ABB Padmount Switching Business

- **ABB**
  - Padmount switchgear manufacturing since early 1990’s
  - Very good reputation; specifically in utility market
  - Switch design incorporates the ABB VersaRupter load break switch (Over 50K units from ABB)

- **Industry Leader in 200 ampere and 600 ampere fused sectionalizing products**

- **S&C “form and fit” 600 ampere padmount switchgear**
  - 15 - 25kV, 200 - 600A switchgear
  - Standard live-front and dead-front configurations
Complete Product Offering

- Dead-Front Switchgear 600 A, 15 and 25 kV (MDS)
- Live-Front Switchgear 600 A, 15 and 25 kV (MES)
- Fuse Sectionalizing Enclosures
  - Power fusing dead-front gear 200A, 15 and 25kV (ME)
  - Current limit fusing dead-front gear 200A, 15 and 25kV (ME)
- Capacitor Banks (MEF)
- Primary Metering Enclosures (MEF)
MDS Dead-Front Switch

- 600 A load switching for 15 and 25 kV systems
- 40,000 A asymmetrical momentary and fault closing
- Various switch / fuse configurations available
- Multiple fusing options
- Key interlocks available for switch and fuse compartments
- Switches and fuses are enclosed in a metal compartment for personnel safety and to prevent entrance of foliage and contaminants
- Switch position is visible through viewing windows in the component compartment
- Construction and coating meet or exceed ANSI Standards for pad-mounted equipment enclosure integrity
- Available in mild steel, stainless steel and aluminum
MES Live-Front Padmount Switch

- 600 A load switching for 15 and 25 kV systems
- 40,000 A Asymmetrical momentary and fault closing
- Various switch / fuse configurations available
- Industry standard footprint and termination height
- Additional termination height available (10” or 20”)
- Multiple fusing options
- Key interlocks available for switch and fuse compartments
- Surge arrester options from 9 kV to 21 kV
- Connecting bus located at top of enclosure for ease of inspection and maintenance
- Storage provisions for fuse holders/fuse end fitting assemblies in fuse compartments
- Switch position is visible through viewing windows with safety barrier in place
- Full height electrical grade phase barriers for switch and fuse compartments
- Construction and coating meet or exceed ANSI standards for pad-mounted equipment enclosure integrity
- Available in mild steel, stainless steel and aluminum
Padmount Switchgear - VersaRupter®

- Designed and manufactured by ABB
- Over 500,000 VersaRupters installed in more than 50 countries.
- Rated for 100 full load and 1,000 mechanical operations
- Air blast technology for arc extinction
- Innovative puffer and nozzle system to quickly extinguish the arc of full-load interruptions
- Generous switch phase spacing to achieve BIL rating without the need for additional barriers
Common Construction Features in Padmount Switchgear

- **Enclosure Features**
  - Superior rigidity and tamper resistance
  - Flexible modular design promotes life cycle support including field upgrades and repairs
  - Cross bus at the top of enclosure for ease of inspection
  - Available in mild steel, stainless steel or aluminum construction

- **Folding 3-point Door Handle Assembly**
  - Stainless steel housing
  - Stainless pentahead bolt
  - Heavy duty cast aluminum folding handle
  - Penta bolt hidden behind handle when secured
  - Easily replaceable

- **Switch Housing Assembly**
  - Padlock and pentahead bolt for added security
  - Folding handle secured with chain
  - Easily replaceable
  - Stainless steel housing
  - Switch lockable open or closed position standard

- **Polymax Plus Premium Coating**
  - Electrostatic epoxy prime coat
  - TGIC polyester powder top coat
  - Available in green or ANSI 70 gray
  - Exceeds ANSI C57.12.28 plus Cleveland Condensing Chamber humidity test
Common Construction Features

- **Automatic Door Stay Assembly**
  - Secures door in open position
  - Easy release with hand or foot
  - Easily removable doors

- **Interior Features**
  - 600 A load-break switch
  - ABB VersaRupter
  - Viewing window for switch status
  - Switch rated for 100 full load and 1,000 mechanical operations

- **200 A Fuse Mounting Option**
  - Mountings available for all industry standard fusing
  - Simple operation for fuse servicing
  - Accepts standard fuse holders/ fuse end fittings
ME Dead-Front 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 & Cutler Hammer compatible
- Current limit fusing
  - Cooper & Hi-TECH
- Bushing wells for 200 A standard with 600 A source bushings optional
- Single & three phase configurations
- Radial or loop feed with one, two or three fused loads
- Enclosure features
  - Available in mild steel, stainless steel and aluminum
  - Electrical grade (GPO-3) fiberglass barriers for phase separation
MEF Capacitor Banks

- Rated for 5, 15 or 25 kV in dead-front or live-front for 150 kVAR to 2400 kVAR
- Radial or loop feed cable connections in
  - 200 A bushing wells for load-break
  - 600 A bushings for non-load-break
- Fixed or switched system configurations
- Capacitor switching in 200 A oil or vacuum
- Fusing options include group power fuses, group current-limited fuses and individual capacitor fuses
- Control power transformer in oil or dry type or source externally
MEF Primary Metering Enclosures

- Rated for 15 kV (95 kV BIL) and 25 kV (125 kV BIL)
- Standard 200 A bushing wells (600 A optional)
- Enclosure features
  - Available in mild steel, stainless steel and aluminum
  - Heavy duty channelized construction
  - Automatic latching door handles
  - Removable doors with stainless steel hinges and hardware
  - Three-point door latching with recessed stainless pocket, folding handle and security bolt
  - Electrostatic epoxy prime coat with TGIC polyester powder top coat in green or optional ANSI 70 gray
- Grounding provisions in each compartment
- Optional potential transformers and current transformers
- Electrical grade fiberglass barriers for phase separation
- Construction and coating meets requirements of ANSI and RUS U-4 specifications
Key Differentiating Features
MDS Dead-front & MES Live-front
# MDS Dead-Front Product Comparison

<table>
<thead>
<tr>
<th>Interior feature</th>
<th>ABB</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase spacing</td>
<td>Generous switch phase spacing to achieve BIL rating without the need for additional barriers</td>
<td>Requires internal phase barriers</td>
</tr>
<tr>
<td>Viewing window</td>
<td>Large switch position viewing window to determine blade status as well as visual inspection of interior</td>
<td>Small viewing window</td>
</tr>
<tr>
<td>Fuse accessibility</td>
<td>Simple swing-out fuse access door for servicing fuses</td>
<td>Complex pivoting fuse access panel</td>
</tr>
<tr>
<td>Fault current rating</td>
<td>40 kA standard</td>
<td>40 kA available at an additional cost</td>
</tr>
<tr>
<td>Fuse phase barriers</td>
<td>Hinged phase barriers secure opening when fuse is in service position</td>
<td>Fixed barriers. Access panel secures opening</td>
</tr>
<tr>
<td>Interior feature</td>
<td>ABB</td>
<td>Industry</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>----------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>Fuse assembly storage</td>
<td>Fuse assembly/holder storage on the door of switch compartment (optional)</td>
<td>Same feature</td>
</tr>
<tr>
<td>Cross bus</td>
<td>Cross bus visible for inspection</td>
<td>Cross bus hidden behind insulating barriers</td>
</tr>
<tr>
<td></td>
<td>*horizontal configuration for added reliability</td>
<td>*vertical configuration</td>
</tr>
<tr>
<td>Fuse mounting alignment</td>
<td>Independent of the enclosure</td>
<td>Same feature</td>
</tr>
<tr>
<td>Switch interrupting rating</td>
<td>600A interrupting rating at 15 kV and 25 kV</td>
<td>600A at 15 kV; Limited to 400A at 25 kV</td>
</tr>
</tbody>
</table>
## MDS Dead-Front Product Comparison Continued

<table>
<thead>
<tr>
<th>Enclosure feature</th>
<th>ABB</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>Penta bolt and padlock security for switch operator door</td>
<td>Padlock security only</td>
</tr>
<tr>
<td>Door handle pocket</td>
<td>Stainless steel</td>
<td>Mild steel</td>
</tr>
<tr>
<td>Exterior handle hardware</td>
<td>Stainless steel and non-ferrous exterior handle parts</td>
<td>Mild steel</td>
</tr>
<tr>
<td>Three point latching</td>
<td>Manual three point latch with rollers, typical of switchgear and transformers</td>
<td>Non-standard, spring loaded latch mechanism</td>
</tr>
<tr>
<td>Enclosure feature</td>
<td>ABB</td>
<td>Industry</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Door stay</td>
<td>Automatic door stay</td>
<td>Manual door stay</td>
</tr>
<tr>
<td>Lift-off doors</td>
<td>Lift-off doors standard</td>
<td>Not available</td>
</tr>
<tr>
<td>Ventilation</td>
<td>Both upper roof ventilation and lower louver ventilation with barriers</td>
<td>Roof ventilation only</td>
</tr>
</tbody>
</table>
## MES Live-Front Product Comparison

<table>
<thead>
<tr>
<th>Interior feature</th>
<th>ABB</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase spacing</td>
<td>Additional spacing for safety and parallel terminations plus arrestors; 6” for 15 kV, 7 ½” for 25 kV</td>
<td>Limited; 6” for 15 kV, 7 ½” for 25 kV *adapter required for parallel termination</td>
</tr>
<tr>
<td>Phase barriers</td>
<td>Full height switch phase barriers</td>
<td>Barrier does not extend to switch top contact</td>
</tr>
<tr>
<td>Viewing window</td>
<td>Switch position viewing window removable, for testing w/o tools or fasteners</td>
<td>Viewing window only removable with fasteners</td>
</tr>
<tr>
<td>Barrier removal</td>
<td>Removal of switch or fuse phase barriers w/o tools or fasteners</td>
<td>Center phase barriers removable with fasteners</td>
</tr>
</tbody>
</table>
## MES Live-Front Product Comparison Continued

<table>
<thead>
<tr>
<th>Interior feature</th>
<th>ABB</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual purpose barriers</td>
<td>Dual purpose fuse safety barriers with hangers for fuse assembly</td>
<td>Fuse assembly cannot be stored in front of the mounting</td>
</tr>
<tr>
<td>Barrier storage</td>
<td>Storage available on the door</td>
<td>No barrier storage available</td>
</tr>
<tr>
<td>Fuse assembly storage</td>
<td>Fuse assembly storage on the door or in front of the mounting</td>
<td>Fuse assembly cannot be stored in fuse compartment</td>
</tr>
<tr>
<td>Cross bus</td>
<td>Cross bus visible for inspection</td>
<td>Cross bus hidden behind insulating barriers</td>
</tr>
<tr>
<td></td>
<td>*horizontal configuration for added reliability</td>
<td>*vertical configuration</td>
</tr>
<tr>
<td>Window header panel</td>
<td>Safety and circuit information located on the switch window header</td>
<td>Not available</td>
</tr>
</tbody>
</table>
## MES Live-Front Product Comparison Continued

<table>
<thead>
<tr>
<th>Interior feature</th>
<th>ABB</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuse mounting alignment</td>
<td>Independent of the enclosure</td>
<td>Dependent on the enclosure</td>
</tr>
<tr>
<td>Fault current rating</td>
<td>40 kA standard</td>
<td>40 kA available at an additional cost</td>
</tr>
<tr>
<td>Switch interrupting rating</td>
<td>600A interrupting rating at 15 kV and 25 kV</td>
<td>600A at 15 kV; Limited to 400A at 25 kV</td>
</tr>
</tbody>
</table>
### MES Live-Front Product Comparison Continued

<table>
<thead>
<tr>
<th>Enclosure feature</th>
<th>ABB</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>Penta bolt and padlock security for switch operator door</td>
<td>Padlock security only</td>
</tr>
<tr>
<td>Padlock</td>
<td>Padlockable switch position</td>
<td>Available at an additional cost</td>
</tr>
<tr>
<td>Door handle pocket</td>
<td>Stainless steel</td>
<td>Mild steel</td>
</tr>
<tr>
<td>Exterior handle hardware</td>
<td>Stainless steel and non-ferrous exterior handle parts</td>
<td>Mild steel</td>
</tr>
<tr>
<td>Three point latching</td>
<td>Manual three point latch with rollers, typical of switchgear and transformers</td>
<td>Non-standard latch with springs</td>
</tr>
</tbody>
</table>
### MES Live-Front Product Comparison Continued

<table>
<thead>
<tr>
<th>Enclosure feature</th>
<th>ABB</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door stay</td>
<td>Automatic door stay</td>
<td>Manual door stay which interferes with operation of fuse safety barriers</td>
</tr>
<tr>
<td>Lift-off doors</td>
<td>Lift-off doors standard</td>
<td>Not available</td>
</tr>
<tr>
<td>Ventilation</td>
<td>Both upper roof ventilation and lower louver ventilation with barriers</td>
<td>Roof ventilation only</td>
</tr>
</tbody>
</table>