ZX2
Gas-insulated medium voltage switchgear

Note:
We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB AG.

Copyright © 2010 ABB
All rights reserved
Double busbar panel for 2000 A

1 Three position disconnector
2 Multifunctional protection and control unit
3 Gas density sensor and filling valve
4 Vacuum circuit-breaker
5 Cable socket
6 Inner cone cable connector
7 Plug-in voltage transformer – feeder
8 Pressure relief disk
9 Current transformer or combined current and voltage sensor
10 Pressure relief duct
11 Measuring sockets for capacitive voltage indicator system
12 Busbars
13 Plug-in voltage transformer – busbar

Versatile
Partitioned single or double busbar system for all applications – even with the most demanding parameters – up to 40 kV, up to 40 kA, for incoming feeders and sectionalizers up to 2500 A and for single busbars up to 4000 A. All the switching devices can be remote controlled, and as an option mechanically interlocked. Both combined protection and control units and pure protection devices are used. The plug-in busbar technology without bolted joints permits simple and therefore safe installation.

The level of operator safety, already impressively confirmed by the IAC classification AFLR 40 kA 1s, can be even further enhanced by pressure relief channelled outside the building.

Configuration opportunities
Together with incoming and outgoing feeder panels with circuit-breakers for various rated currents and thus various panel widths (400, 600 and 800 mm), panel variants for bus sectionalizers and couplers, pure disconnector and metering panels round off the range. Busbar voltage measurement can also be implemented as an integrated function.

Accessibility
Operator control is effected either remotely or at the front of the system. The power cables are accessible at the rear. The switchgear is installed free-standing in the room.

SF$_6$ insulation
All high voltage parts are effectively isolated from fluctuating ambient influences in sealed enclosures filled with SF$_6$ insulating gas. Dust, humidity, harmful gases or vermin therefore have no effect. Temperature-compensated pressure sensors reliably and continuously monitor their own function and the quality of the gas insulation.

Technical data

<table>
<thead>
<tr>
<th>Technical data</th>
<th>IEC Ratings</th>
<th>Special Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>kV</td>
<td>12</td>
</tr>
<tr>
<td>Maximum operating voltage</td>
<td>kV</td>
<td>12</td>
</tr>
<tr>
<td>Test voltages</td>
<td>kV</td>
<td>28/95</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>Hz</td>
<td>50/60</td>
</tr>
<tr>
<td>Rated busbar current</td>
<td>A</td>
<td>...2500</td>
</tr>
<tr>
<td>Rated current of feeder</td>
<td>A</td>
<td>630</td>
</tr>
<tr>
<td>Rated peak withstand current</td>
<td>kA</td>
<td>62.5</td>
</tr>
<tr>
<td>Rated short-time current 3 s</td>
<td>kA</td>
<td>25</td>
</tr>
</tbody>
</table>

1) according to VDE 0671 part 200 | 2) Single busbar systems up to 4000 A on request

High quality components
The permanently installed vacuum circuit-breakers are three-phase switching devices and fundamentally consist of the mechanical stored-energy spring mechanism and three poles with the vacuum interrupters. The three position disconnectors constitute combined disconnectors and earthing switches.

The three switch positions – connecting, disconnecting and earthing – are clearly defined by the mechanical structure of the switch, reliably excluding simultaneous connecting and earthing positions. For earthing, the three position disconnector – under no current – prepares the connection to earth.

Earthing proper is then performed by the circuit-breaker. A circuit-breaker in the function of an earthing switch is of higher quality than any other earthing switch. The combination of these high-quality switching devices with the sealed for life, SF$_6$-filled enclosures guarantees maintenance-free switchgear. Irrespective of this, the enclosures with O-ring seals on all components and covers and the filler valves provide an opportunity for repairs. No minor damage necessitates replacement of a panel.

Always the right connection
In the cable termination compartment, the power cables are connected with inner cone cable connectors, or with outer cone cable connectors depending on the current. Up to four parallel cables can be installed. Depending on the connection system, a surge arrester can either be added or fitted as an alternative to one cable.

A non-return valve on the SF$_6$-filled stainless steel enclosure facilitates systematic extraction of the insulating gas at the end of a panel’s service life.

True switchgear operation is thereby ensured over the entire life of the equipment.

Current transformers
Generously dimensioned block type or bushing type current transformers with several cores supply the signals required for protection and measurement.

Voltage transformers
Shockproof voltage transformers are plugged into inner cone sockets. These are removable or isolatable for test purposes, especially for cable testing.

Durable and reliable
ZX2 components

High quality components

Earthing proper is then performed by the circuit-breaker. A circuit-breaker in the function of an earthing switch is of higher quality than any other earthing switch. The combination of these high-quality switching devices with the sealed for life, SF$_6$-filled enclosures guarantees maintenance-free switchgear. Irrespective of this, the enclosures with O-ring seals on all components and covers and the filler valves provide an opportunity for repairs. No minor damage necessitates replacement of a panel.

Always the right connection
In the cable termination compartment, the power cables are connected with inner cone cable connectors, or with outer cone cable connectors depending on the current. Up to four parallel cables can be installed. Depending on the connection system, a surge arrester can either be added or fitted as an alternative to one cable.

A non-return valve on the SF$_6$-filled stainless steel enclosure facilitates systematic extraction of the insulating gas at the end of a panel’s service life.

Current transformers
Generously dimensioned block type or bushing type current transformers with several cores supply the signals required for protection and measurement.

Voltage transformers
Shockproof voltage transformers are plugged into inner cone sockets. These are removable or isolatable for test purposes, especially for cable testing.
ZX2 Double busbar

Versatile
Partitioned single or double busbar system for all applications – even with the most demanding parameters – up to 40 kV, up to 40 kA, for incoming feeders and sectionalizers up to 2500 A and for single busbars up to 4000 A. All the switching devices can be remote controlled, and as an option mechanically interlocked. Both combined protection and control units and pure protection devices are used. The plug-in busbar technology without bolted joints permits simple and therefore safe installation.

The level of operator safety, already impressively confirmed by the IAC classification AFLR 40 kA 1s, can be even further enhanced by pressure relief channelled outside the building.

Configuration opportunities
Together with incoming and outgoing feeder panels with circuit-breakers for various rated currents and thus various panel widths (400, 600 and 800 mm), panel variants for bus sectionalizers and couplers, pure disconnector and metering panels round off the range. Busbar voltage measurement can also be implemented as an integrated function.

Accessibility
Operator control is effected either remotely or at the front of the system. The power cables are accessible at the rear. The switchgear is installed free-standing in the room.

SF6 insulation
All high voltage parts are effectively isolated from fluctuating ambient influences in sealed enclosures filled with SF6 insulating gas. Dust, humidity, harmful gases or vermin therefore have no effect. Temperature-compensated pressure sensors reliably and continuously monitor their own function and the quality of the gas insulation.

Technical data

<table>
<thead>
<tr>
<th>Rated voltage (kV)</th>
<th>IEC Ratings</th>
<th>Special Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>24</td>
<td>36</td>
</tr>
<tr>
<td>24</td>
<td>36</td>
<td>42</td>
</tr>
</tbody>
</table>

| Maximum operating voltage (kV) | 12 | 24 |
| Test voltages (kV)             | 28/95 | 50/125 | 70/170 | 85/200 |
| Rated frequency (Hz)           | 50/60 | 50/60 | 50/60 | 50/60 |
| Rated busbar current (kA)      | A | 2500 | 2500 | 2500 | 2500 |
| Rated current of feeder (kA)   | A | 630 | 1250 | 2500 | 2500 |
| Rated peak withstand current (kA) | 62.5 | 100 | 100 | 100 | 100 |
| Rated short-time current 3 s (kA) | 25 | 40 | 40 | 40 | 40 |

*according to VDE 0671 part 2001, *Special with inner cone connectors

ZX2 components

Durable and reliable

High quality components
The permanently installed vacuum circuit-breakers are three-phase switching devices and fundamentally consist of the mechanical stored-energy spring mechanism and three poles with the vacuum interrupters. The three position disconnectors constitute combined disconnectors and earthing switches. The three switch positions – connecting, disconnecting and earthing – are clearly defined by the mechanical structure of the switch, reliably excluding simultaneous connecting and earthing positions. For earthing, the three position disconnector – under no current – prepares the connection to earth.

Earthing proper is then performed by the circuit-breaker. A circuit-breaker in the function of an earthing switch is of higher quality than any other earthing switch. The combination of these high-quality switching devices with the sealed for life, SF6-filled enclosures guarantees maintenance-free switchgear. Irrespective of this, the enclosures with O-ring seals on all components and covers and the filler valves provide an opportunity for repairs. No minor damage necessitates replacement of a panel.

Always the right connection
In the cable termination compartment, the power cables are connected with inner cone cable connectors, or with outer cone cable connectors depending on the current. Up to four parallel cables can be installed. Depending on the connection system, a surge arrester can either be added or fitted as an alternative to one cable.

A non-return valve on the SF6-filled stainless steel enclosure facilitates systematic extraction of the insulating gas at the end of a panel’s service life.

Current transformers
Generously dimensioned block-type or bushing-type current transformers with several cores supply the signals required for protection and measurement.

Voltage transformers
Shockproof voltage transformers are plugged into inner cone sockets. These are removable or isolatable for test purposes, especially for cable testing.
Note:
We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB AG.

Copyright© 2010 ABB
All rights reserved