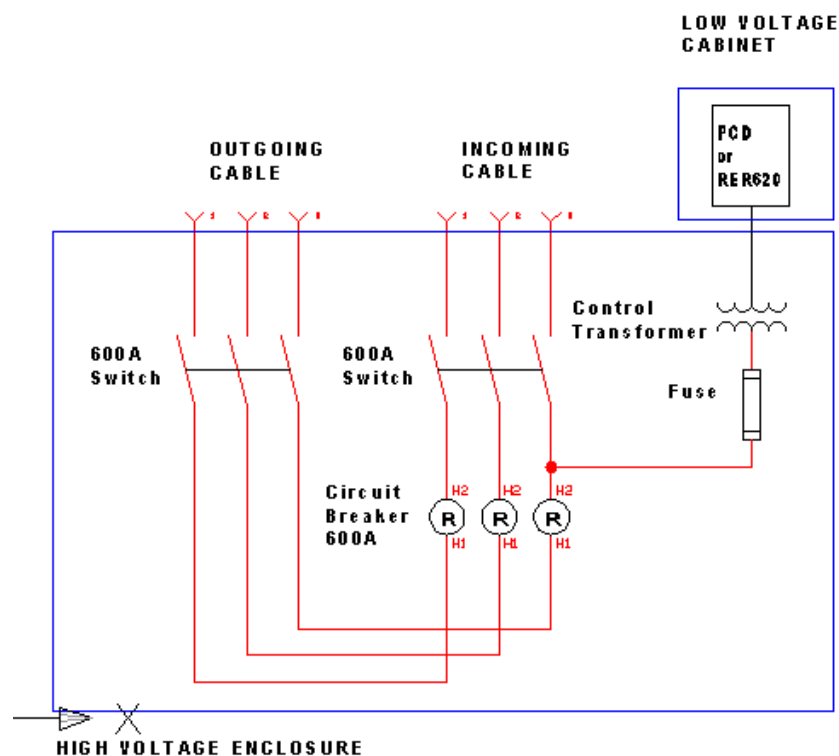


Fig.#1: Dead front circuit breker with two load-break switches

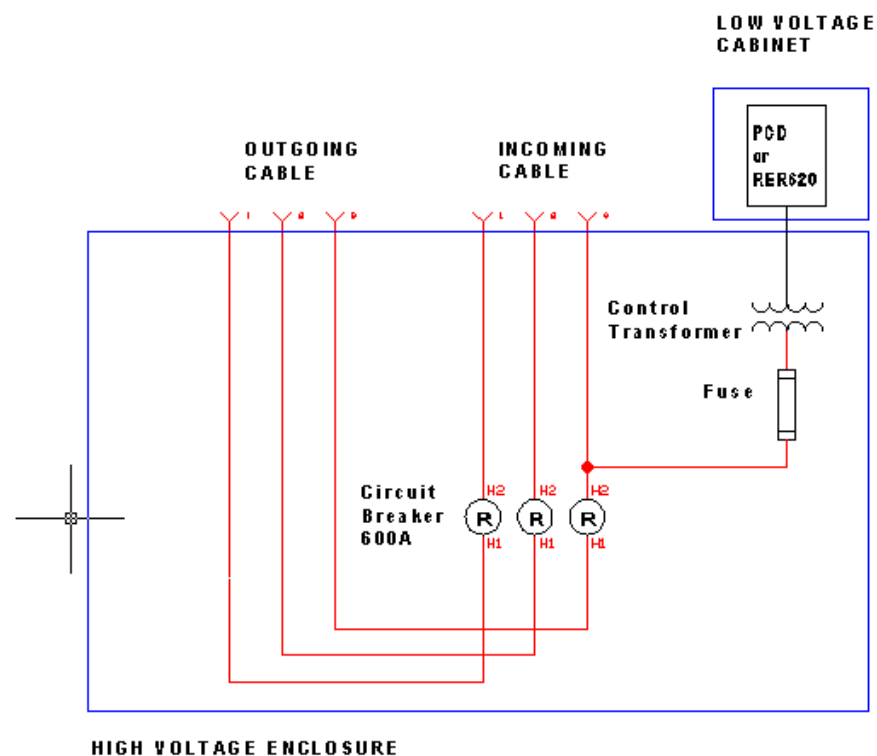


Fig.#2: Dead front circuit breker without load-break switches

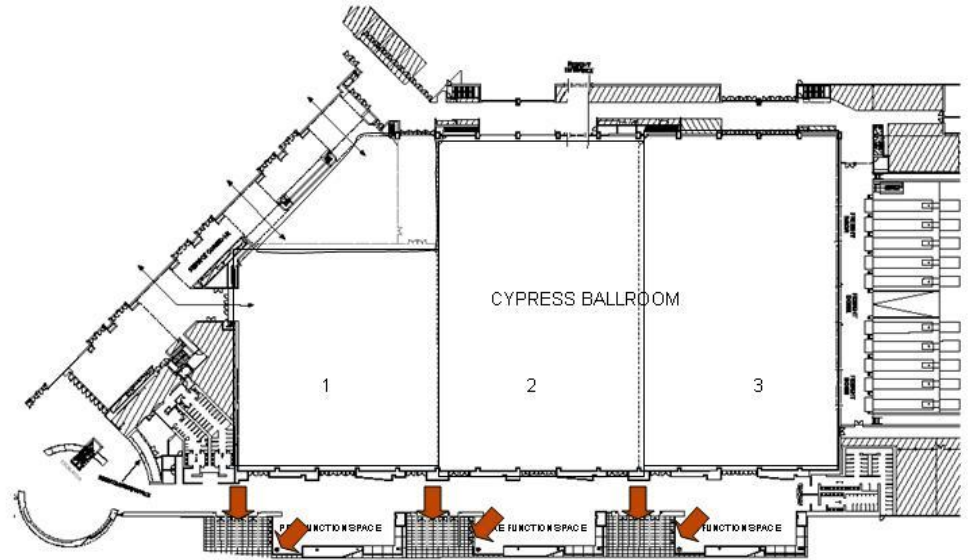
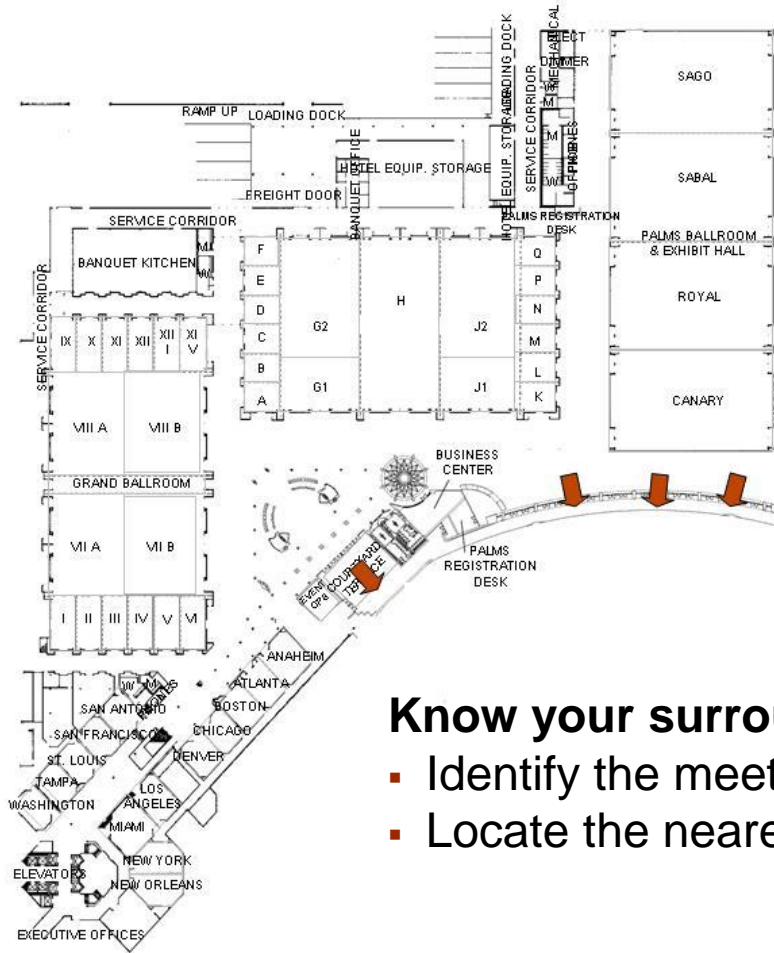
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Please be aware of these emergency procedures

- In the event of an emergency please dial ext. 55555 from any house phone. Do not dial 9-1-1.
- In the event of an alarm, please proceed carefully to the nearest exit. Emergency exits are clearly marked throughout the hotel and convention center.
- Use the stairwells to evacuate the building and do not attempt to use the elevators.
- Hotel associates will be located throughout the public space to assist in directing guests toward the closest exit.
- Any guest requiring assistance during an evacuation should dial “0” from any house phone and notify the operator of their location.
- Do not re-enter the building until advised by hotel personnel or an “all clear” announcement is made.

Your safety is important to us

Convention Center exits in case of an emergency



Know your surroundings:

- Identify the meeting room your workshop is being held in
- Locate the nearest exit

Reminders

Automation & Power World 2011

- Please be sure to complete the workshop evaluation
- Professional Development Hours (PDHs) and Continuing Education Credits (CEUs):
 - You will receive a link via e-mail to print certificates for all the workshops you have attended during Automation & Power World 2011.
 - **BE SURE YOU HAVE YOUR BADGE SCANNED** for each workshop you attend. If you do not have your badge scanned you will not be able to obtain PDHs or CEUs.

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