VACUTAP® VV®-EX, VM®-EX AND VR®-EX

ON-LOAD TAP-CHANGER FOR EXPLOSION-PRONE SITES.

TRANSFORMER CONTROL
EXPLOSIVE ATMOSPHERES – EXPLOSION PREVENTION

MR is the first OLTC manufacturer to have its products certified in accordance with guideline 94/9/EG (ATEX) (comparable to IEC and NEC 505/500 in North America). This also applies to MR’s own internal quality assurance system.

Effective immediately we deliver the VACUTAP® V®-EX, VM®-EX and VR®-EX on-load tap-changers as well as the motor-drive ED, protective relay RS and drive shaft also in an Ex-protection version. It is used in explosion-prone locations such as oil rigs, the chemical industry, and transformers in closed areas.

Benefits of Reinhausen’s Ex-protection concept

I Simple and easy Ex-certification of the entire transformer if Ex-certified products are used.
I All our Ex-certified products are delivered in a fully finished and ready-to-install condition.
I The ED-Ex motor-drive operates with compressed air. Therefore, no time consuming and labor intensive replacement of the nitrogen bottles during nitrogen flushing is required.
I Conforms completely with IEC, i.e. no operational restrictions when compared with non-Ex applications.

Our certified marks:

I OLTC:  \( \text{Ex} \) II 3G Ex nAC IIC T3 Gc
I ED:  \( \text{Ex} \) II 2G Ex px IIC T3 Gb
I RS:  \( \text{Ex} \) II 3G Ex nA nC IIC T4 Gc
I Drive shaft:  \( \text{Ex} \) II 2G IIC T4

* with limits on the switching frequency:
A pause of 10 hours must be made after 216 directly successive switching operations without interruption.

<table>
<thead>
<tr>
<th>Equipment category</th>
<th>Temperature class</th>
</tr>
</thead>
<tbody>
<tr>
<td>VACUTAP® VV®-EX</td>
<td>3G T3</td>
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<tr>
<td>VACUTAP® VM®-EX</td>
<td>3G T3</td>
</tr>
<tr>
<td>VACUTAP® VR®-EX</td>
<td>3G T3</td>
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<tr>
<td>Motor drive ED-EX</td>
<td>2G T3/T4</td>
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<tr>
<td>(T4 with reservations)*</td>
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<tr>
<td>Protective relay</td>
<td>2G/3G T4</td>
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<tr>
<td>RS 2001-EX</td>
<td>(depending on protection type)</td>
</tr>
<tr>
<td>Drive shaft-EX</td>
<td>2G T4</td>
</tr>
</tbody>
</table>

Example:

\( \text{Ex} \) II 3G Ex nAC IIC T3 Gc

\( \text{Ex} \) II 2G Ex px IIC T3 Gb

\( \text{Ex} \) II 3G Ex nA nC IIC T4 Gc

\( \text{Ex} \) II 2G Ex ia IIC T4 Gb
Reference: Transformer manufactured by France Transfo for TOTAL E & P off-shore oil production platform in DR CONGO

Three-phased transformer, "ONAN/ONAF" cooling type:
- breathing type with conservator
- with VACUTAP® VV®-Ex
- power: 16,000 kVA ONAN / 20,000 kVA ONAF
- voltages: 11,000 V / 31,970 V +/- 10 x 1.5 %
- total weight: 28,900 kg