



PPMV, April/May 2009

# Medium Voltage Outdoor Apparatus Portfolio 2009

# Summary



- **Reclosers**
- **Outdoor dead tank vacuum circuit breakers**
- **Outdoor live tank circuit breakers**
- **Pole mounted circuit breakers**
- **SF6 insulated load break switches**
- **Single phase electronic sectionalizers**
- **Three phase air insulated switches**
- **Fuse cutouts**
- **Single phase air insulated switches**
- **Padmount Switches**

# Reclosers

## OVR-3 & PCD Control

Factory: Lake Mary,  
FL, U.S.



- No electronics in HV compartment
- HCEP insulation material
- Encapsulated vacuum interrupters and sensors
- Magnetic actuator per phase
- Single-phase tripping option
- Superior life – rated for 10,000 operations

Max Design Voltage, KV	Continuous Current, A	BIL, kV	Interrupting Current, kA
15.5	630 / 800 / 1000	110/ 125	12
27	630 / 800 / 1000	125	12
38	630 / 800 / 1250	170	16

# Reclosers

## OVR-3SP & PCD Control

Factory: Lake Mary, FL, U.S.



- Utilizes similar technology as OVR-3
- Individual pole design allows for flexible mounting arrangements
  - Phase-over-phase / Wrap-around / Cross arm
  - Substation replacement of small profile devices
  - Seamless transition of replacing 3 hydraulic units
- One PCD control for operating all three recloser poles
  - Available in rack mount for substation mounting or standard cabinets

Max Design Voltage, KV	Continuous Current, A	BIL, kV	Interrupting Current, kA
15.5	630 / 800 / 1000	110/125	12
27	630 / 800 / 1000	125	12
38	630 / 800 / 1250	170	16

# Reclosers

## OVR-1 & ICD Control

Factory: Lake Mary,  
FL, U.S.



- Similar pole design as OVR-3
- ICD Control - Fully integrated magnetic actuator-based control including energy storage capacitors
- Fault current indication
- Continuous self-diagnostics of power supply, memory elements and microprocessors
- All basic recloser functions
- AC powered electronic control eliminates need for maintaining batteries

Max Design Voltage, KV	Continuous Current, A	BIL, kV	Interrupting Current, kA
15.5	800	110/125	10
27	800	125	10

# Outdoor dead tank vacuum circuit breakers

Factory: Lake Mary,  
FL, U.S.



**R-MAG**



**Type V**

- R-MAG Breaker
  - 15kV & 27kV
  - Magnetic actuator
  - No maintenance on operating mechanism
  - Five year warranty
  
- Type V Breaker
  - 38kV
  - Two bottle per phase design
  - Spring charged mechanism
  
- All breakers vacuum interruption & rated for back to back capacitor switching

	Voltage, kV	Continuous Current, A	Interrupting, kA	BIL
R-MAG 15		1200 / 2000 / 3000 / 3700	12 - 25	110
R-MAG 27		1200 / 2000	12 - 25	125 - 150
Type V 38		1200 / 2000	25 - 40	150 - 200

# Outdoor live tank circuit breakers

Factory:, Nashik India



- Telescopic structure to meet the statutory requirement of minimum height from ground level
- Superior life: Tested for 10,000 operations
- Re-strike free: Tested for C2 class Capacitor switching duty
- Suitable for operating in temperatures ranging from -40 deg C to + 45 deg C.

	Voltage, kV	Continuous Current, A	Interrupting, kA (3 sec)	BIL
OVB-SDB	15	2000	25	110
OHV	24 / 36 / 40.5	2500	31.5	200
OVB-VBF	36 / 40.5	2000 / 2500	25 / 31.5	175 / 195

# Pole mounted circuit breaker

Factory:, Xiamen  
China



- Encapsulated vacuum interrupters with HCEP insulation material
- Breaking current in vacuum interrupters environmentally
- Spring mechanism with anti-pumping function needs low operating power and easily being upgraded
- Superior life – Rated for 10,000 operations
- Combined the functions of protection, monitoring and control
  - Different optional DA schemes
    - PCD control or REF615

Rated Voltage, kV	Continuous Current, A	BIL, kV	Interrupting Current, kA	Rated Voltage, kV
12	630	75/85	20	12

# SF6 load breaking switches

Factory: Xiamen  
China



## Sectos

- Complete sealed stainless steel tank
- 2-position (ON-OFF) or 3-position (ON – OFF - EARTH)
- Reliable spiral spring operation mechanism with light reflecting and clear position indicator
- Stable gas density switch and temperature compensated gauge
- Distribution automation solution with remote communication and current and voltage sensing availability
- Mechanical manual locking device or low gas locking device
- Easily upgraded from manual to motor operation

Sectos	Max Design Voltage, KV	Continuous Current, A	BIL, kV	Short time withstand current
NXB	24	630	125/145	20KA / 3s
NXBD	24	630	125/145	20KA / 3s
NXA	36	630	170/195	12.5KA / 3s

# Electronic sectionalizer

Factory: Buenos Aires, Argentina



## Autolink

- Improves reliability on overhead feeders by sectionalizing feeder in conjunction with upstream recloser or breaker
- Customer settable current and counts
- Settable actuating current
- Manually resettable after operation
- Inrush detection feature
- Fits into standard fused cutout bodies

Max Design Voltage, KV	Number of counts	Current settings, A	BIL, kv
15 - 33	1 - 4	6 to 215	95 - 170

# 3 Phase air insulated switches

## R, S, U

Factory: Moorebank  
Australia



### U Series

- Side break operating contacts
- Mounting options: Pole top & mid pole
- Disconnecter or load break interrupter options
- Vertical or rotary operating handle

### S Series

- Side break operating contacts
- Mounting options: Pole top, mid pole, vertical & horizontal
- Disconnecter or load break interrupter options
- Porcelain or polymeric insulator options

### R Series

- Vertical break operating contacts
- Mounting options: Pole top, mid pole, vertical & horizontal
- Disconnecter or load break interrupter options
- Porcelain or polymeric insulator options

	Voltage, kV	Continuous Current, A	Short Time Withstand, kA	BIL
Series U	12-36	630	20	150 & 200
Series R	12-36	800-2000	up to 31.5	up to 225
Series S	12-36	630	20	150 & 200

# 3 Phase air insulated switches

## NPS

Factory: Vaasa  
Finland



- Vertical breaking contacts
- Gang operated – manual or motor.
- Horizontal or vertical mounting
- Wide range of optional accessories - fuses, earthing switches, CT's
- Cycloaliphatic epoxy insulators (CEP) on NPS24B
- Standard silicone rubber insulators on NPS24A..36A (Isoelectric) used
- Load breaking and making capacity
  - Whips for 25A and new design for 50A
  - K4/K5 air breaking chambers for 250 and 630A
  - Unique K5 chamber with also 8..12,5 kA making capacity

	Voltage, kV	Continuous Current, A	Short Time With-stand, kA	BIL
NPS24B	12-24(25,8)	630	16	125
NPS24A	12-24(25,8)	630	20	125 and 150
NPS36A	24-36	630	21	170 and 200

# Fused cutouts

Factory: Greensboro NC, U.S / Moorebank Australia

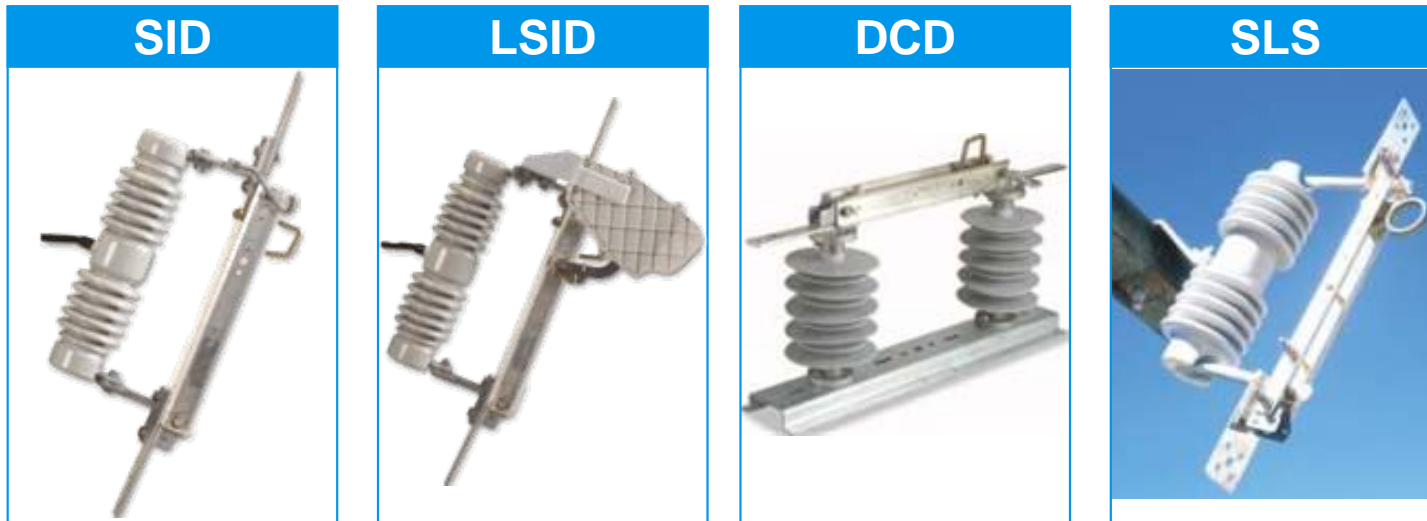


- ICX cutouts: interchangeable fuse holder
- NCX cutouts: non-interchangeable fuse holder
- LBU-II loadbreak cutouts: non-interchangeable fuseholder
- EU: Enclosed fuse holder
- Series V: non-interchangeable fuse holder, IEC 129 / AS 1306
- All fused cutouts are available with silicone, polymer concrete, or porcelain insulators

Type	Standard	Voltage (kV)	Continuous Current (A)	Interrupting Current (kA)	BIL
ICX	ANSI	7.8, 15, 27, 38	100-300	8, 10, 12, 16, 40	110, 125, 150, 170
NCX	ANSI	7.8, 15, 27, 38	100-300	8, 10, 12, 16, 40	110, 125, 150, 170, 180
LBU-II	ANSI	7.8, 15, 27, 20, 34.5	100-300	8, 10, 12, 16, 20, 40	110, 125, 150, 170, 180
Series V	IEC	12 – 36	100	(6-8) - ( 2-4)	125, 150, 170

# Single-phase disconnectors

Factory: Greensboro  
NC, U.S /  
Moorebank Australia



- Visible disconnect for maintenance of line equipment
- Support insulator: porcelain polymer concrete or silicone

Type	Standard	Voltage (kV)	Continuous Current (A)	Momentary Rating (kA)	BIL	Number of Insulators
SID/LSID	ANSI	15 -38	600 / 900	40	110 - 170	1
SLS	IEC	12 - 36	630 / 800	16 / 25	125 - 170	1
DCD	ANSI	15 -38	600 / 900	40	110 - 150	2
SLD	IEC	12 - 36	630 / 800	16 / 25	125 - 200	2

# Single phase by-pass switch

Factory: Greensboro  
NC, U.S / Moorebank  
Australia



**Normal operating mode**



**By-pass mode**

- Bypassing or disconnecting reclosers or regulators; Allows quick system reconfiguration or maintenance without interrupting service
- Support insulators: porcelain or silicone
- Mounting configurations: vertical, underhung, pole mount, or crossarm
- Blade stop – prevents switch from closing under high momentary current. Holds the blade in the 90° or 160° position

Type	Standard	Voltage (kV)	Continuous Current (A)	Momentary Rating (kA)	BIL
RBD	ANSI	15, 27, 38	600 / 900	40	110, 125, 150
SLDT	IEC	12 - 36	630	25	150, 200

# Single-phase by-pass disconnecter

Factory: Moorebank  
Australia /  
Greensboro NC, U.S.



## FBS (Fused By-pass Switch)

- Used to disconnect and isolate circuit reclosers while performing repair and maintenance functions
- Support insulator: silicone
- The standard arc chute allows opening of the fuseholder under load without the need for a portable loadbreak tool

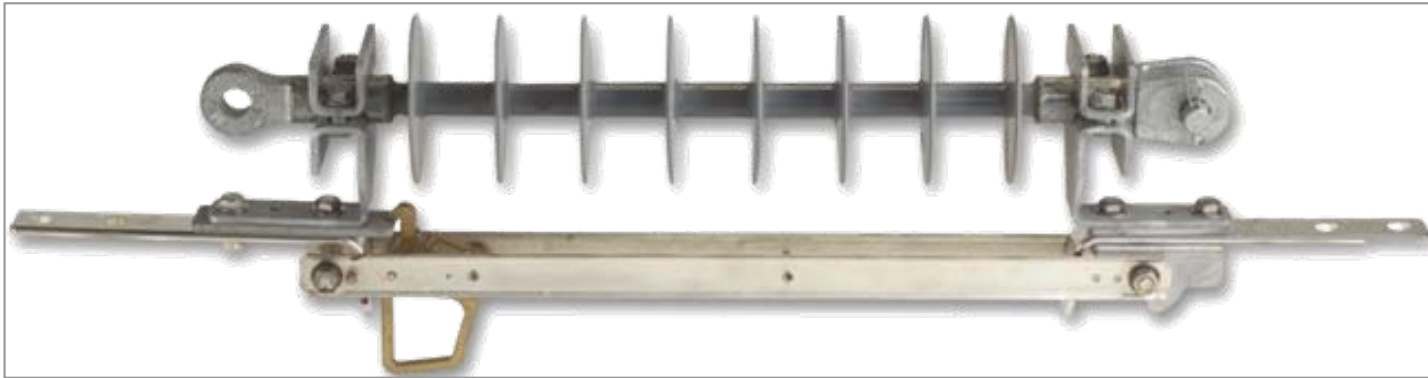
## SLSB

- Single-phase by-pass disconnecter
- Integrated fused cutout for fault protection

Type	Standard	Voltage (kV)	Continuous Current (A)	Momentary Rating (kA)	BIL
FBS	ANSI	15	200	40	110
SLSB	IEC	12 - 24	630	25	125, 150

# Inline tension single-phase disconnect switch

Factory: Greensboro,  
NC U.S.



## ITD

- Used for manual switching of de-energized or parallel circuits of overhead distribution lines
- Installed directly in the distribution line
- Support insulator: silicone
- Blade stop: prevents switch from closing under high momentary current. Holds the blade in the 90° or 160° position

Type	Standard	Voltage (kV)	Continuous Current (A)	Momentary Rating (kA)	BIL
ITD	ANSI	27, 38	600/900	40	150, 200

# Padmount switches

Factory: Lake Mary,  
FL U.S.



- Live front (MES) and dead front (MDS) switches
- Used to isolate an underground line or allow reconfiguration of the system to feed from other directions
- Live front - Energized parts are exposed when doors are open
- Dead front - Energized parts are completely enclosed within a grounded steel compartment for increased personnel safety, electrical isolation and protection from contamination
- Utilizes ABB NAL switch
- Various switch / fuse configurations available

Max Voltage, KV	Continuous Current, A	Load Interrupting, A	Momentary and fault closing, kA
15 - 27	600	600	40

# Padmount switches

Factory: Lake Mary,  
FL U.S.



## ME fused sectionalizing enclosures

- Designed for 200 A circuits to protect and sectionalize a system
- 15 and 25 kV dead-front with multiple mounting options
- Power fusing
  - Load break or non-load break
  - S&C and Cutler Hammer compatible
- Current limit fusing
  - Cooper and Hi-TECH
- Bushing wells for 200 A standard with 600 A source bushings optional
- Single and three phase configurations
- Radial or loop feed with one, two or three fused loads

Max Design Voltage, KV      Continuous Current, A

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15 – 27

200

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