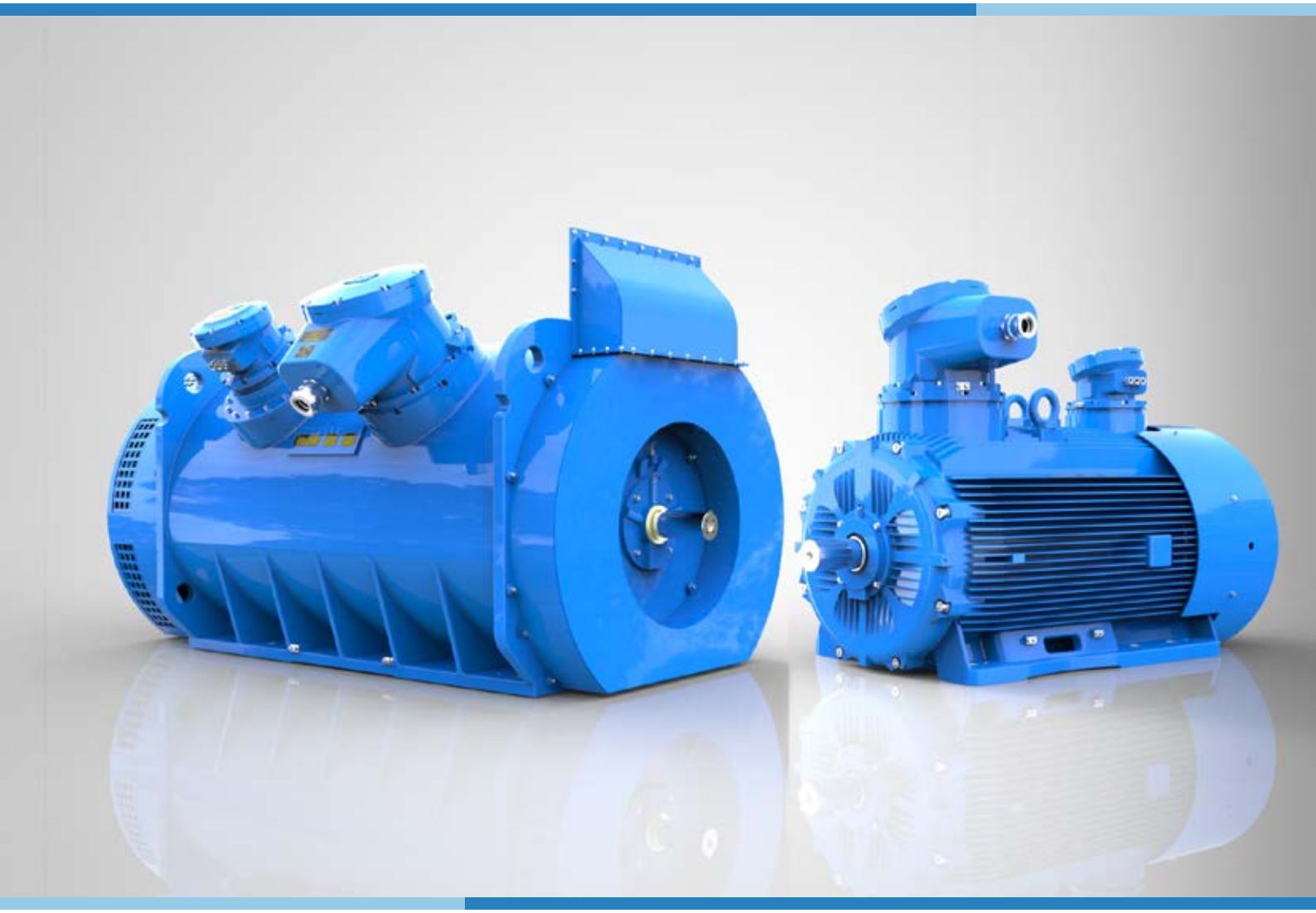
# W22Xdb - FLAMEPROOF MOTORS

## Ex db | Ex db eb
## Medium and High Voltage

- Rib-cooled
- Tube-cooled



Motores | Automação | Energia | Transmissão & Distribuição | Tintas

# Your safety...

A European factory **highly experienced** in the design and manufacture of explosion-protected solutions based on a customer-focused approach.

Since 1968, we have continuously strengthened our portfolio and continue to expand our expertise to meet the challenges of the **Oil & Gas**, **Chemical & Petrochemical**, underground **Mining** and other classified area markets around the world.

... is our EXpertise!

Sustainability

Global Certifications

Simplicity

Global Support and Service

Innovation

Flexibility

Reliability

Short delivery times

## We provide unique solutions to meet customer needs in the most demanding of applications:

- Pumps
- Compressors
- Gas and steam turbines
- Mixers
- Fans
- Conveyors
- ...

## And assuring safe and reliable operation on a wide variety of hazardous environments:

- Oil & Gas (exploration & production)
- Offshore platforms and FPSO's
- Pipelines
- Chemical and Petrochemical plants
- Underground mines
- Sugar refining plants
- Flour mills
- ...

## ATEX - European Directives

**ATEX** is a contraction of "**AT**mosphere **EX**plosible", the French term for "Potentially Explosive Atmosphere".

Standard framework conditions have been set for explosion protection in all European Union Member States for the handling of potentially explosive atmospheres by creating the:

- Product Directive 2014/34/EU (for manufacturers)
- ATEX 137 Worldplace Directive 99/92/EC (for users)

## IECEx Scheme

The objective of the IECEx System is to **facilitate international trade** in equipment and services for use in explosive atmospheres, while maintaining the required level of safety.

It is accepted in many countries and aims to be the world approval system for electrical equipment installed in potentially explosive atmospheres.

The IECEx International Certification System comprises four different Schemes:

- Certified Equipment Scheme
- Certified Service Facilities Scheme
- Conformity Mark Licensing System
- Certification of Personnel Competencies Scheme (CoPC)

## North American Standards and Regulations

The use of electrical equipment in hazardous areas in the U.S. and Canada requires specific assessment for the safety of persons and property according to the framework of the:

- National Fire Protection Association (NFPA 70)
- National Electrical Code (NEC)
- Canadian Electrical Code (CEC)

Electric motors and generators for use in hazardous locations (hazloc) must also be designed, manufactured and certified in accordance with the standards:

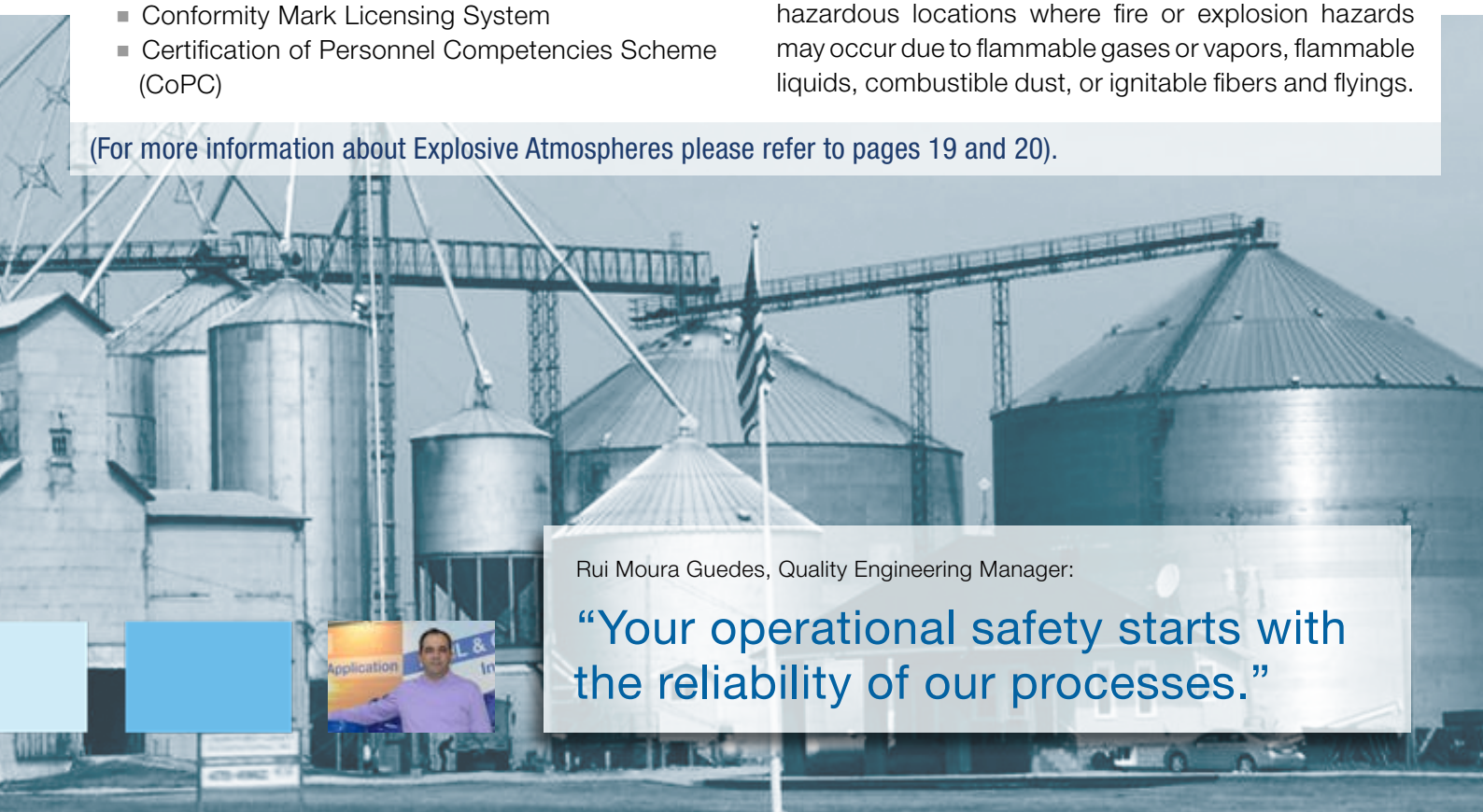
- UL 674 / UL 1203
- CSA C22.2 No. 145 - No. 30
- ANSI / UL 60079-1
- CSA C22.2 No. 60079-1

Besides the "hazloc" certification, electric motors and generators must also comply with the following general standards:

- UL 1004
- CSA C22.2 No. 100-04

NEC / CEC contains two different classification systems for electrical and electronic equipment, the Division Classification System and the Zones Classification System.
These address requirements for equipment installed in hazardous locations where fire or explosion hazards may occur due to flammable gases or vapors, flammable liquids, combustible dust, or ignitable fibers and flyings.

(For more information about Explosive Atmospheres please refer to pages 19 and 20).




Rui Moura Guedes, Quality Engineering Manager:

"Your operational safety starts with the reliability of our processes."

# Global Certifications

## Standard Certifications

WEG flameproof motors comply with **major Standards worldwide** and are designed, manufactured and certified according to:

ATEX

IEC IECEx

C SA US

## Other Local Certifications

In addition to the **major certifications worldwide** WEG flameproof motors have local certifications available.
See below some examples:

**EAC EX**
BELARUS, RUSSIA & KAZAKHSTAN

**INMETRO**
BRAZIL

**NEPSI**
CHINA

**PESO / CCoE**
INDIA

**SONCAP**
NIGERIA

**SASO**
SAUDI ARABIA

**CCC Ex**
CHINA

**ECAS Ex**
UAE

Other local certifications are available on request.

## Certification Bodies

These classified area products and production quality systems are certified by **Notified Bodies** officially **recognized worldwide:**

**CSA**
CANADA

**INERIS**
FRANCE

**TUV**
GERMANY

**PESO / CCoE**
INDIA

**SONCAP**
NIGERIA

**CCVE**
RUSSIA

**INTERTEK**
SPAIN

**BASEEFA**
UK

**UL**
USA

Cátia Chamusca, Certifications Analyst:

"We aim to provide solid and reliable solutions to comply with the most demanding market regulations and standards."

## Marine and Offshore Approvals

Additionally they **comply with the requirements** of all major Classification Society members of **IACS** (International Association of Classification Societies).

**CCS**
CHINA

**BV**
FRANCE

**RINa**
ITALY

**NKK**
JAPAN

**DNV-GL**
NORWAY - GERMANY

**RMRS**
RUSSIA

**KR**
SOUTH KOREA

**LRS**
UK

**ABS**
USA

WEG is one of the first motor manufacturers in the world to be granted a license to use the **IECEx conformity mark**.

The mark is used on Ex products to provide greater assurance to Governments, safety regulators and the industry that the equipment meets the world's most respected and vigorous safety standards.

IEC Ex INE 001

# Cooling Methods

## Rib-Cooled Motors

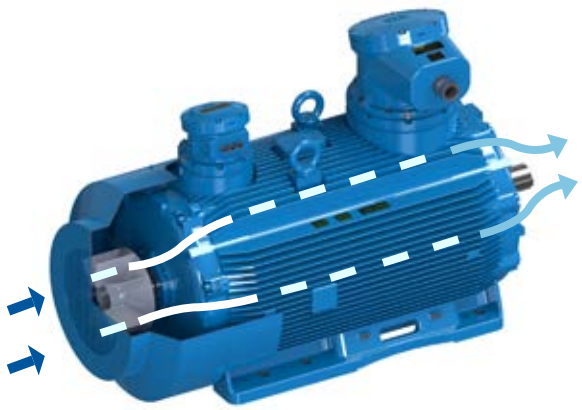
W22Xdb rib-cooled motors are available, as standard, with cooling method **TEFC - IC411** (cooled by an external shaft mounted fan) in accordance with IEC 60034-6 standard.

Non-ventilated **TEAO - IC418** or forced ventilation **TEBC - IC416** versions are available on request.

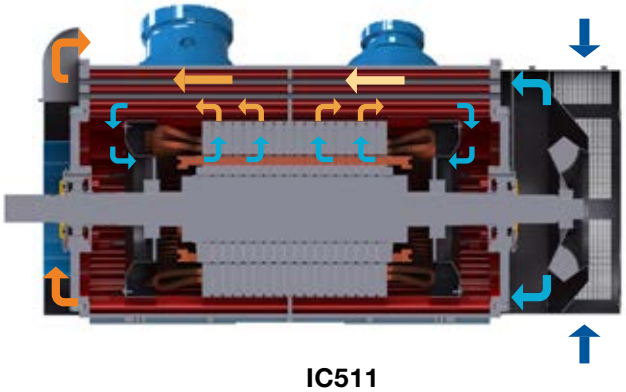
## Tube-Cooled Motors

W22Xdb tube-cooled motors are available, as standard, with cooling method **TEAAC - IC511** (cooled through an integrated heat exchanger) in accordance with IEC 60034-6 standard.

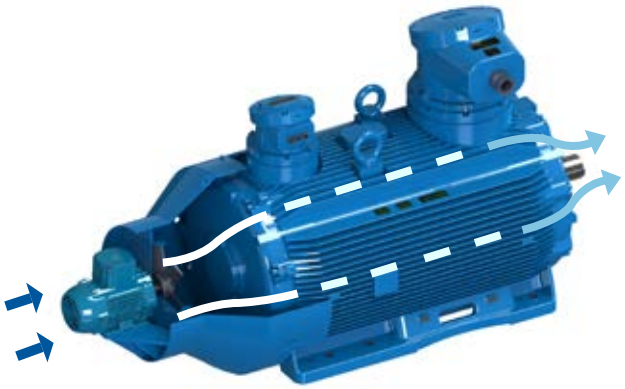
Forced ventilation **TEBC - IC516** version is available on request.



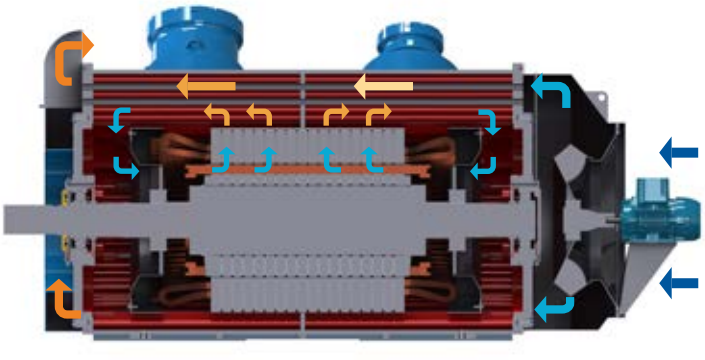
**IC411**
With ribs all around the frame
and cooled by an external shaft mounted fan



**IC511**
With air-to-air cooler around the stator
and cooled by an external shaft mounted fan



**IC416**
With ribs all around the frame
and with forced external air ventilation
by independent motor driven fan



**IC516**
With air-to-air cooler around the stator
and with forced external air ventilation
by independent motor driven fan

## A World
## Of Possibilities

WEG **custom designs** and manufactures flameproof motors that serve thousands of **customers worldwide.**

We pride ourselves in our unique capability to provide **cost-effective** and **sustainable** engineered solutions for ambitious, complex and pioneering applications, offering unmatched **reliability** and assured **safety**.

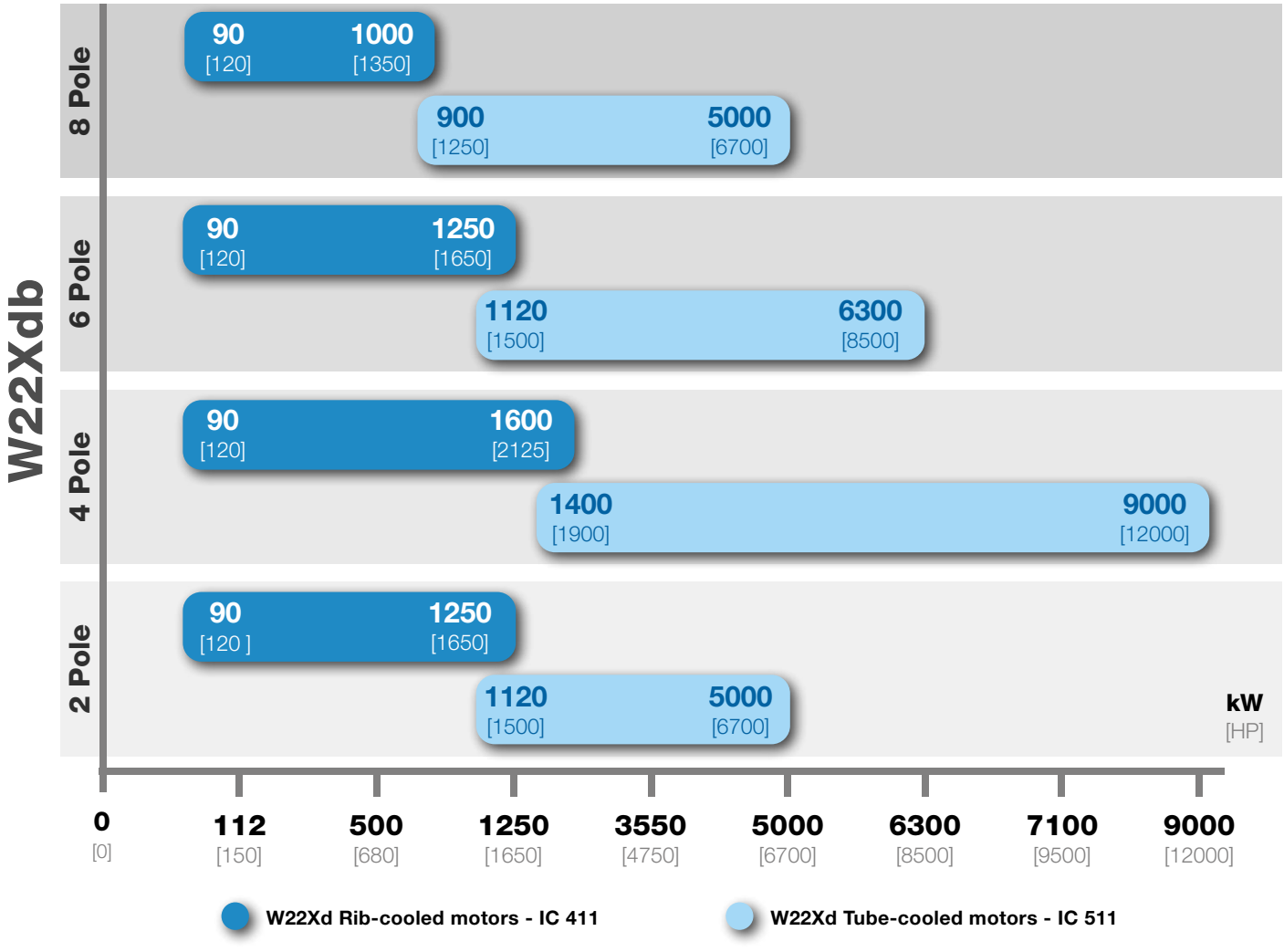
Luís Araújo, Industrial Director:

"We offer more than just standard - we build machines to your exact specifications."

# Outstanding Performance

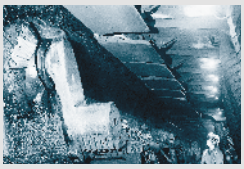
The W22Xdb line is designed according to the most demanding standards in the world and offers one of the most comprehensive rated output vs frame size ratios available in the market.

**Outputs in Medium Voltage (1100V < Un ≤ 6600V - 50Hz)**

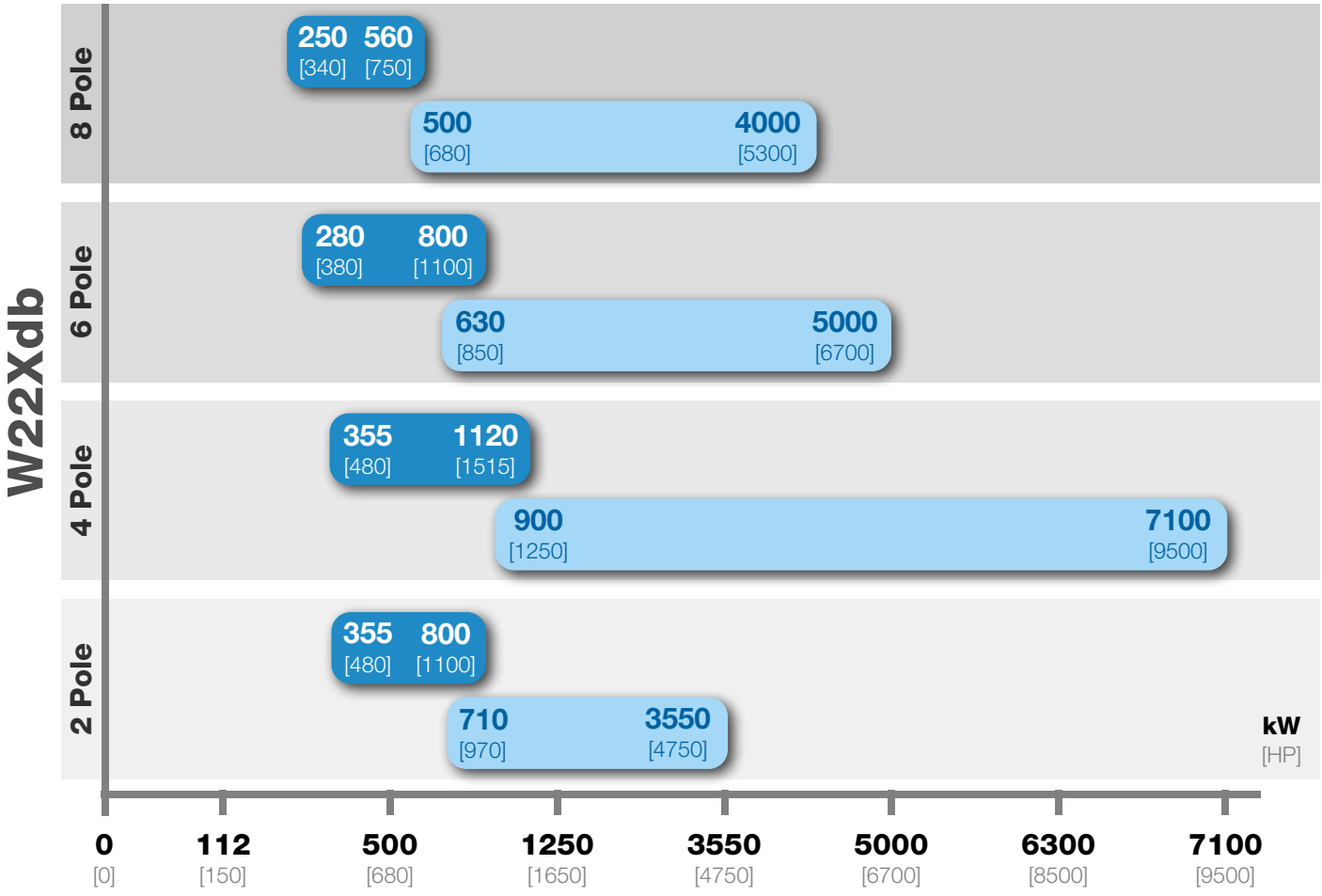



**Please refer to WEG for higher outputs and other speeds**

From severe underground **Coal Mines** in th
to offshore **Oil Platforms** in



## Outputs in High Voltage (6600V < Un ≤ 11000V - 50Hz)




**Please refer to WEG for higher outputs and other speeds**

e depth of the **Black Sea Coal Basin**,
the turbulent waters of the stormy **North Sea**...

# Our Business

Delivering to the most challenging applications globally.

## Inverter Duty

The W22Xd line can be used with variable speed drives **without the need** for a **combined type test**.

Due to their outstanding performance, they are capable of **maintaining T4 temperature class**.

## Vertical Mounting

To help predict the combined reed natural frequency, **WEG supplies** motor's **predicted reed frequency** along with the **location** for the **motor C.G.** (acc. to NEMA MG1 in para.20-23).

This information is used by customers to **keep** the **combined system natural frequency removed from the excitation frequencies** to ensure smooth operation with low vibration.

The **effectiveness** of these calculations **is measured by bump testing.**

## Weak Supply Networks

Low inrush current motors are needed for applications in a **weak supply network** in order to provide a **lower voltage drop without requiring auxiliary starting devices.**

The W22Xd line has a variant specifically designed with **inrush current of 4,5 times the rated current** (guaranteed), significantly reducing the possible impacts on the power supply network. Other values also available under request.

## Reduced Sound Pressure Levels

The cooling system of the W22Xd line was specially designed to provide an **optimum balance** between **airflow** and **noise level.**

As a result, all our standard 50Hz machines, including 2 pole, are **limited to 80 dB(A)** (1 meter and no load) up to frame size 400 and to **85dB(A)** on remaining frames. Special designs for lower sound pressure levels are also available.

# ... Built for EXtremes

Sónia Nunes, Tendering Team Coordinator:

"You can be sure about one thing.
When you're out there, so is WEG."

# Standard Features

- Classified area certification:
  - W22XdbB: Zones 1 and 2, gas group IIB *(IEC / EN / NEC / CEC)*
  - Temperature class: T4 (135ºC)
- Range of operating temperatures:
  - Up to +40ºC
  - Down to -20ºC
- Altitude: Up to 1000 m.a.s.l.
- Insulation: Class F (“B” temperature rise - 80K)
- Impregnation: VPI (Global vacuum and pressure impregnation)
- Voltages: Up to 13800 V (50Hz or 60Hz)
- Duty: S1 (Continuous)
- Service factor (SF): 1.0
- Winding protections: RTD - Pt100, 3 wires (2 per phase)
- Bearing protections: RTD - Pt100, 3 wires (1 per bearing)
- Space heater: 200V to 240V
- Frame sizes: From 315 up to 1000
- Mounting: B3
- Cable entries: On left hand side, facing drive end
- Enclosure:
  - Rib-cooled: TEFC (Totally Enclosed Fan Cooled)
  - Tube-cooled: TEAAC (Totally Enclosed Air-to-Air Cooled)
- Cooling:
  - Rib-cooled: IC411
  - Tube-cooled: IC511
- International protection rating:
  - Frame: IP55
  - Terminal Boxes: IP66
- Protection by enclosure against mechanical impacts: 20 Joule
- Frame material:
  - Rib-cooled: Cast iron
  - Tube-cooled: Welded steel construction with stainless steel cooling tubes
- Terminal boxes:
  - Power supply terminal box (Cast iron)
  - Auxiliary terminal box for thermal protections and heaters (Cast iron)
- Rotor: Squirrel cage (Aluminium or copper)
- Balancing: Half key
- Vibration class: Grade A (IEC 60034-14)
- Bearings: Anti-friction or sleeve
- Fan: Cast iron, aluminium or welded steel
- Fan cover: Steel
- Grounding: Double grounding in the frame and terminal boxes
- Tropical treatment: Rotor, windings and castings
- Painting plan: 214P (C4)
- Standard colour: RAL 5009 (Azure blue)

# Optional Features

- **Classified area certifications:**
  - W22XdbC: Zones 1 and 2, gas group IIC *(IEC / EN / NEC / CEC)*
    Class I, Division 1, gas groups C & D *(NEC / CEC)*
  - W22XdbBD: Zones 1 / 21 and 2 / 22, groups IIB / IIIC
    *(IEC / EN / NEC / CEC)*
  - W22XdbCD: Zones 1 / 21 and 2 / 22, groups IIC / IIIC
    *(IEC / EN / NEC / CEC)*
    Class II, Division 1, gas groups E, F & G *(NEC / CEC)*
  - W22XdbM: Group I, category M2 *(IEC / EN)*
  - Temperature class: T5
- **Wide range of operating temperatures:**
  - Up to +80ºC for IIB
  - Down to -55ºC
- Special mounting arrangements and custom designed solutions
- Increased safety terminal box
- Fault rated terminal boxes certified by a third party (up to 50kA during 1 second)
- Phase segregated or phase insulated terminal boxes
- Accessible neutral point terminal box
- Current transformers (protection or measurement), surge protection (arrestors or capacitors), signal transducers and partial discharge monitoring
- Dedicated terminal box for space heaters
- Heating resistance for terminal boxes
- Wide range of terminal box mounting arrangements through the use of certified adaptors in several designs and different terminal boxes models (cast iron, welded carbon or stainless steel)
- International protection ratings: IP56, IP65 and IP66
- Certified drain plugs on motor frame or terminal boxes
- C5 lamination
- Special shaft materials and dimensions
- Sleeve bearings (self-lubricating or oil circulation) - not allowed for IIC execution, as per IEC/EN 60079-1 Standard
- Full key / no key balancing
- Vibration monitoring accessories (provision or supply of SPM, accelerometers, key-phasors,..)
- Special painting plans according to Client specification
- Wide range of windings / bearings thermal protections (Pt1000, thermocouples, surge diverters, temperature transmitters,..)
- Suitable for VSD application (without the need for a combined type test)
- Forced ventilation
- Encoder or tacho assembly
- Flying leads
- Motor without fan or fan cover (AOM) - IC418
- Sunshade
- Special electrical designs (low starting current, etc)
- ...

# Terminal Boxes

Easy connections and reliable solutions.

## Versatility

The standard power terminal boxes are available in flameproof (Ex db) or increased safety (Ex eb) execution.

These boxes can be made of cast iron, welded carbon or stainless steel.

The following solutions are also available:
- Phase segregated
- Phase insulated

Wide range of terminal box mounting arrangements through the use of certified adaptors in several designs and different terminal boxes models.

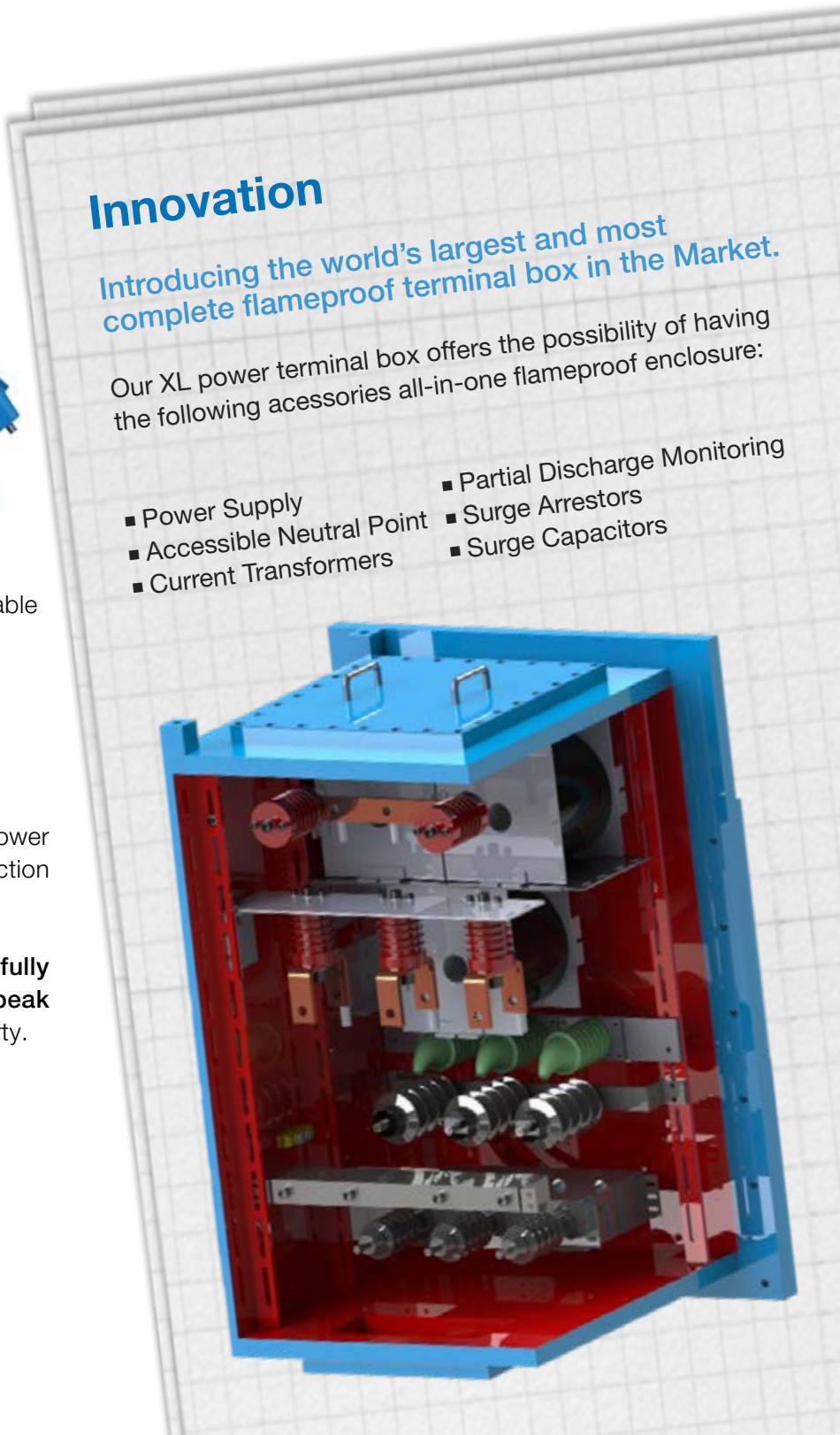
The boxes are turn able by 90º to provide cable entry from any direction.

## Reliability

As standard all of our terminal boxes (power or acessories) have an international protection rating of IP66.

Power terminal boxes have been **successfully tested** and assigned a **short-time and peak withstand current** by a renowned third party.

Isc = 50kA during 1s




# Global Support and Service

Your Business is our Success!

In addition to our solutions we provide a **pre-sale support** with technical know-how, helping you on the proper selection for your application, as well as a wide variety of **aftermarket services** that builds long-term customer success through:

- Manufacturer Support to all WEG Products
- Factory Repairs and Refurbishments
- Parts - Spare and Replacement
- Certified Workshops Worldwide
- Site Service Specialist Network
- Service Contracts
- Site Repairs and Troubleshooting
- Field Support Linked to Engineering
- Installation and Start-up Service
- Inspection and Maintenance
- Warranty Support

# Terminology

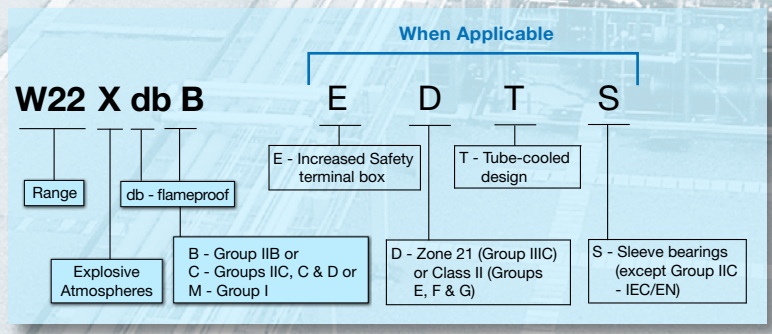
The WEG terminology below standardizes the designation for W22 series hazardous areas motors globally and clearly identifies the classified area to which the motor is designed to be installed.

This terminology identifies the motor designs as follows:

- W22Xdb - Explosion Proof Ex db motors
- W22Xec - Increased Safety Ex ec Motors (formerly Ex nA)
- W22Xeb - Increased Safety Ex eb motors
- W22Xtb - Motors protected by dust ignition proof enclosure (motors for zone 21)
- W22Xtc - Motors protected by dust ignition proof enclosure (motors for zone 22)

The “W22Xdb” design terminology shall include the following complementary hazardous area information:

- W22XdbB - Gas group IIB *(IEC / EN / NEC / CEC)*
- W22XdbC - Gas group IIC *(IEC / EN / NEC / CEC)*
  - Gas groups C & D *(NEC / CEC)*
- W22XdbM - Group I, category M2 *(IEC / EN)*




## WEG, a leading supplier of hazardous area solutions

### Meet the other members of the W22X family

***W22Xec***
Increased Safety Ex ec Motors (formerly Ex nA)
Suitable for Zones 2 and 22 classified areas
From 0.12 to 450 kW
Frames 63 to 355A/B
Voltages: up to 690 V

***W22Xtb***
Dust Ignition Proof motors (Ex tb machines)
Suitable for Zone 21 classified areas
From 0.12 to 450 kW
Frames 63 to 355A/B
Voltages: up to 690 V

***W22Xdb Low Voltage***
Flameproof motors (Ex d/Ex de/Ex tb machines)
Suitable for Zones 1 and 2 classified areas
From 0.12 to 1400 kW
Frames 71 to 500
Voltages: up to 1100 V

### Other WEG industrial motors for hazardous areas

***Non-Sparking, Increased Safety and pressurized***
Up to 50,000 kW
Voltages: up to 13,800 V

### Other WEG industrial products

***Gearboxes***
***Automation***
***Energy***
***Transmission & Distribution***
***Coatings***
***...***

*And industrial solutions...*

Please visit us at **www.weg.net** to learn more about our products.

# Guide to **Explosive Atmospheres**

## Area Classification

| Standard | | Flammable Material | Present Continuously [1] | Present Intermittently | Present Abnormally |
|---|---|---|---|---|---|
| IEC / CENELEC | IEC / EN 60079-10-1 | Gas / Vapour | Zone 0 | Zone 1 | Zone 2 |
| | IEC / EN 60079-10-2 | Combustible Dust or Ignitable Fibers | Zone 20 | Zone 21 | Zone 22 |
| ATEX | Directive 99/92/EC | Gas / Vapour | Zone 0 | Zone 1 | Zone 2 |
| | | Combustible Dust or Ignitable Fibers | Zone 20 | Zone 21 | Zone 22 |
| NEC 501 | ANSI/NFPA 70 National Electrical Code Article 501 | Gas / Vapour | Class I, Division 1 | Class I, Division 1 | Class I, Division 2 |
| NEC 505 | ANSI/NFPA 70 National Electrical Code Article 505 | Gas / Vapour | Class I, Zone 0 | Class I, Zone 1 | Class I, Zone 2 |
| NEC 502 | ANSI/NFPA 70 National Electrical Code Article 502 | Combustible Dust or Ignitable Fibers | Class II, Division 1 | Class II, Division 1 | Class II, Division 2 |
| NEC 506 | ANSI/NFPA 70 National Electrical Code Article 506 | Combustible Dust or Ignitable Fibers | Zone 20 | Zone 21 | Zone 22 |
| CEC Sec. 18 | CSA C22.1 Canadian Electrical Code Section 18 | Gas / Vapour | Class I, Zone 0 | Class I, Zone 1 | Class I, Zone 2 |
| | CSA C22.1 Canadian Electrical Code Section 18 | Combustible Dust or Ignitable Fibers | Class II, Division 1 | Class II, Division 1 | Class II, Division 2 |

[1] *Electric motors are not allowed in Zone 0/20 locations;*

## Atmosphere Groups

| Substance | ATEX IECEx | North America | | |
|---|---|---|---|---|
| | Group | Class | NEC / CEC Division System | NEC / CEC Zone System [3] |
| Methane (Fire damp) | I | - | Gaseous | Mines [2] |
| Propane | IIA | I | Group D | IIA |
| Ethylene | IIB | | Group C | IIB |
| Hydrogen | IIC | | Group B | IIC |
| Acetylene | IIC | | Group A | IIC |
| Fibers and Flyings | IIIA | III | - | IIIA |
| Grain Dust | IIIB | II | Group G | IIIB |
| Coal Dust | IIIB | | Group F | IIIB |
| Metal Dust | IIIC | | Group E | IIIC |

## Temperature Classes

| IEC / CENELEC NEC / CEC 505 & 506 | NEC / CEC 500 | Maximum Surface Temperature |
|---|---|---|
| T1 | T1 | 450 °C (842 °F) |
| T2 | T2 | 300 °C (572 °F) |
| | T2A | 280 °C (536 °F) |
| | T2B | 260 °C (500 °F) |
| | T2C | 230 °C (446 °F) |
| | T2D | 215 °C (419 °F) |
| T3 | T3 | 200 °C (392 °F) |
| | T3A | 180 °C (356 °F) |
| | T3B | 165 °C (329 °F) |
| | T3C | 160 °C (320 °F) |
| T4 | T4 | 135 °C (275 °F) |
| | T4A | 120 °C (248 °F) |
| T5 | T5 | 100 °C (212 °F) |
| T6 | T6 | 85 °C (185 °F) |

[2] *Not within scope of NEC or CEC. Mining applications under jurisdiction of MSHA (Mine Safety & Health Association).*
[3] *Equipment with Gas Group marking IIC, covers also the Groups IIA and IIB.*
*Equipment with Dust Group marking IIC, covers also the Groups IIA and IIB.*

## Equipment Protection Level (EPL)

| Equipment Group | Equipment Category (acc. ATEX Directive 2014/34/EU | Zone | Equipment Protection Level | Atmosphere | Protection Level | Use |
|---|---|---|---|---|---|---|
| I (Mines) | M1 | - | Ma | Methane (Fire damp) | Very High | Operable in Ex atmosphere |
| | M2 | - | Mb | | High | De-energised in Ex atmosphere |
| II (All other) | 1 | 0 | Ga | G - Gas, Vapours D - Dust | Very High | Zones 0, 1 and 2 |
| | | 20 | Da | | | Zones 20, 21 and 22 |
| | 2 | 1 | Gb | | High | Zones 1 and 2 |
| | | 21 | Db | | | Zones 21 and 22 |
| | 3 | 2 | Gc | | Enhanced | Zone 2 |
| | | 22 | Dc | | | Zone 22 |

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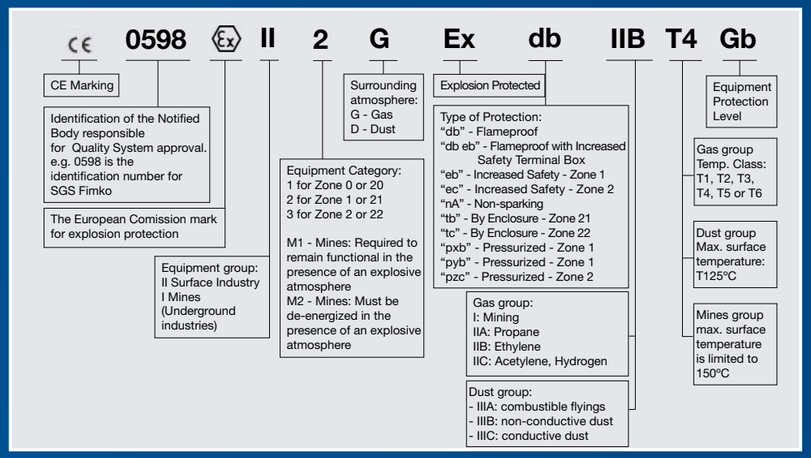
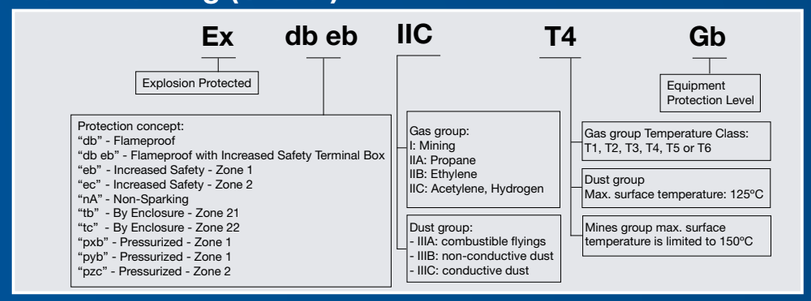
## Protection Concepts

| Type of Protection | Code / Symbol | Division / Zone | Market | Standard | Concept of Protection |
|---|---|---|---|---|---|
| Electrical Equipment for Flammable Gas, Vapours and Mist | | | | | |
| Flameproof Level of Protection "db" | Ex db | Zone 1 | IECEx / ATEX | IEC / EN 60079-1 | Contain the explosion and prevent flame propagation |
| | Ex db | Class I, Zone 1 | Canada | CAN/CSA-C22.2 No. 60079-1 | |
| | AEx db | Class I, Zone 1 | US | ANSI / UL 60079-1 | |
| Explosion Proof | (XP) | Class I, Division 1 | Canada | CSA-C22.2 No. 145 / No. 30 | |
| | (XP) | Class I, Division 1 | US | UL 674 / UL 1203 | |
| Increased Safety Level of Protection "eb" | Ex eb | Zone 1 | IECEx / ATEX | IEC / EN 60079-7 | No arcs, sparks or hot surfaces |
| | Ex eb | Class I, Zone 1 | Canada | CAN/CSA-C22.2 No. 60079-7 | |
| | AEx eb | Class I, Zone 1 | US | ANSI / UL 60079-7 | |
| Increased Safety Level of Protection "ec" | Ex ec | Zone 2 | IECEx / ATEX | IEC / EN 60079-7 | |
| | Ex ec | Zone 2 | Canada | CAN/CSA-C22.2 No. 60079-7:16 | |
| | AEx ec | Class I, Zone 2 | US | ANSI / UL 60079-7 | |
| Non-sparking "nA" | Ex nA | Zone 2 | Canada | CAN/CSA-C22.2 No. 60079-15 | |
| | AEx nA | Class I, Zone 2 | US | ANSI / UL 60079-15 | |
| Nonincendive (Div.2) | (NI) | Class I, Division 2 | Canada | CSA-C22.2 No. 0 / No. 213 | |
| | (NI) | Class I, Division 2 | US | UL 674 / ISA 12.12.01 | |
| Pressurized Level of Protection "pxb" | Ex pxb | Zone 1 | IECEx / ATEX | IEC / EN 60079-2 | Keep flammable gas out |
| | Ex pxb | Zone 1 | Canada | CAN/CSA-C22.2 No. 60079-2 | |
| | AEx px | Class I, Zone 1 | US | ANSI / UL 60079-2 | |
| Pressurized Level of Protection "pyb" | Ex pyb | Zone 1 | IECEx / ATEX | IEC / EN 60079-2 | |
| | Ex pyb | Zone 1 | Canada | CAN/CSA-C22.2 No. 60079-2 | |
| | AEx pyb | Class I, Zone 1 | US | ANSI / UL 60079-2 | |
| Pressurized Level of Protection "pzc" | Ex pzc | Zone 2 | IECEx / ATEX | IEC / EN 60079-2 | |
| | Ex pzc | Zone 2 | Canada | CAN/CSA-C22.2 No. 60079-2 | |
| | AEx pzc | Class I, Zone 2 | US | ANSI /UL 60079-2 | |
| Pressurized | Type X | Class I, Division 1 | Canada / US | NFPA 496 | |
| | Type Y | Class I, Division 1 | Canada / US | NFPA 496 | |
| | Type Z | Class I, Division 2 | Canada / US | NFPA 496 | |
| Electrical Equipment for Combustible Dusts | | | | | |
| Protection by Enclosure Level of Protection "tb" | Ex tb | Zone 21 | IECEx / ATEX | IEC / EN 60079-31 | Keep combustible dust out |
| | Ex tb | Zone 21 | Canada | CAN/CSA-C22.2 No. 60079-31 | |
| | AEx tb | Zone 21 | US | ANSI/UL 60079-31 | |
| Protection by Enclosure Level of Protection "tc" | Ex tc | Zone 22 | IECEx / ATEX | IEC / EN 60079-31 | |
| | Ex tc | Zone 22 | Canada | CAN/CSA-C22.2 No. 60079-31 | |
| | AEx tc | Zone 22 | US | ANSI/UL 60079-31 | |
| Dust Ignition Proof | (DIP) | Class II, Division 1 | Canada | CSA-C22.2 No. 25 | |
| | (DIP) | Class II, Division 1 | US | UL 1203 | |
| Dust Protected | (NI) | Class II, Division 2 | Canada | ICSA-C22.2 No. 25 | |
| | (NI) | Class II, Division 2 | US | ANSI/UL 1604 | |
| Pressurized | (PX) | Class II, Division 1 | Canada / US | NFPA 496 | |
| | (PY) | Class II, Division | Canada / US | NFPA 496 | |
| | (PZ) | Class II, Division 2 | Canada / US | NFPA 496 | |

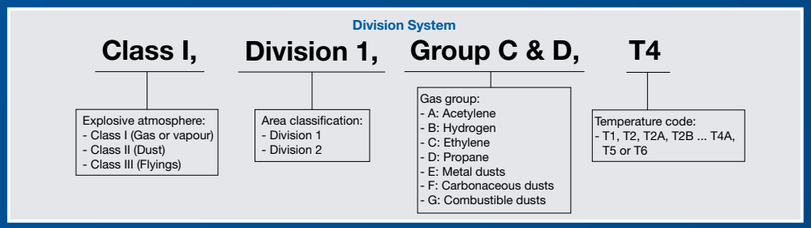
## ATEX Marking (European)

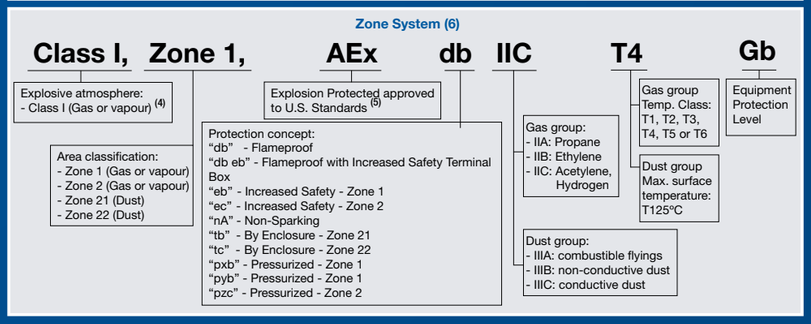



## IECEx Marking (Global)




## NEC/ CEC Marking (North American)




[4] *For Dust environments (Zone 21 or 22) the Class of the hazard (Class II) shall not be mentioned in the marking e.g. Zone 21, AEx tb IIIC T125ºC Db*
[5] *For Canadian Standards letter "A" shall not be mentioned in the marking e.g. Class I, Zone I, Ex d IIC T4 Gb*
[6] *Zone System is recommended for new installations in Canada. For United States, the installation, Zone System is optional.*

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