

Ventilation solutions ATEX for hydrogen applications



ATEX fans for
clean energy
generation



CERTIFICATION
ATEX



ATEX FANS FOR GREEN HYDROGEN GENERATION

The process of obtaining green hydrogen involves the electrolysis of water through the use of electrolyzers, using electricity generated from renewable sources such as wind or solar. Unlike conventional hydrogen which is obtained from fossil fuels, green hydrogen does not emit greenhouse gases during its production or when it is used as a fuel.

This makes it a key option for decarbonising sectors such as transport, industry or power generation

In turn, hydrogen is a highly explosive gas (IICT1) and therefore, proper ventilation must be provided for confined or enclosed spaces where hydrogen may accumulate, in accordance with current regulations and/or standards.

H₂

Hydrogen (H₂) is the most abundant element in the universe that can be used to generate energy.

EXPLOSION GROUP AND TEMPERATURE CLASS

TEMPERATURE CLASS (IGNITION TEMPERATURE)

	T1 (>450 °C)	T2 (>300 °C)	T3 (>200 °C)	T4 (>135 °C)	T5 (>100 °C)	T6 (>85 °C)	
EXPLOSION GROUP	II A	Acetone Ethane Ethyl acetate Ethyl chloride Ammonia Benzene Acetic acid	Methane Methanol Methyl chloride Propane Town gas Toluene	Amyl acetate=i Butane N-butyl alcohol Cyclohexane 1,2-dichloroethane Acetic anhydride	Gasoline Otto fuels Aviation fuel Fuel oils Hexane	Acetaldehyde	
	II B		Ethyl alcohol Ethylene Ethylene oxide	Hydrogen sulphide	Ethyl ether		
	II C	Hydrogen	Acetylene				Carbon disulphide



Combination of high explosion energy, low amount of energy required to ignite it, and low flammability limit, make hydrogen a particularly hazardous gas and that a special ATEX equipment is required .

SODECA uses IIB+H₂ marking for fans suitable for hydrogen



ATEX APPLICATIONS

There are many applications that may require fans prepared to work in explosive atmospheres. Generally speaking, any application that takes place in a zone with a risk of explosion:

ELECTRIC MOTOR CATEGORIES

EXPLOSION RISK ZONE

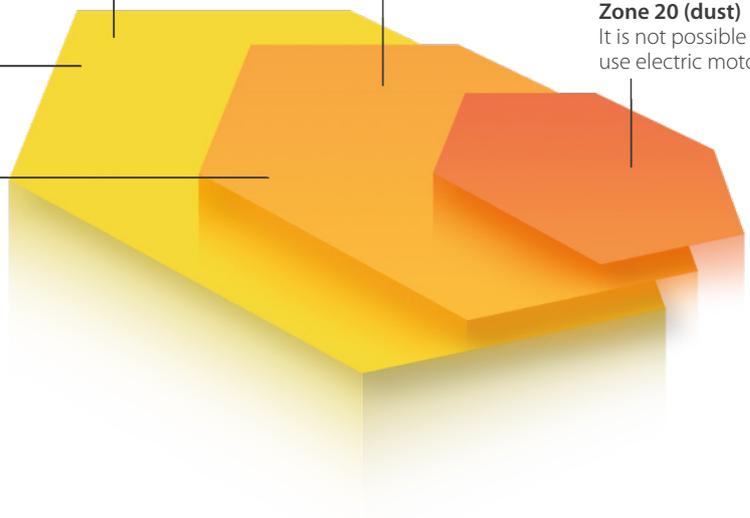
CE Ⓜ II 3G Ex ec
CE Ⓜ II 3D Ex tc IIIB (non-conductive dust)
CE Ⓜ II 3D Ex tc IIIC (conductive dust)

CE Ⓜ II 2G Ex db
CE Ⓜ II 2G Ex db eb
CE Ⓜ II 2G Ex eb
CE Ⓜ II 2D Ex tb IIIB (non-conductive dust)
CE Ⓜ II 2D Ex tb IIIC (conductive dust)

**Zone 2 (gas)
Zone 22 (dust)**
Not likely in normal operating conditions

**Zone 1 (gas)
Zone 21 (dust)**
Likely in normal operating conditions

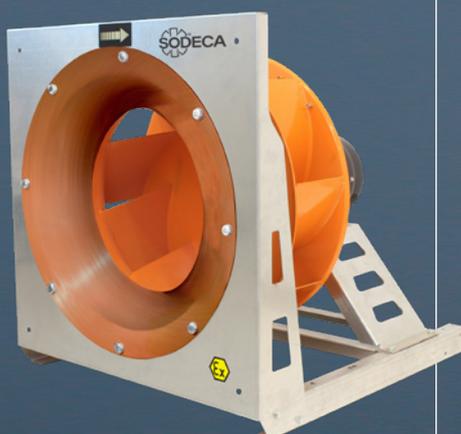
**Zone 0 (gas)
Zone 20 (dust)**
It is not possible to use electric motors



Any device installed in an explosive atmosphere must be **prepared to prevent ignition that leads to an explosion**. This makes the installations, maintenance and safety much more expensive in industries with explosive atmospheres.

For this reason, in most industries there is a tendency to declassify the maximum number of explosion risk zones.

For the total or partial declassification of a room or area with an explosive atmosphere, it must be ventilated with air free of gases or explosive dust to guarantee the concentration of these gases or dust is reduced below the explosive limits.



This mechanical ventilation process reduces the level of explosion risk in the premises or minimises the extension of the classified zone, thus reducing the anti-explosive requirements of the devices that are to be installed in the premises.



SOLUTIONS FOR APPLICATIONS WITH GREEN HYDROGEN

SODECA offers solutions for extracting hydrogen in electrolysers and other applications where this gas may be present. SODECA units are ATEX-certified and are designed and built in accordance with European Standard EN 14986:2017, are suitable for use in Zone 1 (Category 2) and are compliant with European Directive 2014/34/EU.

SODECA has a wide range of ATEX fans that are suitable for use with hydrogen, which allows the best ventilation solution to be selected, without sacrificing energy efficiency or reliability

ATEX units from SODECA are most often equipped with ATEX-certified electric motors with EX eb increased safety or flame-proof, Ex db. The latter, in most cases, are suitable for use with variable frequency drive.

Fans for countries where NPFA 70 NEC is applied instead of the ATEX certification such as the United States, SODECA offers EX fans with UL/CSA motors and certified for Class I Div 2 Group B, in accordance with NEC 500.



SODECA SOLUTIONS



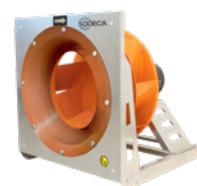
HCDF

Axial fans with square frames, ATEX II 2G certification and Ex db motors, for use with hydrogen.



HC/ATEX

Wall mounted axial fans, with ATEX 2G or 2D certification and Ex db, Ex eb or Ex tb motor.



PF/ATEX

High efficiency centrifugal fans (Plug Fan type) indicated for air treatment applications, with ATEX 2G or 2D certification and Ex db, Ex eb or Ex tb motor.



HCT/ATEX

Extremely robust, tubular axial fans, with ATEX 2G or 2D certification and Ex db, Ex eb or Ex tb motor.



CMP/ATEX

Medium pressure centrifugal fans fitted with forward curved impeller, ATEX 2G or 2D certification and Ex db, Ex eb or Ex tb motor.



HT/ATEX

Roof mounted axial fans, with ATEX 2G or 2D certification and Ex db, Ex eb or Ex tb motor.



ATEX CERTIFICATIONS

Most SODECA fans are available in 2G, 2D, 3G, and 3D versions.



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