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ATEX EQUIPMENT



EQUIPMENT

ATEX Equipment



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COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV GL
= ISO 9001 =

ATEX DIRECTIVES

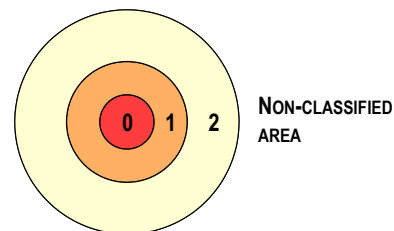
Under **Directive 94/9/EC**, an explosive atmosphere exists when there is a mixture:

- of flammable substances in the form of gases, vapours, mists and dusts;
- with air;
- in certain atmospheric conditions;
- in which, following ignition, combustion spreads together with the unburned mixture (please note that in the presence of dust, the entire amount of dust is not always consumed by the combustion).

An atmosphere which could become explosive due to local and/or operational conditions is defined a potentially explosive atmosphere. The products covered by Directive 94/9/EC are intended solely for this kind of potentially explosive atmosphere.

With reference to the presence of explosive atmospheres, the European Union has issued two directives: one dealing with the construction safety requirements for products, **ATEX 94/9/EC**, the other on the safety requirements in the workplace, **ATEX 99/92/EC**.

Depending on the likelihood of there being an explosive atmosphere, the workplaces are classified into **areas**, in which equipment compliant with the system safety requirements can be installed and used. The ATEX Directive identifies the following areas (identified graphically in the figure alongside relating to explosive atmospheres caused by mixtures of air and gases, vapours or mists):



- **ZONE 0**, which identifies areas where there is a high probability of explosive atmospheres arising, often or for long periods, due to mixtures of air and gases, vapours or mists. These environments require the use of products designed to ensure a very high protection level, i.e. **Category 1 products**;
- **ZONE 1**, which identifies areas where there is a high probability of explosive atmospheres arising, due to mixtures of air and gases, vapours or mists. These environments require the use of products designed to ensure a very protection level, i.e. **Category 2 products**;
- **ZONE 2**, which identifies areas where there is a low probability of explosive atmospheres arising, only rarely or for a short time, due to mixtures of air and gases, vapours or mists. These environments require the use of products designed to ensure a normal protection level, i.e. **Category 3 products**;
- **NON-CLASSIFIED AREA**, in which there is no probability of explosive atmospheres arising. Non-Atex products can therefore be installed.

ATEX EQUIPMENT: MARKING

Equipment marking: **Ex II 1/2/3 G IIA T3**



Compliant with the ATEX Directive

Unauthorised applications

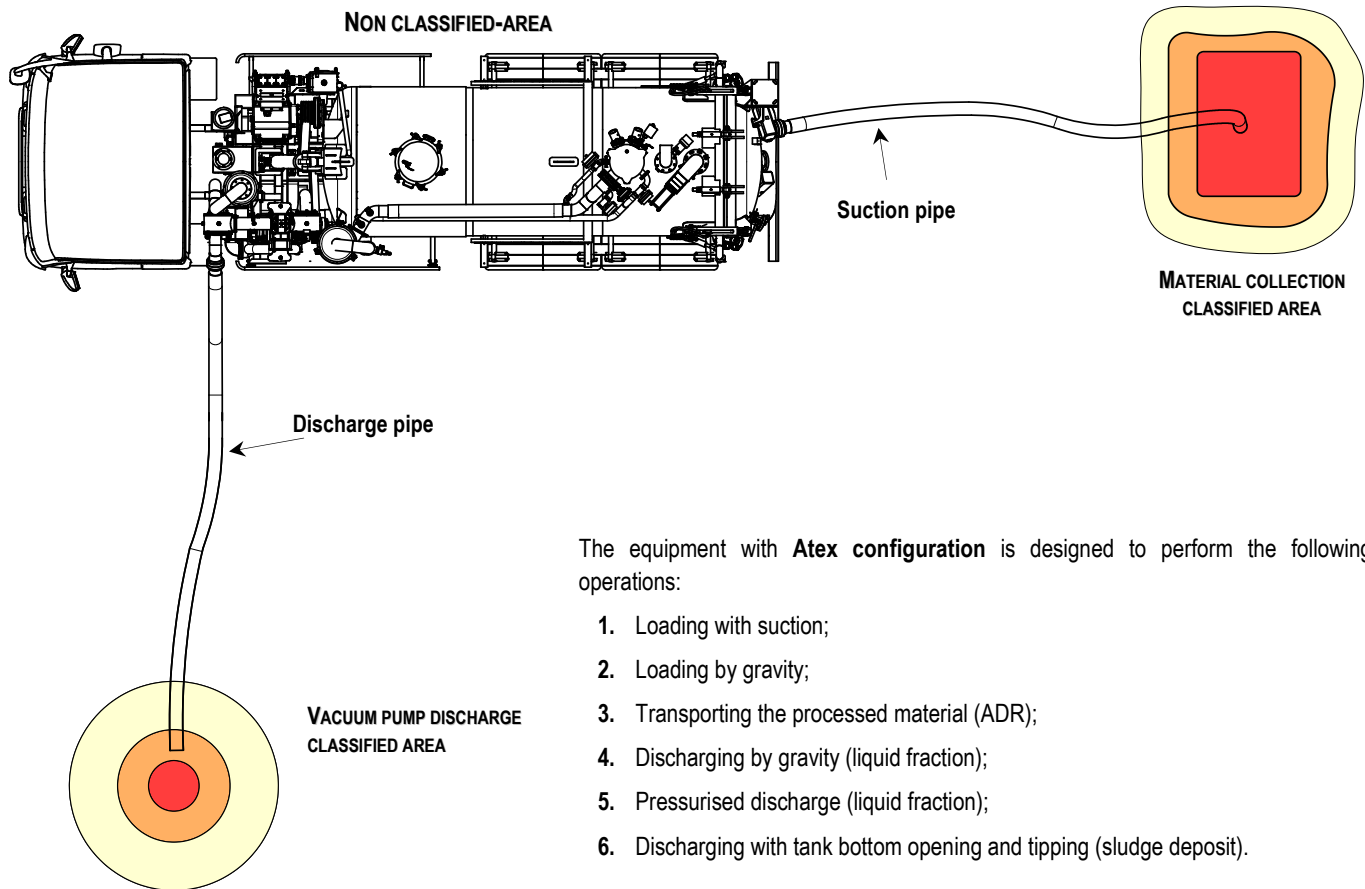
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|--------------|---|---|
| II | Equipment group Equipment suitable for surface installation. | <i>Applications in mines and in their surface plants (Group I) in which an explosive atmosphere is due to firedamp and/or combustible dust, are therefore excluded.</i> |
| 1/2/3 | Equipment category Equipment designed for operation indoors in ZONE 0 (Category 1) , outdoors in ZONE 1 (in relation to the possibility of using the remote control in the areas of zone 1) and outdoors ZONE 2 (Category 3) . | <i>The equipment can process products indoors in zone 0, but the vehicle cannot operate in a classified zone.</i> |
| G | Atmosphere Explosive atmospheres caused solely by gases, vapours and mists. | <i>It is not allowed to process dust (D).</i> |
| IIA | Explosion group Equipment suitable for processing gases, such as methane, alkanes, alcohols, acetone and benzene. | <i>It is not allowed to process substances of group IIB3 (ethylene, esters of ethylene), IIB (ethylene oxide, butadiene) and IIC (hydrogen).</i> |
| T3 | Temperature class Equipment operating in the T3 class under standard conditions (maximum temperature of the surface of the components in contact with the processed material equal to 200°C). | <i>It is not allowed to process substances with a flash point lower than 200°C (T4, T5 and T6).</i> |



ATEX EQUIPMENT FEATURES

ATEX equipment is designed for carrying out loading, transporting and discharging flammable materials from containment reservoirs, percolation pits or excavation residues. The equipment is equipped with a high performance **PVT series** lobe vacuum pump.

The picture below shows the loading operation with suction.



1. Loading with suction

The equipment is designed to load material from zone 0 by means of suction (through pipes or ducts connected to the inlet valve located at the bottom of the tank). The outlet of the vacuum pump must be placed, by means of a duct or pipe, at a suitable distance from the machine. During the loading operation with suction, the equipment must be placed in the non-classified area.

2. Loading by gravity

The equipment is designed to load material from zone 0 (e.g. storage silos) by means of gravity (through pipes or ducts connected to the inlet valve at the bottom of the tank). The vent of the vacuum line (necessary to compensate for the overpressure during filling) must be placed, by means of a duct or pipe, at a suitable distance from the machine. During the loading by gravity operation, the equipment must be placed in the non-classified zone.

3. Transporting the processed material (ADR)

The equipment is designed for the transport dangerous goods by road, in compliance with the requirements of the ADR agreement.

4. Discharge by gravity

The equipment is designed to discharge potentially flammable materials by gravity, into collection tanks or open air tanks, through a pipe or duct connected to the discharge valve at the bottom of the tank. Discharge by gravity is permitted with the machine placed in the non-classified zone.

5. Pressurised discharge

The equipment is designed to discharge the tank (through a pipe or duct connected to the discharge valve at the bottom of the tank) into collection tanks or open air tanks. Pressurised discharge is permitted with the machine placed in the non-classified zone.

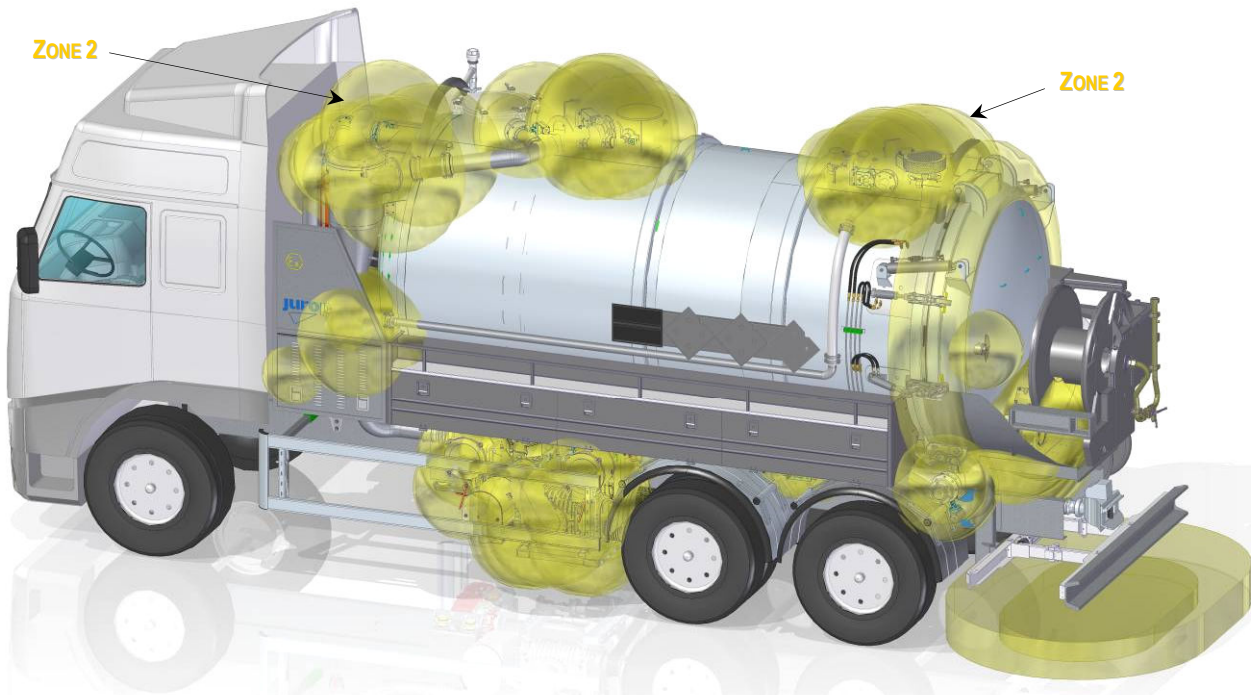
6. Discharge with tank bottom opening and tipping

The equipment is designed to discharge solid waste (sludge deposit) into open air tanks, by means of the tank bottom opening and tilting. This operation is permitted after discharge by gravity or pressurised discharge of the potentially flammable liquid fraction.

ATEX EQUIPMENT CONFIGURATION

During operation of the equipment in **Atex configuration**, the flow of the potentially flammable substance along the vacuum line, can generate limited potentially explosive atmospheres, in correspondence of the discontinuities of the line (couplings, seals, etc.). These discontinuities are identified by regulations under the term **ES (emission source)** and are capable of generating explosive atmospheres as a result of failures.

The figure below shows the areas of the equipment subject to a potential explosive atmosphere, for equipment equipped with subframe pumps.



The extension, however limited, of areas with a potentially explosive atmosphere, is the result of a careful selection of materials that make up the ES, and of an innovative ventilation system of the tank and vacuum line, based on a

2013 JUROP PATENT.

In correspondence of such areas, the following must not be present:

- **live electric components**, except for those belonging to the appropriate ATEX category for the classification of the area;
- **moving mechanical parts**, which can generate sources of ignition if placed in classified areas.

In the standard equipment configuration, during the operations listed previously, (operation in **Atex configuration**) the following conditions occur:

- exclusion of any high pressure pump operation;
- exclusion of any washing hose reel (flag, lateral, fixed rear, etc.) movement;
- exclusion of any suction boom or hose reel movement;
- exclusion of any rear extendible underrun protection bar movement;
- exclusion of any work light (e.g. located on the flag hose reel or boom) power supply, unless ATEX compliant.

Configurations other than those above require specific risk analysis and must be evaluated individually.

The following can be supplied on request:

- **High pressure pump operation** in ATEX configuration, limited to "nozzle controlled" operations, i.e. use of spray nozzles for washing operations, or of accessories (with their own ATEX certification) that require high-pressure water supply;
- Transfer pump **VL ATEX**, with Category 2 (zone 1, indoor) certification, as it is intended for the processing liquids.