Summary of Atos intrinsically safe components

multicertified to **ATEX** and **IECEx**

Atos intrinsically safe components are electrohydraulic equipment for industrial and mobile applications, designed to operate in hazardous environments of surface plants or underground mining with presence of flammable liquids, gases, or vapors.

They are designed to grant a very high protection, superior to ex-proof components, and suitable for hazardous environments classified **Zone 0** with high risk of explosion.

They are certified by independent notified bodies in conformity to **ATEX** and **IECEx** standards.

1 PRODUCTS RANGE

Atos intrinsically safe range includes on-off directional valves, pressure relief with solenoid pilot valve and power supply barriers.

1.1 On-off valves

The core of intrinsically safe valves is represented by the intrinsically safe solenoid.
It is engineered, manufactured and certified according to the intrinsically safe protection method **Ex ia**, based on the principle of limiting the energy in the electric circuits.
The "intrinsically safe" circuit is virtually unable to produce electrical surges or thermic effects able to cause explosion in hazardous environments also in presence of break-down situations.
The Intrinsically safe equipment cannot release a sufficient electrical or thermal energy under normal or abnormal conditions to cause ignition of a specific hazardous mixture".
The intrinsically safe solenoids are designed to operate with a very low current and they must be powered by certified intrinsically safe power supply barriers.

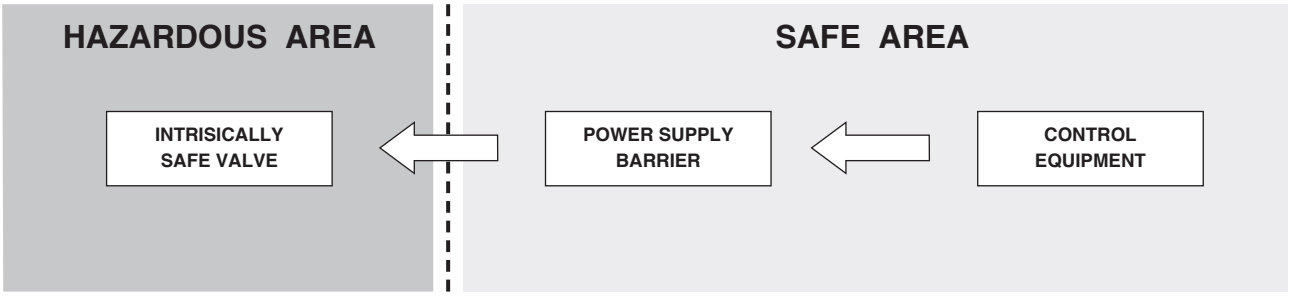
The mechanical parts of the valve likes body, spools, etc, are strictly derived from highly engineered standard components.
They are not involved in the certification since their functioning does not represent a potential risk for the explosive environment.

Product Category	Component	Environment	Certification				Marking
			ATEX Group II	IECEx Group II	ATEX Group I	IECEx Group I	
On-off valves	Directional valves Pressure relief valves	Gas	X	X			see sect. 3
		Mining			X	X	see sect. 4
Electronics	Power supply bariers	Gas & Dust	X	X			see sect. 5

1.2 Power supply barriers

The electric power supply to the intrinsically safe valves must be operated through electronic devices, to be located outside the hazardous environment.
These devices are usually called "safety barriers" because they limit the electric current to the intrinsically safe solenoid within the classified range, also in case of short circuit.

Atos barriers type Y-BXNE 412 are galvanic isolated electronic devices, designed in compliance with European Norms EN60079-0, EN60079-11 and ATEX certified with **Ex ia** protection method – see tech table **GX010**
They ensure the optimized functioning of the Atos intrinsically safe valves up to the max operating limits.



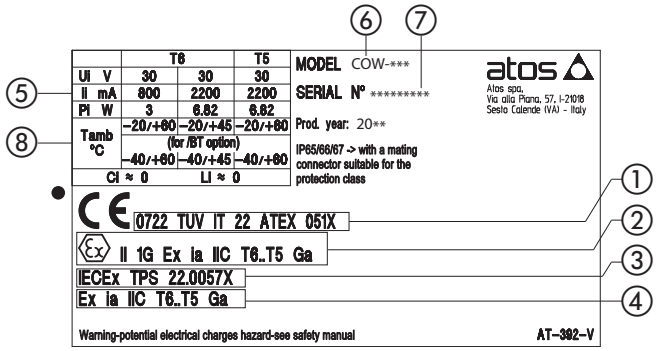
2 NAMEPLATE MARKING

Atos intrinsically safe components are provided with a specific nameplate reporting the ATEX or IECEx certificate number, the notified body and the classification according to the ATEX or IECEx certifications.
The classification identifies the protection method and the compatibility of the intrinsically safe component for a specific hazardous environment.
The following sections provide a detailed description of the nameplate marking for the intrinsically safe valves.

Nameplate marking to ATEX

Gas - group II 1G - Zone 0, 1, 2

① ATEX notified body and certificate number
② Marking according to ATEX directive
③ IECEx notified body and certificate number
④ Marking according to IECEx scheme
⑤ Electric characteristics
⑥ Solenoid model code
⑦ Solenoid serial number
⑧ Ambient temperature



ATEX, IECEx classification - for Gas group II

II 1G	Ex	ia	IIA / IIB / IIC	T6 / T5	Ga
Equipment Group **II** Industrial **Equipment Category** **1** Very high protection **Suitable for use** **G** Gas	**Mark of Explosion Proof**	**Protection Method** **ia** Intrinsicaly safe (Gas Zone 0)	**Gas Group** **IIA** Ammonia, Methane, Ethane, Propane, etc. **IIB** Citygas, Ethylene, Ethyl glycol, etc. **IIC** Hydrogen & Acetylene	**Temperature Class** **T6** ≤ 85°C **T5** ≤ 100°C	**Equipment Protection Level** **Ga** Very high protection (Gas Zone 0)

RELATED DOCUMENTATION

Directional valves

EX110 DHWL8 - direct, spool type
EX120 DLWH - direct, poppet type
EX130 DPHW - piloted, spool type
EX150 LIDEW-WO, LIDBH-WO - piloted ISO cartridges and functional covers

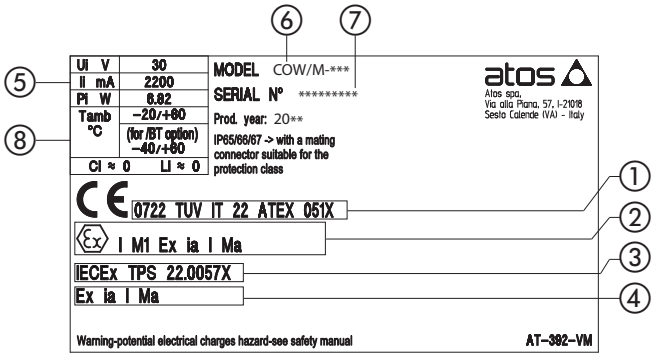
Pressure relief valves

CX030 AGAM-WO, ARAM-WO - piloted, with solenoid valve for venting

Nameplate marking to ATEX and IECEx

Gas - group I M2 - Mining

① ATEX notified body and certificate number
② Marking according to ATEX directive
③ IECEx notified body and certificate number
④ Marking according to IECEx scheme
⑤ Electric characteristics
⑥ Solenoid model code
⑦ Solenoid serial number
⑧ Ambient temperature



ATEX, IECEx classification - for Gas group I - Mining

I M2	Ex	ia, ib	I	Mb
Equipment Group **I** Mines **Equipment Category** **M2** High protection	**Mark of Explosion Proof**	**Protection Method** **ia** Intrinsicaly safe (Gas Zone 0) **ib** Intrinsicaly safe (Gas Zone 1 and 2)	**Gas Group** **I** Methane	**Equipment Protection Level** **Mb** High protection (de-energized with gas presence)

RELATED DOCUMENTATION

Directional valves

EX110 DHWL8/M - direct, spool type
EX120 DLWH/M - direct, poppet type
EX130 DPHW/M - piloted, spool type
EX150 LIDEW/M-WO, LIDBH/M-WO - piloted ISO cartridges and functional covers

Pressure relief valves

EX030 AGAM/M-WO, ARAM/M-WO - piloted, with solenoid valve for venting

Gas - group II 1G - Zone 0, 1, 2
Dust - group II 1D - Zone 20, 21, 22

ATEX and IECEx classification - for Gas group II

II 1G	Ex	ia	IIB / IIC
Equipment Group **II** Industrial **Equipment Category** **1** Very high protection **Suitable for use** **G** Gas	**Mark of Explosion Proof**	**Protection Method** **ia** Intrinsicaly safe (Gas Zone 0)	**Gas Group** **IIB** Citygas, Ethylene, Ethyl glycol, etc. **IIC** Hydrogen & Acetylene

ATEX and IECEx classification - for Dust group II

II 1D	Ex	ia D
Equipment Group **II** Industrial **Equipment Category** **1** Very high protection **Suitable for use** **D** Dust	**Mark of Explosion Proof**	**Protection Method** **ia D** Intrinsicaly safe (Dust Zone 20)

RELATED DOCUMENTATION

GX010 Y-BXNE Power supply barrier