Energy

Pressurized Motors and Generators for Classified Areas
Pressurized Motors and Generators for Classified Areas

WEG offers complete industrial solutions and manufactures products that are designed with support of international consultant companies.

Pressurized motors and generators used in potentially explosive atmospheres, zones 1 and 2 (gas), stand out among these products. They can operate in places where flammable products are continuously handled, processed or storaged for the protection of people and proprieties.

Pressurized motors and generators comply with requirements of highly demanding national and international standards which are tested and certified by renowned worldwide entities.
Classified Areas

A potentially explosive atmosphere can occur when the proportion of gas or steam is such that a spark from an electric circuit or the heating of equipment can cause an explosion.

According to IEC/CENELEC/ABNT standards, the risk areas are classified as to the probability of occurring of an explosive mixture and have the following classification:

**GROUP I:**
Underground installations

**GROUP II:**
Installations on the surface. This group is subdivided according to the characteristics of the involved agent:
- IIA - Propane group
- IIB - Ethene group
- IIC - Hydrogen / acetylene group

---

Classification of Zones for Explosive Atmosphere according to IEC/CENELEC/ABNT standards.

**Zone 0:** The presence of explosive atmosphere is present continuously.

(not applicable for motors and generators)

**Zone 1:** The explosive atmosphere occur at standard operating conditions.

**Zone 2:** The explosive atmosphere does not occur at standard operating conditions and if it does it will not last long.
Temperature Class

It is the maximum surface temperature allowed for any surface exposed to the explosive agent. This temperature must be lower than the ignition temperature of the explosive agent.

It is the maximum temperature of the surfaces that can get in touch with the explosive atmosphere and it must be below the ignition temperature of the gas present.

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum allowed surface temperature (°C)</td>
<td>≤ 450</td>
<td>≤ 300</td>
<td>≤ 200</td>
<td>≤ 135</td>
<td>≤ 100</td>
<td>≤ 85</td>
</tr>
</tbody>
</table>

Note: temperature class established by IEC 60079-0 standard.

“Ex p” Protection

There are different ways to protect equipment that is used in explosive atmospheres. Among them is pressurization (“Ex p” protection).

Pressurization of enclosures is one of the protection techniques consisting of keeping the explosive atmosphere out of the machine enclosure. This is done by injecting (into the equipment) a protection gas (clean air or motionless gas) coming from a safe area and keeping the internal pressure higher than the external pressure to avoid penetration of flammable gases into the enclosure.

Before starting the equipment, assure that there are no flammable gases inside it. To assure this condition, the enclosure is purged. The purge is the process of replacing the internal air for air which is completely free of any flammable gas. This is done by passing a previously defined amount of protection gas for a certain time before the equipment is powered-up.

WEG pressurized machines (Ex p) have an automatic pressurization system which detects eventual variations on the internal pressure of the equipment with automatic compensation, resulting in increase or reduction of the protection gas flow.

Protection by pressurization is subdivided into the following types which are selected according to the explosive atmosphere outside the enclosure and considering the type of electric equipment that is being installed:

“Px” Pressurization

This type of pressurization reduces the classification of the internal area of the enclosure of zone 1 or group I for safe area (not classified).

“Pz” Pressurization

This type of pressurization reduces the classification of the internal area of the enclosure of zone 2 for safe area.

Equipment with “Ex p” protection can be used either in zone 1 or zone 2 and in groups IIA, IIB, and/or IIC, according to design and application requirements.
Characteristics

Motors
- Output: up to 50,000 kW
- Voltages: up to 13,800 V
- Frequency: 50 or 60 Hz
- Degree of protection: IP55 / IP56 / IP65
- Speed: 300 to 3600 rpm
- Cooling method: with air-air or air-water heat exchanger

Generators
- Output: up to 62,500 kVA
- Voltages: up to 13,800 V
- Frequency: 50 or 60 Hz
- Degree of protection: IP55 / IP56 / IP65
- Speed: 1800 rpm
- Cooling method: with air-air or air-water heat exchanger

Certifications and Tests

Motors and generators used in explosive atmospheres must be tested and certified by entities and/or laboratories to assure their compliance with applicable standards to the type of protection used.

WEG motors and generators with “Ex p” protection can be certified by different certification entities according to the legislation and the country where they will be installed, including: TÜV (Brazil), TÜV (Germany), CEPEL (Brazil), PTB (Germany), Test Safe (Australia).
Applications

WEG manufactures pressurized motors and generators with high quality standards meeting a wide variety of applications in explosive atmospheres in chemical, petrochemical, oil and gas industries, among others.

13,500 kW, 6600 V, 4 poles, frame size 900 (IEC)
Application: centrifugal compressor

4500 kW, 13,200 V, 2 poles, frame size 800 (IEC)
Application: centrifugal compressor
3600 kW, 13,200 V, 6 poles, frame size 900 (IEC)
Application: reciprocating compressors
WEG Worldwide Operations

ARGENTINA
WEG EQUIPAMIENTOS ELECTRICOS
San Francisco - Cordoba
Phone: +54 3564 421 484
info-ar@weg.net
www.weg.net/ar

WEG PINTURAS - Pulverlux
Buenos Aires
Phone: +54 11 4299 8000
tintas@weg.net

AUSTRAILIA
WEG AUSTRALIA
Victoria
Phone: +61 3 9765 4600
info-au@weg.net
www.weg.net/au

AUSTRIA
WATT DRIVE - WEG Group
Markt Piesting - Vienna
Phone: +43 2633 404 0
watt@wattdrive.com
www.wattdrive.com

BELGIUM
WEG BENELUX
Nivelles - Belgium
Phone: +32 67 88 84 20
info-be@weg.net
www.weg.net/be

BRAZIL
WEG EQUIPAMENTOS ELÉTRICOS
Jaraguá do Sul - Santa Catarina
Phone: +55 47 3276-4002
info-br@weg.net
www.weg.net/br

CHILE
WEG CHILE
Santiago
Phone: +56 2 784 8900
info-cl@weg.net
www.weg.net/cl

CHINA
WEG NANTONG
Nantong - Jiangsu
Phone: +86 0513 8598 9333
info-cn@weg.net
www.weg.net/cn

COLOMBIA
WEG COLOMBIA
Bogotá
Phone: +57 1 416 0166
info-co@weg.net
www.weg.net/co

FRANCE
WEG FRANCE
Saint Quentin Fallavier - Lyon
Phone: +33 4 74 99 11 35
info-fr@weg.net
www.weg.net/fr

GERMANY
WEG GERMANY
Kerpen - North Rhine Westphalia
Phone: +49 2237 9291 0
info-de@weg.net
www.weg.net/de

GHANA
ZEST ELECTRIC GHANA
WEG Group
Accra
Phone: +233 50 27 664 90
info@zestghanacom.gh
www.zestghanacom.gh

INDIA
WEG ELECTRIC INDIA
Bangalore - Karnataka
Phone: +91 80 4129 2007
info-in@weg.net
www.weg.net/in

ITALY
WEG ITALIA
Cinisello Balsamo - Milano
Phone: +39 02 6129 3535
info-it@weg.net
www.weg.net/it

JAPAN
WEG ELECTRIC MOTORS JAPAN
Yokohama City - Kanagawa
Phone: +81 45 550 3030
info-jp@weg.net
www.weg.net/jp

MEXICO
WEG MEXICO
Huehuetoca
Phone: +52 55 5321 4231
info-mx@weg.net
www.weg.net/mx

NETHERLANDS
WEG NETHERLANDS
Oldenzaal - Overijssel
Phone: +31 541 571 080
info-nl@weg.net
www.weg.net/nl

PERU
WEG PERU
Lima
Phone: +51 1 472 3204
info-pe@weg.net
www.weg.net/pe

PORTUGAL
WEG EURO
Mia - Porto
Phone: +351 22 9477705
info-pt@weg.net
www.weg.net/pt

RUSSIA and CIS
WEG ELECTRIC CIS
Saint Petersburg
Phone: +7 812 357 2172
info-ru@weg.net
www.weg.net/ru

SOUTH AFRICA
ZEST ELECTRIC MOTORS
WEG Group
Johannesburg
Phone: +27 11 723 6500
info-es@weg.net
www.weg.net/es

SINGAPORE
WEG SINGAPORE
Singapore
Phone: +65 68589081
info-sg@weg.net
www.weg.net/sg

SCANDINAVIA
WEG SCANDINAVIA
Kungsbacka - Sweden
Phone: +46 30 753 400
info-se@weg.net
www.weg.net/se

UK
WEG ELECTRIC MACHINERY UK
Redditch - Worcestershire
Phone: +44 1527 531 800
info-uk@weg.net
www.weg.net/uk

UNITED ARAB EMIRATES
WEG MIDDLE EAST
Dubai
Phone: +971 4 813 0800
info-ae@weg.net
www.weg.net/ae

USA
WEG ELECTRIC
Duluth - Georgia
Phone: +1 678 249 2000
info-us@weg.net
www.weg.net/us

VENEZUELA
WEG INDUSTRIAS VENEZUELA
Valencia - Carabobo
Phone: +58 241 821 0582
info-ve@weg.net
www.weg.net/ve

For those countries where there is not a WEG own operation, find our local distributor at www.weg.net.