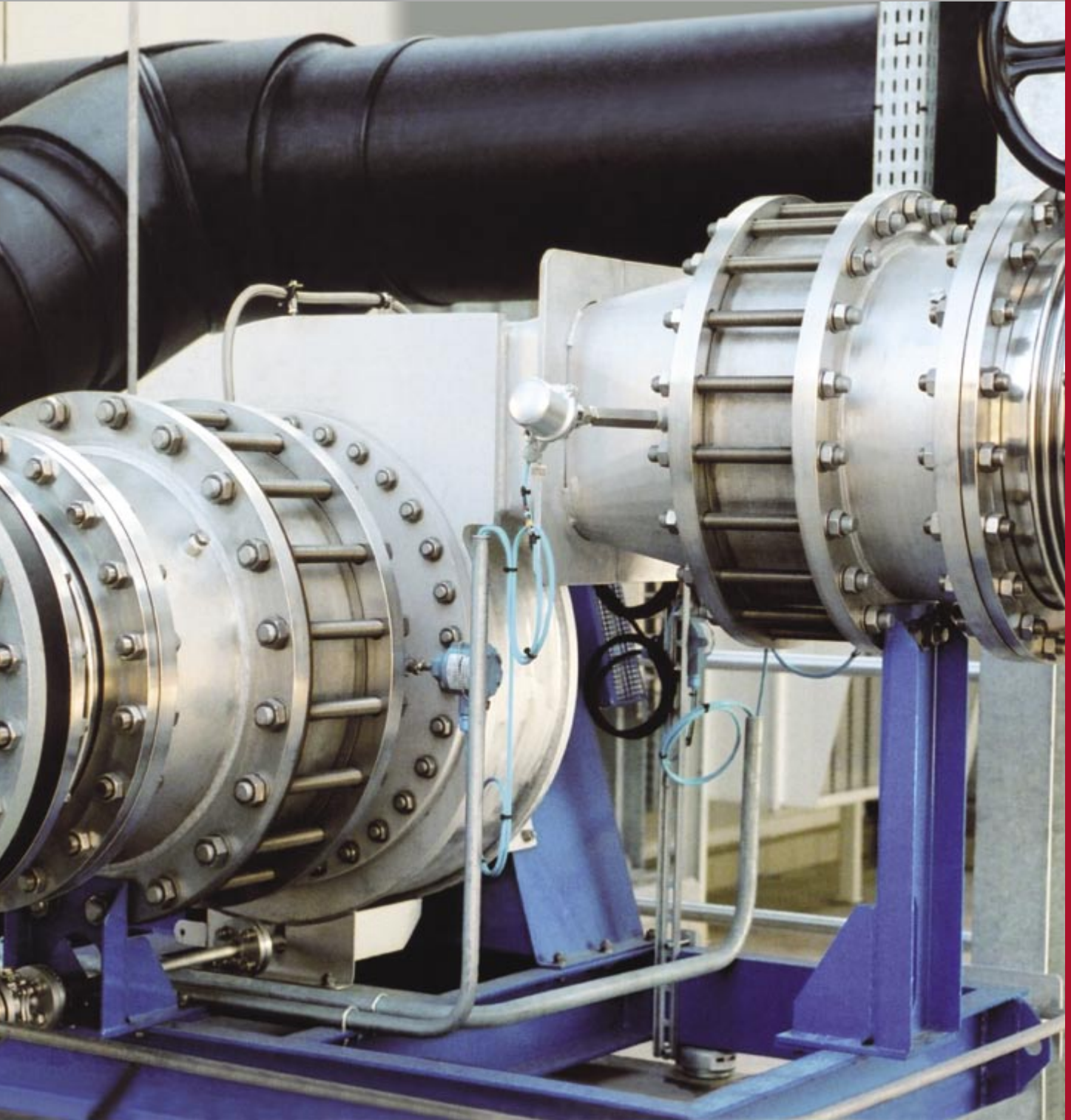


Explosion protected fans
Zone Zero



MEIDINGER
WITT

Skills and Experience

From the companies' formation in 1900, Meidinger moved into the conveyance of explosive gases and dusts, developing the first generation of zone zero fans in 1992.

In 1996 Meidinger was awarded the highly prestigious innovation prize from the canton of Basle, Switzerland.

Meidinger engineers produce a wide range of zone zero fans, developed from 5 fan sizes. The design of the fans has moved on quite considerably and the company is now supplying third generation designs which are fully compliant to the latest European directive for equipment in explosive environments. The design and manufacture of the fans are extremely specialised and as such Meidinger are only one of a very small number of certified European suppliers.



Typical applications

Pharmaceutical and Chemical Industry

Permanently explosive gas mixtures of a zone zero are often generated when draining solvents. Due to the nature of the process in some cases it is not possible to run the process outside an ignitable concentration range of the solvent. In other cases an ignitable concentration is accepted in favour of the omission of a concentration survey or the omission of a costly inertisation. Without inertisation the conveyed volume is smaller and therefore the equipment can be kept more compact.

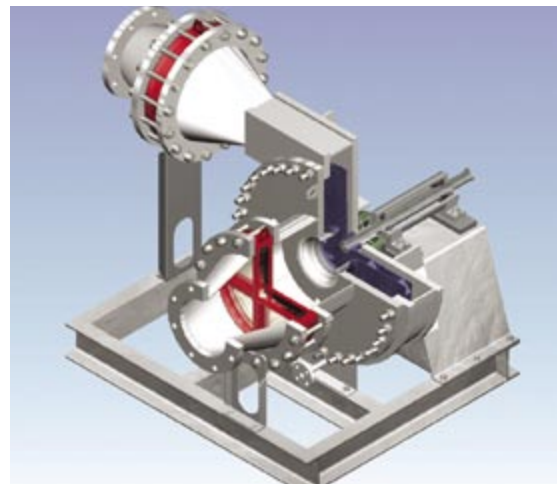
Fuel tanks

In many cases zone zero fans are required for vapour recovery systems (VRC) for gasoline or kerosene vapours or for the combustion or filtering of such vapours.

Engineering, Production and Service

Meidinger zone zero fans

- Made of stainless steel, available also with other materials and coatings
- Direct coupled drive or belt driven
- Bearing temperature permanently monitored
- Standardised components for inexpensive and readily available parts
- No reduction of the available inlet temperature range. Inlet temperature up to 60°C
- High reliability and availability by accurate construction and the use of high quality components
- A wide range of accessories from one source



Double safety

For a zone zero fan a double safety level is required:

- Reliable prevention against ignition sources
- Protection of staff and environment by flame arresters and a pressure resistant casing

Last and not least this all protects also the reputation of the employer and company.

On demand we can help you with the setup of your installation and the training of your staff in our factory or in your premises. Our qualified service personnel are ready to assist you with revisions and preventive maintenance.

Take advantage of our years of experience. By early involvement we can help you develop cost effective solutions.

Directive – Compliant Design

EU directive



| Frequency of the explosion hazard according to the operator's risk analysis | Medium | Classification by the operator according to 1999/92 EG | Manufacturer's equipment category according to 94/9 EG |
|---|--------|--|--|
| frequent or constant | gas | zone 0 | II 1G |
| | dust | zone 20 | II 1D* |
| occasional | gas | zone 1 | II 2G |
| | dust | zone 21 | II 2D |
| rare | gas | zone 2 | II 3G |
| | dust | zone 22 | II 3D |

*) II 1D has technologically not yet been achieved

Since 2003 organisations in EU must follow two directives to protect employees from explosion risk in areas with explosive atmospheres. Equipment must comply with the ATEX equipment directive 94/9/EC. Employers must classify areas where hazardous explosive atmospheres may occur into zones. The classification given to a particular zone, and its size and location, depends on the likelihood of an explosive atmosphere occurring and its persistence if it does according to ATEX workplace directive 99/92/EC.

All Meidinger zone zero fan designs comply with the directive 94/9/EC and the standard EN 14986 by

- Gas-tight housing, which withstands an explosion pressure of at least 10 bar
- Turbo labyrinth shaft seal, resistant to flame penetration
- Integrated flame arresters (deflagration protection) at the inlet and outlet
- EU type examination by a Notified Body to affirm the conformity of the design with the directive

Areas of Application

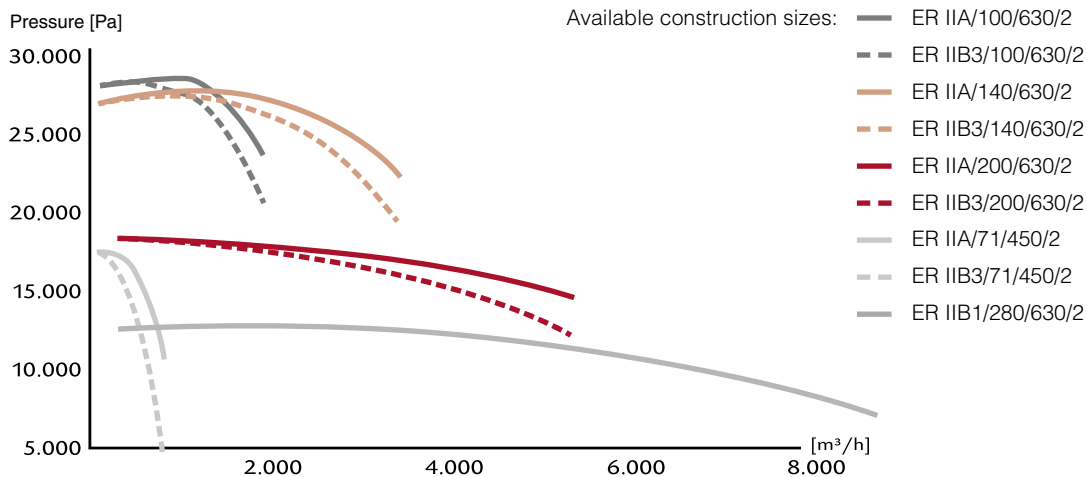
Gases are classified in explosion groups and temperature classes depending from ignitability and ignition temperature.

| Explosion group | Temperature classes (maximum permissible temperature) | | | | |
|---|---|--|---|--|------------------|
| | T1 (<440° C) | T2 (<300° C) | T3 (<200° C) | T4 (<135° C) | T6 (<85° C) |
| | Substance | Substance | Substance | Substance | Substance |
| IIA (Maximum experimental safe gap MESG 0.9 mm) | Acetone Ethane Ethyl acetate Ethyl chloride Ammonia Benzene Acetic acid i-Butane Methane Methyl chloride Naphthalene Phenol Propane Toluol | -Amyl acetate n-Butane n-Butyl alcohol Cyclohexanone 1.2-Dichloroethane Acetic acid-anhydride Methanol Propanol | Gasoline Cyclohexane Special gasoline Diesel fuel Heating oil n-Hexane Kerosene | Acetaldehyd Benzaldehyd Butyraldehyd Dihexylether Trimethylamine | Ethyl nitrite |
| IIB1 (MESG 0.85 mm) | Acrylonitrile Hydrocyanic acid | Acrylic acid Ethanol Methyl acrylate i-Nitropropane | n-Butylacrylate Dimethoxymethane Dimethyl ether Hydrogen sulfide Tetrahydrofuran Tetrahydrofurfuryl- alcohol | Dibutyl ether Diethyl ether Ethyl ether | |
| IIB2 (MESG 0.75 mm) | Carbon monoxide | Butadiene 1.4-Dioxane | | Di-t-butyl Peroxide Diethoxyethane | |
| IIB3 (MESG 0.65 mm) | | Ethylene Formaldehyde Furan | | 1.2-Dimethoxyethane | |
| IIB (MESG 0.5 mm) | | Ethylene oxide Paraformaldehyde | Tetrafluorethylene | | |
| IIC (MESG < 0.5 mm) | Hydrogen | Acetylene | | | Carbon disulfide |

Temperature class: classification according to ignition temperature

Explosion group: classification according to normal safety gap and minimum ignition current

zone zero fans





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