




Safety is for life.™


# **REMBE®** **Explosion Safety**

Hazard oriented.  
Risk appropriate.  
Reliable.  
Sustainable.  
Authentic.  
Safe.

Reliable. German.  
Safety. ●●●

A dark, industrial background featuring a complex network of metal scaffolding and structural beams. On the right side, a tall smokestack is visible, emitting a plume of white smoke that drifts upwards. The overall scene is dimly lit, emphasizing the structural elements and the smoke.

**Explosion Safety.  
From Humans.  
For Humans.  
Humans are what  
matter to us.**



At REMBE® we not only guarantee the suitable products, but above all comprehensive Explosion Safety solutions that always keep operational efficiency and the legal safety regulations firmly in mind. An economical and reliable solution tailored to your operational requirements.

Crucial quality characteristics and the personal commitment make our Explosion Safety solutions the leaders in our industry.

Our experienced consultants and engineers understand Explosion Safety as an engineering discipline. Challenge us and give us a chance – let's work together to increase health and safety at your company. Speaking of „worrying“, you'd be surprised how easy it can be to have one less thing to worry about.

Stefan Penno  
Chief Executive Officer



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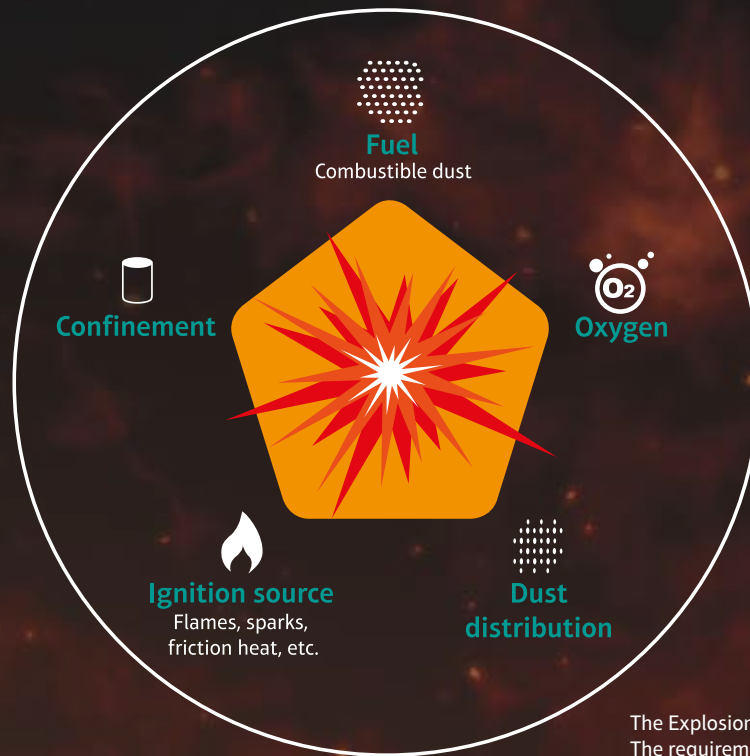
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The Explosion-Pentagon:  
The requirements for a dust explosion.

# The Principles of Explosion Safety.

When a combustible material, an ignition source and atmospheric oxygen collide in a confined space, the result is an explosion. **Preventive explosion safety** measures aim to stop this potentially lethal mixture from occurring. However, in practice, the vast number of potential ignition sources alone almost always makes this impossible. Consequently, the most important steps towards explosion safety for industrial companies are protection measures that minimise the damage caused by an explosion.

Industrial plants must always be protected against the consequences of explosions to ensure that employees are safe and production can be resumed quickly.

After all, every hour of lost production costs money. In most cases, explosion safety can be provided cost-effectively through explosion venting and explosion suppression.



## The 3 key features of a modern protection concept

### 1. Reliability and productivity

Protective systems must be permanently available and operational. The possibility of false triggers must be excluded as this reduces the productivity of the plant.

### 2. Compliance

Modern protective systems must satisfy all legal requirements and thus guarantee legal compliance for plant operators.

### 3. Cost-effectiveness

Protective systems must be as simple as possible to install and require minimum investment of time and financial resources. The total costs of ownership of the systems must also be kept as low as possible.

All safety concepts from REMBE® meet these requirements. That's a promise.

## 3 steps to make your processes safer

### 1. Risk assessment

A risk assessment determines the probability that an explosive mixture of dust and air (divided into zones) will come into contact with an effective ignition source. If there is a danger of an explosion occurring, you must take steps to prevent, or at least reduce, the probability of this happening (see step 2).

Alternatively, you must implement protective systems that reduce the damage an explosion would cause to an acceptable level (see Step 3).

### 2. Prevention and organisational measures

#### Technical measures:

Effective dust extraction systems reduce the build-up of explosive atmospheres. Inert gas blanketing is also recommended to reduce oxygen levels.

#### Eliminate effective ignition sources:

Only ever use the appropriate equipment (e.g. category 1D) and prevent foreign bodies from entering the product stream.

#### Organisational measures:

Employees should always receive comprehensive training. Documented cleaning procedures and permit to work systems for hot-work create an additional level of safety.

### 3. Protective measures

#### Explosion pressure resistant or explosion proof vessels:

These terms are used to describe vessels that are strong enough to withstand the maximum explosion pressure.

#### Conventional explosion venting:

Explosion venting is a technique for protecting enclosed vessels that prevents the pressure within the vessel from rising above a permitted level. Breaking points, such as explosion vents, in the walls of the plant, rupture when the pressure reaches a predefined level and thus reduce the pressure in the vessel below its strength.

#### Flameless explosion venting:

This essentially uses the same principle as conventional explosion venting. However, it offers the advantage that the explosion can be vented indoors because the flame and pressure wave of the explosion are contained. This eliminates the risk of injury even when working in close proximity to the equipment.

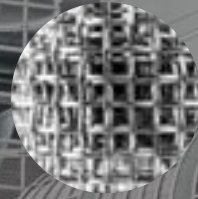
#### Explosion suppression:

Pressure and/or infrared sensors detect the explosion at a very early stage. Within a few milliseconds, a control system smothers the germ of the explosion using an extinguishing powder that is released into the plant.

#### Isolation:

These explosion protection measures must always be combined with explosion isolation to avoid the devastating effects of explosion propagation and secondary explosions.

The stainless-steel mesh filter in the Q-Rohr®, Q-Box® and Q-Ball® flameless explosion venting devices protects the plant and surroundings from the effects of an explosion.



# Typical Applications for our Products.

REMBE® explosion safety products are installed in a number of different industries and various plant locations. You can find a small selection of typical applications on this double page. Please note that industrial explosion safety does not

follow a standard recipe, but requires a thorough analysis of the installation. We will gladly support you in that respect.

Give us a call on: T +49 2961 7405-0 or contact us via email: [hello@rembe.de](mailto:hello@rembe.de)

## Filter

Dust collectors are used to capture dust, which is intentionally or unintentionally generated during the process. Therefore, an increased risk of explosion will be present within the dust collectors especially during the pulse-cleaning of the filter elements. Dust collectors are therefore generally protected with vent panels. The Q-Box® or the Q-Rohr® are commonly used in indoor areas. The original flameless venting devices which were developed by REMBE® in the 1980s, provide a relief of the explosion from the vessel, and protect the environment at the same time.

If transport or traffic routes are located in the vicinity of the explosion venting, a vent panel in combination with the TARGO-VENT add-on module should be used, in order to deflect the flame and shock wave of the explosion to safe areas. Protective systems are used for the isolation in order to prevent an explosion propagation into interconnected areas. In this example, this is a Q-Flap RX™ isolation flap valve and a VENTEX® isolation valve.





## Silos

There is a particularly high risk during the filling of a silo through an explosive dust-air mixture. This is precisely the time frame with the highest likelihood of an explosion. In outdoor areas, silos are usually relieved with vent panels. Different types can be used depending on the filling process. Q-Box® or Q-Rohr® are installed for safe indoor venting.

Explosion isolation is usually achieved through quench valves. These completely seal the pipes within a few milliseconds, thus inhibiting the explosion from propagating further.

## Elevators

Elevators convey large amounts of (combustible) bulk materials, and thus pose a high risk of an explosion.

The size and strength of the bucket elevator determine the number and mounting distance for the required protective systems, depending on the bulk material involved.

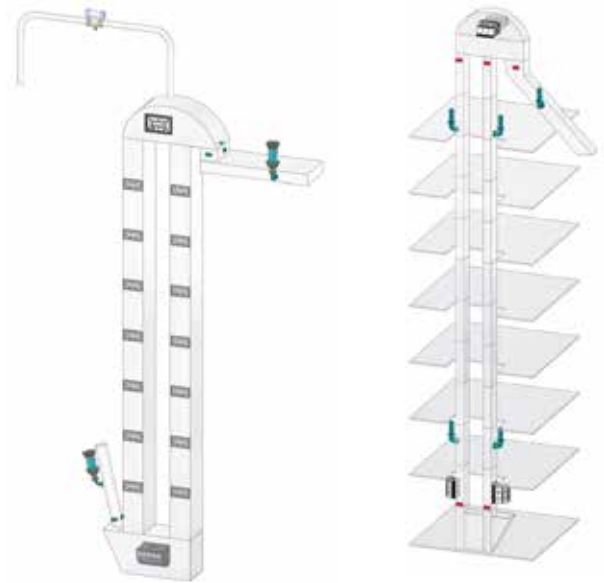
Outdoor elevator shafts are commonly protected with vent panels, whereas flameless venting is applied indoors. A combination of conventional and flameless venting is also feasible, depending on the conditions of the installation. The isolation of the up/down stream conveyors is usually performed with rotary valves or a Q-Bic™ chemical barrier. Additionally, it is possible to use quench valves to prevent the explosion propagation through connected aspiration lines.

## Spray Dryers

Usually, spray dryers are protected with a combination of explosion isolation systems and vent panels. If free and safe relief is not possible, the vent panels are replaced by a flameless venting device. To prevent explosion propagation, the connecting pipes are usually isolated with a Q-Bic™ chemical barrier.

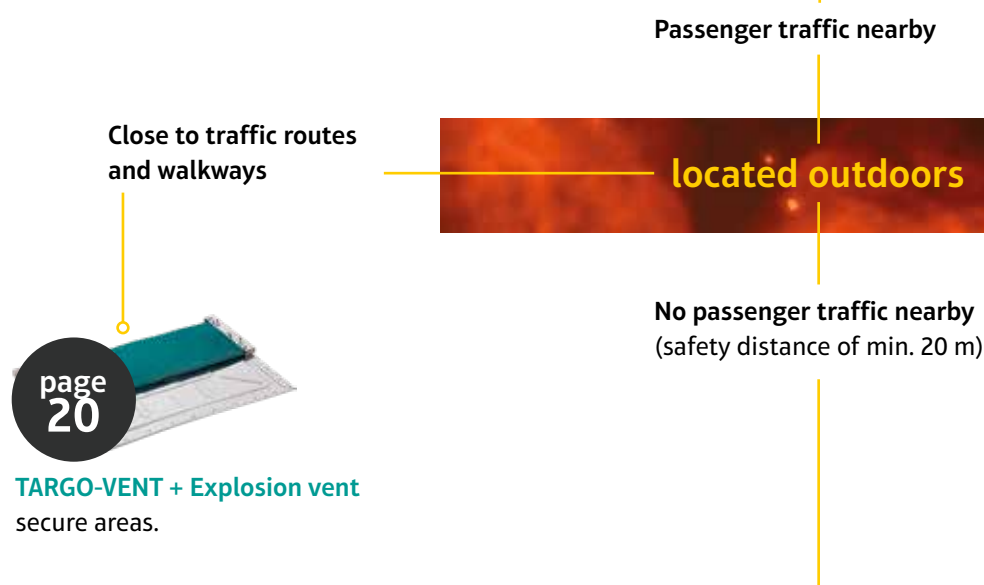
For hygienically demanding processes, the special vent panels EGV HYP and ERO are used. Through this, bacteria formation, deposits and cross-contamination does not stand a chance. In addition to the protection against the influence of weather, to improve the hygienic termination, but also to reduce noise emissions, KAD covers are installed on the blow-off channels.

The combination of ERO and Q-Rohr® also enables the flameless venting of these hygienic applications.



# Which is the best REMBE® Product for **your** requirements?

REMBE® is a specialist in protecting every area of your production plant. The best strategy for protecting your plant against explosions depends on the locations of the various plant components. Start in the middle and select the right protection system for your needs.



## Explosion Isolation



**page 34**

**EXKOP® System**  
Space-saving, bidirectional isolation.



**page 36**

**Q-Flap RX™**  
Explosion isolation flap valve.



**page 40**

**Q-Bic™**  
Active Isolation.



**page 37**

**VENTEX®**  
Explosion safety valve.



**page 38**

**REDEX® Slide, RSV**  
Slide valves.





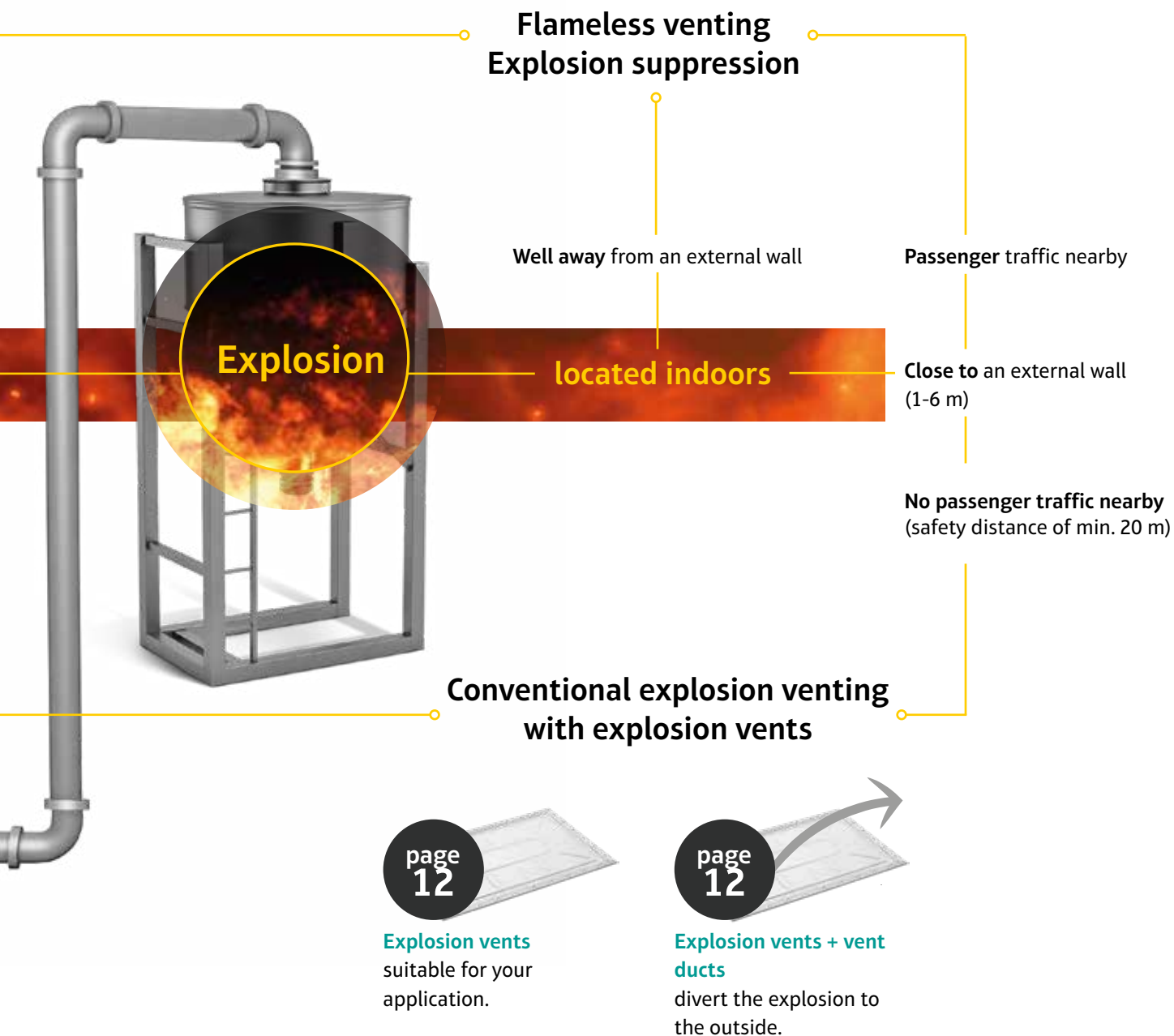
**page 26**  
**Q-Rohr®**  
The all-rounder.



**page 28**  
**Q-Box®, Q-Box® R3leaf™**  
Perfect protection of the environment.



**page 30**  
**Q-Ball® E, Q-Ball® S**  
Effective + ultra-lightweight.



# Deflagration Venting with Explosion vents.

In the case of a deflagration, an explosion vent will rupture and thus protect the vessel by reducing the overpressure within it and releasing the explosion into the surrounding environment in a controlled manner. Industrial processes vary widely depending on the sector and the product.

No two processes are identical. For this reason, REMBE® supplies explosion vents in a variety of different shapes, materials, temperature and pressure resistances and many other specifications.

## Advantages

- ✓ Easy to install.
- ✓ No maintenance required.
- ✓ Long service life.
- ✓ Quick to replace after an explosion event especially with the REMBE® RushOrder Service.

In outdoor plant components, explosion vents are used for explosion safety. They safeguard outdoor equipment such as silos, filters, elevators, bunkers, cyclones and other dust-handling facilities.

Whether your application is in a sanitary apparatus or under extreme conditions, e.g. rapidly fluctuating, pressure cycling, low vacuum and overpressure or high operating temperatures, we can supply you the optimum explosion vent for your requirements. You will receive a complete protection concept that is perfectly adapted to your process.

All REMBE® explosion vents are Made in Germany and certified in accordance with directive 2014/34/EU (ATEX) and EN 14797.

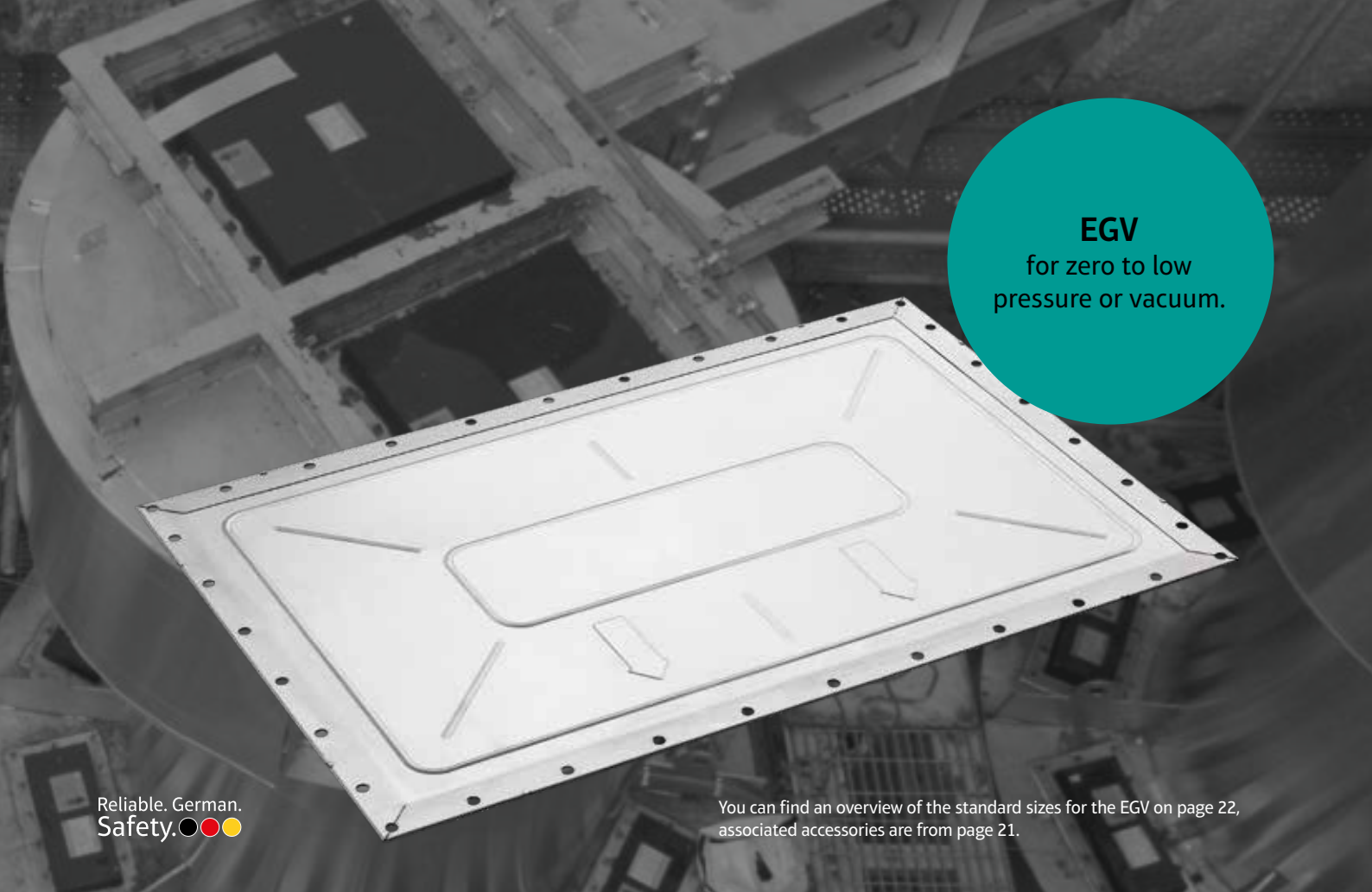




### Product selection guide

Application	Operating conditions	Product
Silo/Vessel	Mechanical filling	EGV
	Pneumatic filling	EDP
Filter/Cyclone	Overpressure or low vacuum	EGV
	Low to medium vacuum or pressure cycling	EDP
	High vacuum or pressure cycling	ODV
	Hygienic requirements and high vacuum	ERO
	Large vent areas with low burst pressure and medium or high vacuum	MDX
Elevator/Chain conveyor	All	EGV
Spray dryer	Hygienic requirements to avoid cross contamination	EGV HYP
	No hygienic requirements	EGV
Screen/Sieve	Slight vibration	EGV
	Strong vibration	EDP
Gas motors	All	EDP*

\* Type selection based on process temperature.



**EGV**  
for zero to low  
pressure or vacuum.

Reliable. German.  
Safety. ●●●●

You can find an overview of the standard sizes for the EGV on page 22, associated accessories are from page 21.

The REMBE® EGV explosion vent provides optimal protection for cyclones, silos and elevators. It is available in square, semicircular, trapezoidal or other geometries and can also be adapted to round vessels if required.

### Application

From spray dryers, elevators and chain conveyors to screens with light vibration, silos with mechanical filling and cyclones – the REMBE® explosion vent EGV is suitable for use in **a wide range of applications in all sectors** for both non-pressurised processes and processes with low vacuum or overpressure (**up to 50% of static burst pressure**). The standard burst pressure is 0.1 bar at 22°C (71.6°F).

### Mechanism

When pressure rises, the EGV explosion vent opens at the defined breaking point and releases pressure out of the vessel into the surrounding area.

### Applications + Industries

Aspiration plants, Battery and energy storage systems, breweries, elevators, filters, conveyors, wood processing industry, food production, mixers, mills and grinding plants, food, recycling, screens, silos, spray dryers, destoners, animal feed production, hydrogen

### Advantages

- ✓ **High venting capacity and full bore opening** due to low surface weight.
- ✓ **High stability and opening speed** through integrated bionic structure.
- ✓ Direct installation of the explosion vent even on round vessels **prevents bacteria formation**. No complicated flange constructions required.
- ✓ **Adapts perfectly to your process** due to the wide range of EGV geometries available.
- ✓ **Quick and easy installation** while torque is independent. No additional counter frame required.
- ✓ **Significant space savings** due to the integrated gasket and frame in the explosion vent.

All versions of the EGV are available with insulation to prevent the build-up of deposits as a result of the temperature falling below the dew point.

### Certification



ATEX  
EU-type examination  
certificate no.  
FSA 04 ATEX 1538 X

### SIL equivalent

SIL 4



**EDP**  
for low to medium  
vacuum and  
pressure cycling.

Reliable. German.  
Safety. 

You can find an overview of the standard sizes for the EDP on page 22, associated accessories are from page 21.

## Application

The domed, single-layer REMBE® explosion vent EDP is suitable for use in processes with medium vacuum or overpressure (**up to 70% of min. response pressure ( $p_{stat}$ )**) and slight pressure cycling. It is particularly suitable for vessels with pneumatic filling equipment, filters, cyclones and sieves with strong vibration. The standard explosion pressure is 0.1 bar at 22°C (71.6 °F).

## Mechanism

When pressure rises, the EDP explosion vent opens and releases pressure out of the vessel into the surrounding area.

## Applications + Industries

Aspiration plants, breweries, filters, wood processing industry, food, silos, food production, mixers, mills and grinding plants, recycling, screens, spray dryers, destoners, animal feed production, hydrogen

## Advantages

- ✓ The domed construction **provides high stability and pressure cycling resistance.**
- ✓ **Quick and easy installation** while torque is independent. No additional counter frame required.
- ✓ **Significant space savings** due to the integrated gasket and tensioning frame in the explosion vent.

## Certification



ATEX  
EU-type examination  
certificate no.  
FSA 04 ATEX 1538 X

## SIL equivalent

SIL 4



Reliable. German.  
Safety. ●●●●

**MDX**  
for low  
burst pressures under  
high vacuum +  
pressure cycling.

You can find an overview of the standard sizes for the MDX on page 22, associated accessories are from page 21.

The design of the MDX makes it the ideal vent panel, even under high vacuum, lowest burst pressure and alternating pressures.

### Applications

Filters with **high vacuum requirements and large vent areas** are protected with the MDX vent panel. With a standard burst pressure of 0.05 bar at 22°C, the MDX can also be used in other system components with a medium to high pressure, as well as for vacuum and alternating pressures.

**Its unique one-piece design provides a combination of precise opening behaviour with a high vacuum resistance and the lowest possible weight per surface area unit.**

### Mechanism

In case of a sudden pressure increase, the MDX vent panel will open and release the pressure from the vessel.

### Applications + Industries


Aspiration plants, breweries, filters, wood processing industry, food production, mixers, mills and grinding plants, food, screens, silos, spray dryers, destoners, animal feed production

### Advantages

- ✓ **Reduction of deposits:** the design guarantees high pressure resistance without the need for an extra vacuum support.
- ✓ **Weight savings** through three-dimensional reinforcement corrugations.
- ✓ **Low initial purchase costs:** single-layer vent panel.



**ODV, ODU**  
for high to full  
vacuum + pressure  
cycling.

Reliable. German.  
Safety. 

You can find an overview of the standard sizes for the ODV + ODU on page 22, associated accessories are from page 21.

The REMBE® ODV explosion vent consists of an upper part, a sealing membrane and a vacuum support. The triple-section ODU explosion vent is ideal for applications that involve alternating pressure but no vacuum. In this version, the ODV's vacuum support is replaced by a supporting lower part.

### Applications

REMBE® explosion vent ODV is used under demanding vacuum to overpressure cyclic operating conditions. Designed for working pressures of up to **80 % of static burst pressure**.

The ODV is ideal for use in applications such as dust collectors with frequent jet-pulse cleaning, high vacuum or suction conveyors. It is **vacuum resistant** and the standard explosion pressure is 0.1 bar at 22°C (71.6°F).

### Mechanism

When pressure rises, the ODV explosion vent opens and releases pressure out of the vessel into the surrounding area.

### Applications + Industries

Aspiration plants, breweries, filters, wood processing industry, food production, mixers, mills and grinding plants, food, recycling, screens, silos, spray dryers, destoners, animal feed production, hydrogen

### Advantages

- ✓ Low response pressure with full vacuum resistance is possible.
- ✓ High working pressure resistance of the explosion vent **offers maximum productivity for your processes**.
- ✓ Triple-section domed construction ensures **high-pressure cycling resistance and exceptional service life**.
- ✓ **Round versions and special customised solutions** possible.

### Certification



ATEX  
EU-type examination  
certificate no.  
FSA 04 ATEX 1538 X


### SIL equivalent

SIL 4

# Explosion vent for hygienically demanding processes.

EGV HYP  
for low  
vacuum.



Reliable. German.  
Safety. 

You can find an overview of the standard sizes for the EGV HYP on page 22, associated accessories are from page 21.

With the vent panel EGV HYP which is designed for production facilities with highly elevated hygienic requirements, REMBE® is able to provide safety and cleanliness. The innovative sealing concept of the EGV HYP is able to convince. Deposits and bacterial growth are permanently prevented. Direct mounting of the vent panel to round vessel forms is also possible due to pre-bending.

## Applications

The EGV HYP was specially designed for hygienically demanding systems in the food and pharmaceutical industry, and is often used in critical systems such as spray and fluidbed dryers.

**The special feature:** The patented, full-flat, chamfered gasket system has a flush internal sealing area with the vent panel, and facilitates the avoidance of cross-contamination.

## Mechanism

In case of a sudden pressure increase, the EGV HYP vent panel will open and release the pressure from the vessel.

## Applications + Industries

Aspiration plants, petrochemical, food production, food, mixers, spray dryers, animal feed production, pharmaceutical industry

## Advantages

- ✓ Hygienic design will continuously assure a **high product quality**.
- ✓ **Protects against cross-contamination** when changing products.
- ✓ Enables CIP cleaning.
- ✓ **Increased service life** of the vent panel under alternating temperature and pressure stresses through the integrated bionic structure.
- ✓ **Reduces sound emissions** (e.g. from hammers) at the venting channels.

## Certification



ATEX  
EU-type examination  
certificate no.FSA 04  
ATEX 1538 X

## SIL equivalent

SIL 4



Certified in accordance  
with EHEDG



**ERO**  
for vacuum +  
pressure cycling.

Reliable. German.  
Safety. 

You can find an overview  
of the standard sizes  
for the ERO on page 22,  
associated accessories  
are from page 21.

Specially developed for production plants with strict hygiene requirements, REMBE® ensures increased safety + cleanliness with the ERO explosion vent.

### Applications

The ERO sanitary vent panel is used in the pharmaceutical, chemical and food industry in a broad range of system areas.

The smooth and closed stainless steel membrane which faces the process, optimally seals the vessel and enables **sterilization of the vent panel while still installed**. The hygienic and robust design enables a reliable response, even at the lowest burst pressures.

The working pressure is at 75% of the minimum burst pressure.

### Mechanism

In case of a sudden pressure increase, the ERO vent panel will open and release the pressure from the vessel.

### Applications + Industries

Aspiration plants, breweries, filters, wood processing industry, food production, mixers, mills and grinding plants, food, screens, silos, spray dryers, destoners, animal feed production, pharmaceutical industry

### Advantages

- ✓ The only vent panel with **USDA approval**.
- ✓ **Easy and safe to maintain sterile** through the special design of the ERO.
- ✓ **Easy installation** and low maintenance effort.
- ✓ Enables CIP cleaning.

In conjunction with the Q-Rohr®, the ERO vent panel even enables flameless venting for hygienically demanding applications.

### Certification



ATEX  
EU-type examination  
certificate no.  
FSA 04 ATEX 1538 X

**SIL equivalent** 


SIL 4

USDA approval

With TARGO-VENT the flame is deflected into safe areas.

You can find an overview of the standard sizes for the TARGO-VENT on page 22, associated accessories are from page 21.

**TARGO-VENT**  
Add-on module to  
reduce the size of  
dangerous areas.

Reliable. German.  
Safety. 

Without TARGO-VENT the flame creates a dangerous situation in operating areas.

In the case of an explosion outside a building, explosion vents open and release the explosion flame and pressure wave into the environment. Adequate safety areas are crucial. They must be kept free of buildings and be out of bounds to both vehicles and pedestrians. These empty areas cannot be used commercially but still incur operating costs. TARGO-VENT limits the opening angle of an explosion vent in order to protect people, vehicles or subsequently erected buildings. By decreasing the size of dangerous areas, TARGO-VENT helps you to **reduce your safety areas** to a minimum and increase usable operating space while providing optimum protection against explosions.

### Application

Ideal for **rectangular explosion vents**,

- ✓ venting into areas used by **vehicles or pedestrians**,
- ✓ used in outdoor applications,
- ✓ venting into previously **clear areas which have subsequently been built upon**.

### Mechanism

TARGO-VENT limits the opening angle of the explosion vent and guides the explosion pressure wave, flames and heat into defined areas. This minimises the size of the safety areas required.

### Applications + Industries

Aspiration plants, breweries, filters, wood processing industry, food production, mixers, mills and grinding plants, food, recycling, screens, silos, spray dryers, destoners, animal feed production, hydrogen

### Advantages

- ✓ Smaller safety areas required in front of vent openings – **more productive use of valuable operating areas**.
- ✓ Smaller area required for explosion venting than with alternative deflectors.
- ✓ **Low cost protection** of infrastructure.
- ✓ **Safe traffic routes for people and vehicles** while simultaneously reducing the safety area required.
- ✓ Retrofitting with TARGO-VENT **provides greater safety for existing installations**.
- ✓ **Maintenance-free and long service life** through the use of stainless steel.

### Certification



ATEX  
EU-type examination certificate no. FSA 13 ATEX 1637



# Accessoires for optimum adaption to meet your requirements.



Signalling units enable you to shut down a plant quickly in the event of an explosion and also trigger isolation systems which protect adjacent parts of the plant. Automated processes also use intelligent signalling systems to monitor the status of the entire plant and any disruptions that occur. This is not just essential in venting ducts, it can also play an important role in free venting. Signalling units can be retrofitted to vents that have already been installed.

For evaluation of the signals, we offer isolation amplifiers with relay outputs which guarantee an intrinsically safe closed-circuit current. The potential-free relay contact ensures that the plant is deactivated safely and the alarm functions correctly.

Reliable. German.  
Safety. 

## **SK signalling unit**

*This signalling unit uses the closed-circuit current principle.*

A signalling cable is integrated onto the explosion vent during the manufacturing process to create a highly reliable unit.

When the explosion vent opens, the signalling cable circuit gets interrupted.

## **RSK signalling unit**

*The RSK signalling unit can be retrofitted to explosion vents.*

The signalling cable is fixed in position over the breaking point of the explosion vent. When the explosion vent opens, the RSK signalling cable circuit gets interrupted.

## **BIRD signalling unit**

*The BIRD signalling unit contains a ceramic bar with integrated electrical conductors.*

*When the explosion vent opens, the circuit breaks.*

The standard version of the BIRD unit can withstand temperatures of up to 150°C (302°F). A high temperature version, resistant up to 400°C (752°F), is also available. The device is mounted using a stainless steel angle and mounting frame.

## **Mounting frame and flange**

Galvanised or stainless steel.

## **Weather resistant insulation**

Prevent condensation, improve thermal insulation and up to 50% noise emissions. Thermal insulation products reduce expensive energy and temperature losses from the protected vessels and prevent condensation related product build-up.

## **A range of gaskets**

*for all process conditions.*

For example, for high temperature or sterile requirements.

## **KAD weather cover for vent pipes/ducts**

Reliable protection against penetration by snow, rain and dust with a low response pressure. Also reduces noise during normal operation. Their nonflammability provides advantages over plastic or polystyrene coverings with regard to the risks of explosion-induced subsequent fires.

# All standard sizes and vent areas at a glance.

## Rectangular vent panels

Max. size of wall opening – nominal vent dimensions [mm]	Effective venting area, cm <sup>2</sup>				
	EGV For zero to low pressure or vacuum	EDP For low to medium vacuum and pressure cycling	ODV For high to full vacuum and pressure cycling	KAD Weather cover for vent pipes/ducts	TARGO-VENT Opening angle limiter
130 × 500	650	650	500	650	–
229 × 305	700	700	540	700	–
150 × 600	900	900	750	900	–
180 × 420	750	750	640	750	–
270 × 465	1250	1250	1.000	1250	–
200 × 460	920	920	790	920	–
247 × 465	1100	1100	970	1100	–
205 × 610	1250	1250	1000	1250	–
340 × 385	1300	1300	1100	1300	–
314 × 424	1330	1330	1150	1330	–
305 × 457	1350	1350	1200	1350	–
315 × 467	1470	–	–	–	–
247 × 610	1500	1500	1300	1500	–
340 × 440	1490	1490	1300	1490	–
400 × 400	1600	1600	1400	1600	–
410 × 410	1680	1680	1450	1680	–
404 × 420	–	–	1500	–	–
305 × 610	1860	1860	1600	1860	x
354 × 580	2050	2050	1800	2050	–
375 × 655	2450	2450	2200	2450	–
440 × 605	2660	2660	2400	2660	–
470 × 610	2850	2850	2600	2850	–
490 × 590	2890	2890	2600	2890	–
500 × 620	–	–	2800	–	–
300 × 1000	3000	3000	2750	3000	–
386 × 920	–	–	3200	–	–
454 × 760	3400	–	–	–	–
570 × 620	–	–	3200	–	–
450 × 800	3600	3600	3300	3600	–
600 × 600	3600	3600	3300	3600	–
590 × 620	–	–	3350	–	–
605 × 605	–	–	3350	–	–
575 × 645	3700	3700	3400	3700	–
610 × 610	3720	3720	3400	3720	–
457 × 890	4100	4100	3750	4100	–
650 × 650	4220	–	–	–	–
520 × 820	4260	4260	4000	4260	–
370 × 1220	4500	–	–	–	–
653 × 653	4260	4260	3900	4260	–
600 × 800	4800	4800	4400	4800	–
710 × 710	5000	5000	4700	5000	–
620 × 820	5100	5100	4750	5100	x
586 × 920	5400	5400	5000	5400	x
500 × 1100	5500	5500	5100	5500	–
750 × 840	6300	6300	5900	6300	–
620 × 1020	6320	6320	6000	6320	–
800 × 800	6400	6400	6000	6400	–
457 × 1500	6850	6850	6350	6850	–
610 × 1118	6810	6810	6400	6810	x
645 × 1130	–	–	6800	–	–



## Rectangular vent panels

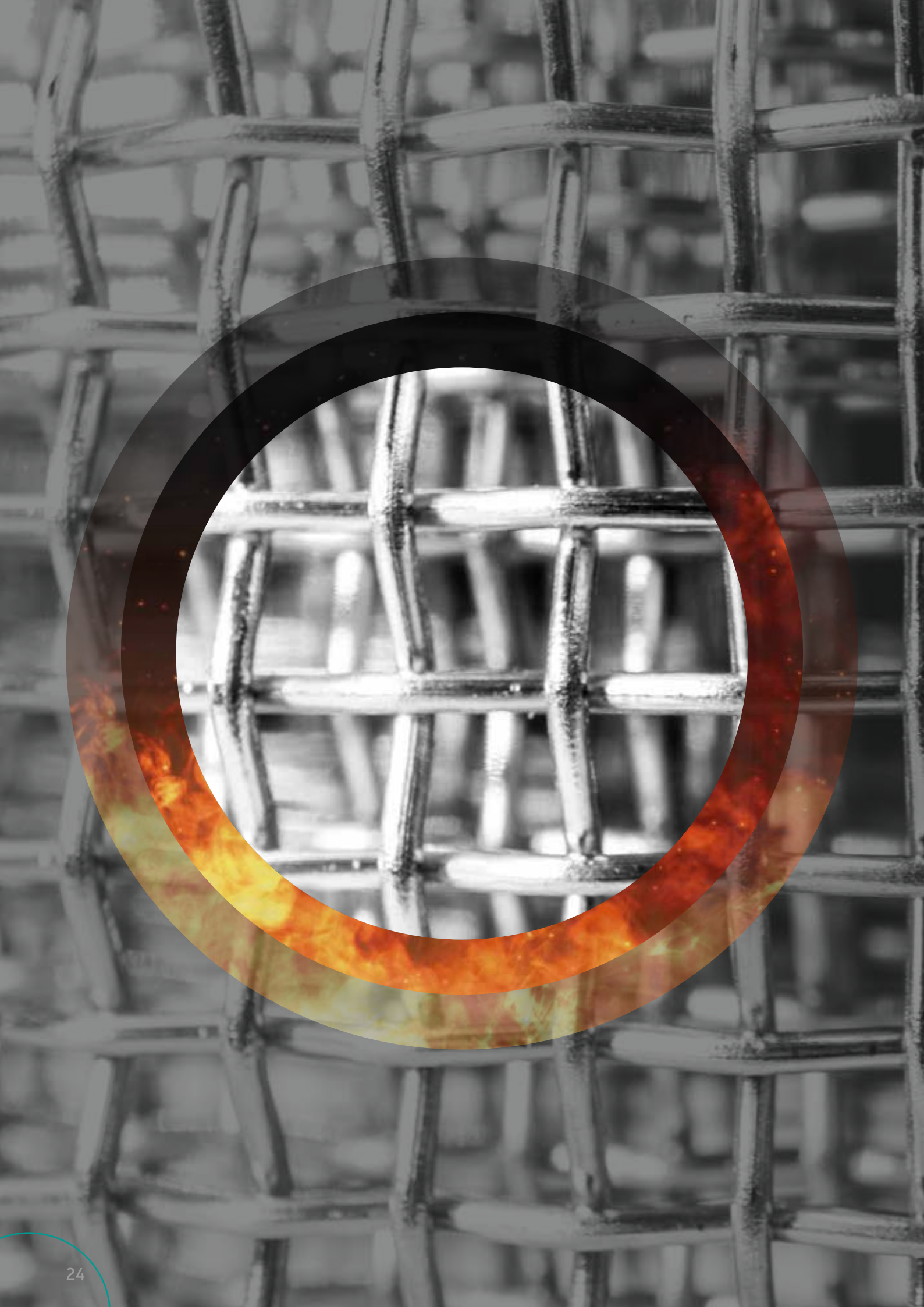
Max. size of wall opening – nominal vent dimensions [mm]	Effective venting area, cm <sup>2</sup>				
	EGV For zero to low pressure or vacuum	EDP For low to medium vacuum and pressure cycling	ODV For high to full vacuum and pressure cycling	KAD weather cover for vent pipes/ducts	TARGO-VENT Opening angle limiter
720 × 1020	7340	7340	6950	7340	–
760 × 1114	8450	–	–	–	–
840 × 920	7700	7700	7300	7700	–
920 × 920	8500	8500	8000	8500	x
457 × 2000	9140	9140	8500	9140	–
920 × 1020	9350	9350	8800	9350	–
586 × 1630	–	–	8900	–	–
1000 × 1000	10000	10000	9500	10000	–
915 × 1118	10200	10200	9700	10200	x
770 × 1340	10300	10300	9800	10300	–
1020 × 1020	10400	10400	9900	10400	–
790 × 1340	10500	–	–	–	–
586 × 1893	–	–	10400	–	–
920 × 1254	11500	11500	11000	11500	–
740 × 1630	–	–	11450	–	–
750 × 1900	–	–	13500	–	–
1130 × 1130	12750	12750	12200	12750	–
860 × 1520	13000	–	–	–	–
940 × 1440	13500	13500	13000	13500	–
940 × 1600	15000	–	–	–	–
1110 × 1460	16000	16000	15600	16000	–
920 × 1920	17500	17500	17000	17500	–
1000 × 2000	20000	–	–	–	–

## Round vent panels

DN [mm]	Effective venting area, cm²				EGV For zero to low pressure or vacuum	KAD weather cover for vent pipes/ducts
	ODV For high to full vacuum and pressure cycling	ERO For low to medium pressure, and alternating pressures		EDP For low to medium vacuum and pres- sure cycling		
		< 1.000 mmWS	> 1.000 mmWS			
200	245	340	245	340	340	–
300	600	750	600	750	750	–
400	1000	1200	1000	1200	1200	1200
500	1660	1900	1660	1900	1900	1900
600	2500	2700	2500	2700	2700	2700
700	3500	3800	3500	3800	3800	3800
800	4600	5000	4600	5000	5000	5000
		< 500 mmWS				
900	5900	6300		6300	6300	6300
1000	7400	7800		7800	7800	7800
1100	8950	9500		9500	9500	9500
1200	10000	11300		11300	11300	11300
		< 200 mmWS				
1300	12500	13200		13200	13200	13200
1400	15000	15400		15400	15400	15400

REMBE® vent panels can be supplied in any desired dimension and with a customized bolt pattern. The special EGV HYP, ERO and MDX vent panels are fundamentally available in any size. Especially the standard sizes 586 × 920, 920 × 920, 1000 × 1000, 610 × 1118 and 915 × 1118 do provide economic benefits.

Other dimensions available on request.





# Flameless Explosion Venting: Deliberately not on fire.

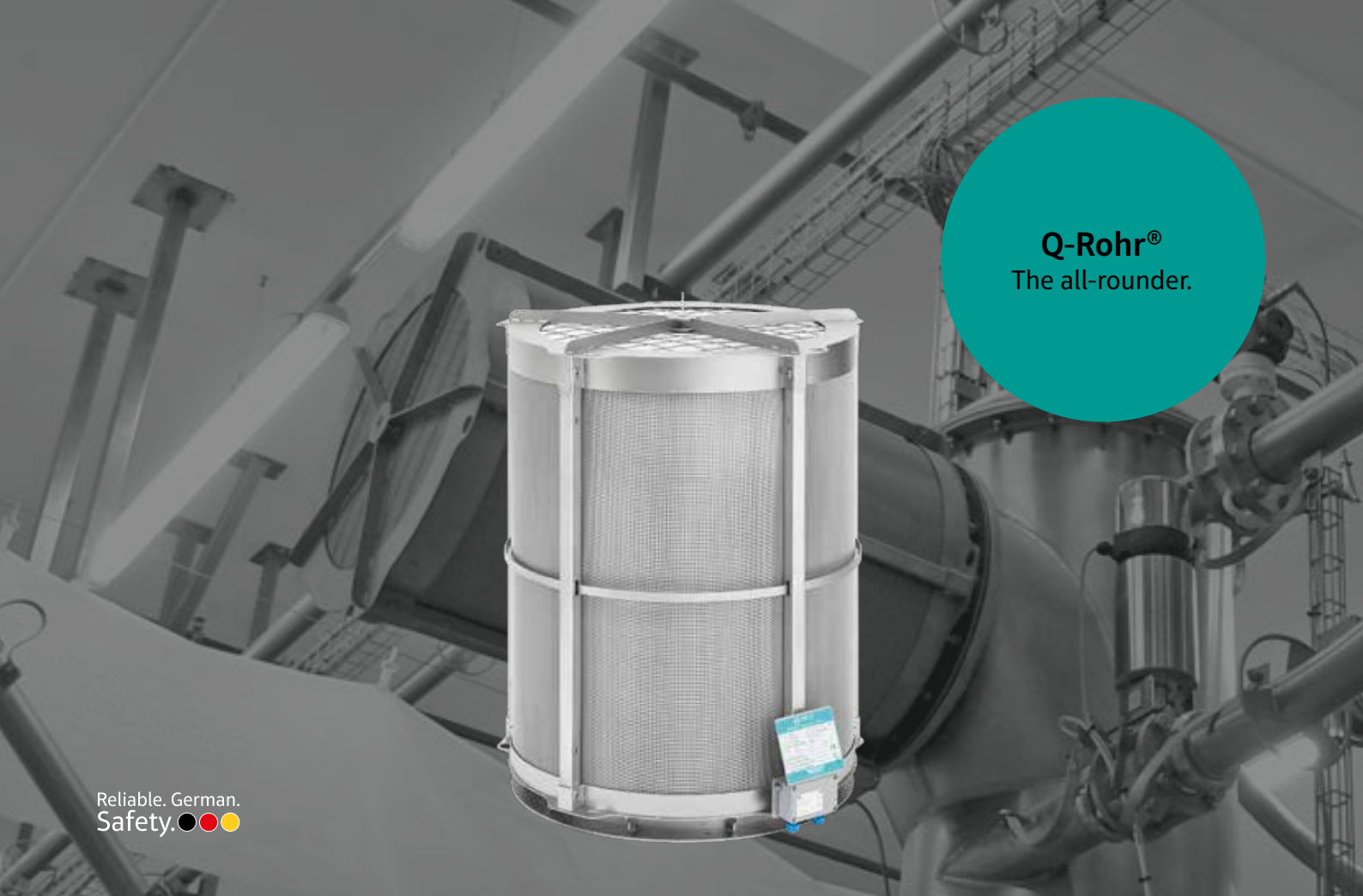
As early as 1988, REMBE® developed the first flameless explosion venting system. It was based on a process in which the flames are cooled extremely efficiently in the mesh filter of the flame absorber and extinguished immediately. The typical pressure waves and noise pollution in the production hall that occur during an explosion are reduced to a harmless level. This guarantees maximum protection for employees and, in addition, allows the production plant to be set up in a process-optimised manner.

## Advantages

- ✓ focus on optimising the design of their processes and plants for maximum efficiency.
- ✓ flame- and dust-free explosion venting.


Flameless indoor explosion venting consigns expensive protection systems with complicated vent ducts to the history books. Companies are once again free to focus on optimising the design of their processes and plants for maximum efficiency.

This form of flame- and dust-free explosion venting is the safest and most cost-effective solution for indoor use.



## Q-Rohr®

The all-rounder.

Reliable. German.  
Safety. 

The Q-Rohr® enables you to implement flame arresting and particulate retention explosion venting in closed rooms. **Safety and operating efficiency go hand in hand.** No complicated ducts for outdoor venting or associated restructuring of production equipment are required. **With the Q-Rohr® there is now nothing to prevent you from using the optimum layout for your production plant while guaranteeing the best possible explosion safety.** In addition, Q-Rohr® is unrivalled in terms of running costs. Eliminating vent ducts saves you money not only on installation but also on servicing and maintenance. Q-Rohr® is also suitable for metal dusts, gas and hygienic applications. Q-Rohr® is available in the sizes DN 200 to DN 800. Customised versions up to DN 1400 are also possible.

### Application

The Q-Rohr® is ideal for indoor plants that are at risk of dust and gas explosions. Many new plants are equipped directly with the Q-Rohr® as it offers a wide range of flexible installation options. Retrofitting is also simplicity itself. **The Q-Rohr® can be used to protect filters, dryers, cyclones and it can be used with gases, hybrid mixtures, metal dusts, melting dusts or fibres.**

Optional sanitary cover prevents accumulation/contamination of the Q-Rohr® flame trap mesh in dusty areas.

### Mechanism

The special stainless steel mesh filter inlet developed by REMBE® cools the hot flame gases extremely efficiently (up to 1.500 °C (2.732 °F) for metal dusts). This reduces the volume of gas ejected and extinguishes the explosion.

### Applications + Industries

Aspiration plants, breweries, chemical industry, elevators, filters, conveyors, wood processing industry, food production, food, mixers, mills and grinding plants, recycling, screens, silos, spray dryers, destoners, animal feed production, pharmaceutical industry

### Advantages

- ✓ **Perfect protection of the surrounding area.**  
Guaranteed flame arresting and particulate retention – no hazardous pressure wave effects.
- ✓ **REMBE® is the first manufacturer in the world to be certified for metal dusts.**
- ✓ **The complete production process remains in the building.**
- ✓ **No running costs** for vent ducts or external maintenance, a visual inspection is sufficient.
- ✓ The Q-Rohr® is a **flexible solution** – it can even be used in the middle of your production halls. Proximity to an external wall is not required.



Q-Rohr® with  
Sanitary Cover



The stainless steel mesh filter of the Q-Rohr® protects installations and their surroundings from the impact of an explosion.

- ✓ **Integrated signalling** unit for reliable monitoring.
- ✓ **Noise level and rise of pressure typically associated with explosions are greatly reduced** to an acceptable harmless level.
- ✓ **Immediately reusable** and operational after cleaning of the flame filter and replacement of the explosion vent.
- ✓ **Process-optimised plant layout.**
- ✓ **No external maintenance costs.**

The combination of the Q-Rohr® and isolation systems prevents pressure waves and flames propagating to other parts of the plant.

## Certification



Meets the requirements  
of **NFPA 68**



**Germanischer Lloyd**  
Q-Rohr® 19496-11 HH



FM Approved

## Patents

DE 38 22 012  
US 7,905,244

## Certified in accordance with

EN 16009  
EN 14797



**ATEX**  
EU-type examination  
certificate no.  
IBExU 11 ATEX 2152 X



**ATEX**  
EU-type examination  
certificate no.  
IBExU 13 ATEX 2085 X



**ATEX**  
EU-type examination  
certificate no.  
IBExU 13 ATEX 2086 X



**ATEX**  
EU-type examination  
certificate no.  
IBExU 13 ATEX 2027 X

## SIL-Equivalent

SIL-Level 2



## Q-Box® R3leaf™

Flameless venting



Reliable. German.  
Safety. ●●●●

The Q-Box® R3leaf™ is designed for dust explosion-prone applications of low design strength and the need for large vent areas such as required for filters, dryers, sifters, elevators or silos. The Q-Box® R3leaf™ complements the product line of REMBE® flameless explosion venting devices as it is optimised in terms of performance and sustainability. Based on systematic development, the venting efficiency, the maximum protected volume as well as the  $K_{St}$  value could be improved significantly. Hence, less flameless explosion venting devices are required, especially for larger vessels.

### Applications + Industries

Aspiration plants, breweries, elevators, filters, conveyors, wood processing industry, food production, food, mixers, mills and grinding plants, recycling, screens, silos, destoners, spray dryers, animal feed production

### Mechanism

The Q-Box® R3leaf™ guarantees safe explosion venting in working areas. Like the Q-Rohr®, the flame gases are instantly extinguished inside the Q-Box® R3leaf™ by efficient cooling.

### Advantages

- ✓ Proven reliability and safety in a new, more efficient and sustainable design
- ✓ Maximum process efficiency for the protected plant due to the flexible use
- ✓ Perfect protection for people, the environment and the plant
- ✓ Economical alternative to vent ducts
- ✓ Maximum reduction in TCO (total cost of ownership) thanks to low maintenance requirements
- ✓ Long service life due to increased corrosion resistance
- ✓ Sustainability through product design, logistics and maximum venting efficiency
- ✓ Easier recycling compared to painted steel
- ✓ No false activations

The combination of the Q-Box® R3leaf™ and isolation systems prevents pressure waves and flames propagating to the vicinity or other interconnected parts of the plant.

### Certifications



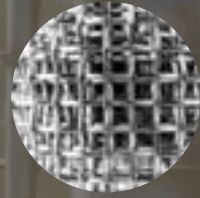
Meets the  
requirements of  
NFPA 68



ATEX  
EU type examination  
certificate no.  
BVS 23 ATEX H 033 X

**Certified in  
accordance  
with**

EN 16009  
EN 14797



The stainless-steel mesh filter in the Q-Box® R3leaf™ protects the plant and surroundings from the effects of an explosion.



”

**EGGER operates a fully integrated wood factory that manufactures and finishes particle and MDF board, laminate flooring and sawn timber. We have used venting equipment from REMBE® to protect our employees and equipment for many years. We are impressed by the expert advice provided by their consultants and the safety concept, which has been tailored to our specific requirements.**



Ferdinand Martini,  
former safety specialist  
at EGGER

”

The stainless-steel mesh filter in the Q-Ball® E protects the plant and environment from the effects of an explosion.

**Q-Ball® E**  
Effective + ultra-  
lightweight solution  
for elevators.

Reliable. German.  
Safety. 

The Q-Ball® E guarantees safe explosion pressure relief in the operating area. Efficient cooling inside the Q-Ball® E prevents the flames from escaping and eliminates pressure effects as a result of the explosion.

The Q-Ball® E is suitable for flameless venting of mechanical conveyors with low design strength such as elevators. Explosions with  $K_{St}$  values up to 200 bar × m/s can be handled.

The connecting dimensions of the Q-Ball® E perfectly complement the standard sizes of mechanical conveyors such as elevators. This avoids the need for work-intensive adjustments of the flanges. Due to the low weight of the Q-Ball® E, any reinforcements of the conveyor's shaft also become unnecessary. With the newly developed principle of full body flameless venting, the Q-Ball® E ensures maximum relief efficiency. The necessary relief area can thus be reduced to a minimum.

### Application

The Q-Ball® E is suitable for low-strength plant components as well as plants at risk of dust explosions such as elevators with  $K_{St}$  values  $\leq 200$  bar × m/s.

### Applications + Industries

Aspiration plants, breweries, elevators, filters, conveyors, wood processing industry, food production, food, mixers, mills and grinding plants, recycling, screens, silos, destoners, spray dryers, animal feed production

### Mechanism

The flame gases, which can reach temperatures of up to 1,500°C, are cooled extremely efficiently in the special stainless-steel mesh filter inlet developed by REMBE®. This reduces the volume of escaping gas and thus extinguishes the explosion.

### Advantages

- ✓ **Maximum venting efficiency** through a full body flameless venting.
- ✓ **Easy maintenance** through an integrated inspection opening.
- ✓ **Integrated signalling** for a reliable monitoring.
- ✓ **Can be utilized flexibly indoors and outdoors.**
- ✓ **Easy retrofitting** of existing vent panel installations possible.

Used in combination, the Q-Ball® E and isolation systems prevent the propagation of pressure and flames to other parts of the system.

### Certifications



Meets the  
requirements of  
**NFPA 68**



**ATEX**  
EU-type examination  
certificate no.  
DNV 25 ATEX 68991X


**Certified in  
accordance  
with**

EN 16009  
EN 14797



The stainless-steel mesh filter in the Q-Box® S protects the plant and environment from the effects of an explosion.

**Q-Ball® S**  
Stable + ultra-lightweight solution for oscillating screens + vibrating fluid beds.

Reliable. German.  
Safety. 

The Q-Ball® S guarantees safe indoor explosion venting in the operating area. An escape of the flames as well as pressure effects as a result of the explosion are prevented inside the Q-Ball® S by efficient cooling. A specially designed substructure and minimal power-to-weight ratio allow the Q-Ball® S to be attached directly to the oscillating system. There are no costs for extensions or conversions with the application of the newly developed **spherical quenching factor**, the Q-Ball® S ensures **maximum venting efficiency**. The required venting area can thus be reduced to a minimum.

### Application

Unlike conventional flameless explosion venting systems, the Q-Ball® S was specially developed for oscillating and vibrating plant components with high dynamic requirements and  $K_{St}$  values  $< 265 \text{ bar} \times \text{m/s}$ .

### Applications + Industries

Aspiration plants, breweries, elevators, filters, conveyors, wood processing industry, food production, food, mixers, mills and grinding plants, recycling, screens, silos, destoners, spray dryers, animal feed production

### Mechanism

The hot flame gases, which can reach  $1,500^\circ\text{C}$ , are cooled extremely efficiently in the special stainless-steel mesh filter corpus developed by REMBE®. This reduces the escaping gas volume and thus extinguishes the explosion.

### Advantages

- ✓ The only approved **flameless explosion venting for oscillating and vibrating systems** with high dynamic requirements.
- ✓ **Maximum venting efficiency** due to spherical quenching factor.
- ✓ **Easy maintenance** due to integrated inspection opening.
- ✓ **Integrated signalling** for reliable monitoring.
- ✓ **Can be used flexibly indoors and outdoors.**
- ✓ **Simple retrofitting of existing explosion vent installation possible.**

Used in combination, the Q-Ball® S and isolation systems prevent the propagation of pressure and flames to other parts of the system.

### Certification



Meets the requirements of  
**NFPA 68**



**ATEX**  
EU-type examination  
certificate no.  
DNV 25 ATEX 63910X

**Certified in  
accordance  
with**

EN 16009  
EN 14797



# Explosion Isolation: Comprehensive protection for your plant.

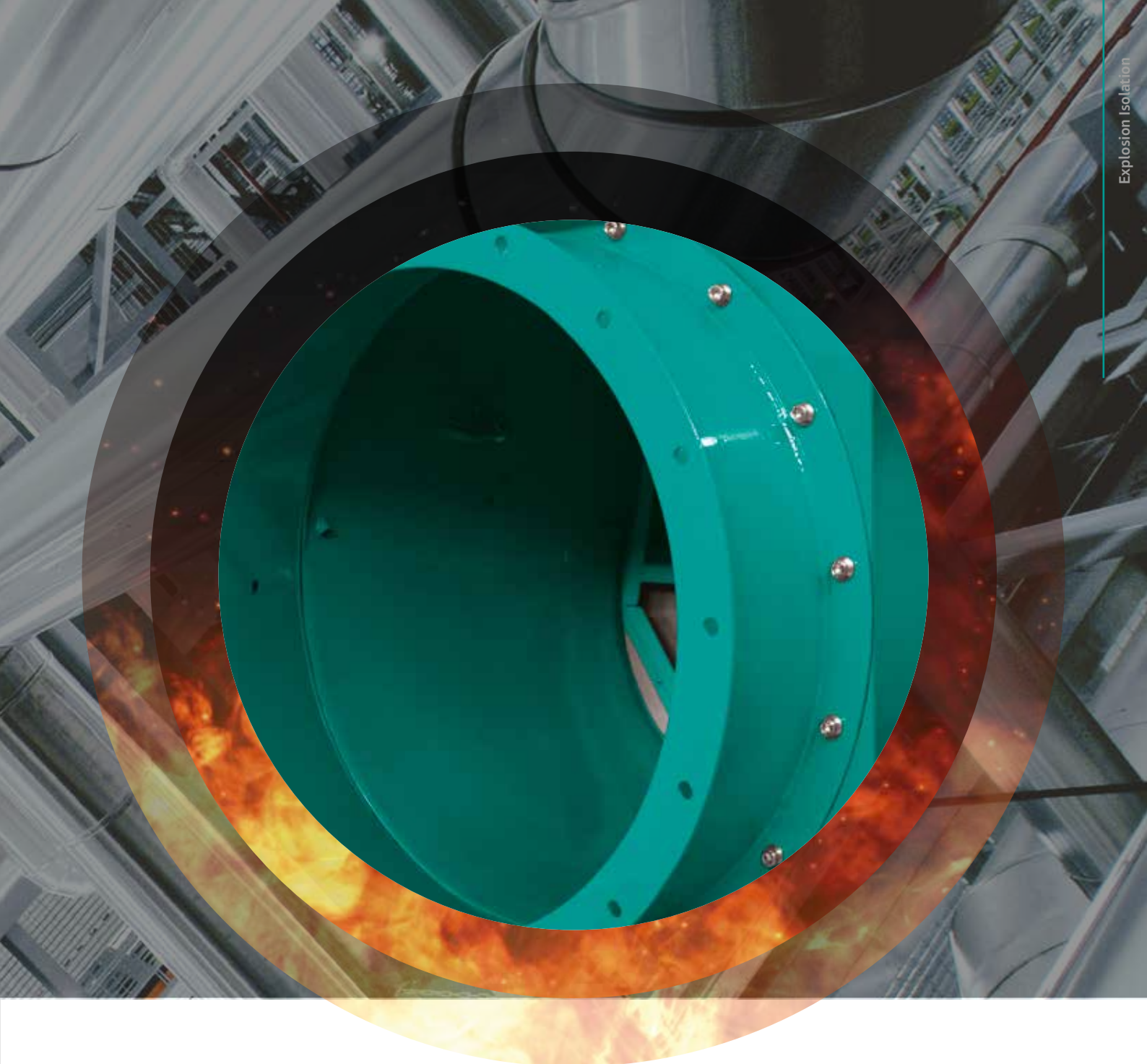
Explosion isolation systems use components such as quench valves and explosion isolation flap valve. Chemical extinguishing barriers are also commonly used to smother the explosion flames. Valves and extinguishing barriers are capable of isolating components in both directions simultaneously. The objective of explosion isolation or decoupling is to protect adjacent parts of the plant and prevent the explosion from propagating. Explosion isolation is mandatory – secondary explosions in interconnected vessels would cause a high risk.

Active systems have detectors or sensors which register the pressure rise or flames and trigger countermeasures, e.g. closing a valve.

Passive isolation systems react simply due to the effect of the explosion. Their structural design prevents flames and pressure waves from spreading.

Explosion safety from REMBE® is more than an individual product – it is always a complete solution. There is no other way that we can guarantee the safety of your employees and provide full protection for your plant. This is why venting and isolation must always work hand-in-hand for effective explosion safety – no ifs or buts.





### Product selection guide

Applications	EXKOP® QV II, QV III	Q-Flap RX™	VENTEX®	Q-Bic™	RSV**	REDEX® Slide*	REDEX® Ball*
Vertical pipes	✓		✓	✓	✓	✓	✓
Horizontal pipes	✓	✓	✓	✓	✓	✓	✓
Pneumatic conveyor lines	✓			✓	✓	✓	✓
Aspiration lines	✓	✓	(✓)	✓	✓	✓	✓
Chutes + rectangular ducts				✓			
Air intake openings	✓	(✓)	✓		✓	✓	✓
Mechanical conveyors				✓			
Multi-inlet pipes	(✓)			✓	(✓)	(✓)	(✓)

(✓) May only be used in special cases.

\* also suitable for highly abrasive media.

\*\* can withstand maximum explosion pressure.




## EXKOP®

### System

Space-saving,  
bidirectional  
isolation.

The heart of the EXKOP® system is the controller which is monitoring the process via sensors and will activate the connected isolation devices.

Reliable. German.  
Safety. 

This system isolates plant components in both directions and comprises a self-monitoring EXKOP® controller with data storage and one or several quench valves.

### Application

EXKOP® systems are suitable for **filling lines, aspiration lines and pipes, pneumatic conveyor lines and air intake openings**. As well as operating as a decoupling system for dust-bearing plants, the EXKOP® system can also be used as a spark arrester or overpressure limiter.

### Applications + Industries

Aspiration plants, breweries, elevators, filters, conveyors, wood processing industry, food production, food, mixers, mills and grinding plants, recycling, screens, silos, destoners, spray dryers, animal feed production

### Mechanism

In the event of an explosion, the EXKOP® controller receives a trigger signal (e.g. from the signalling unit of the Q-Rohr® or an explosion vent, from a pressure switch or spark detector) and activates the connected EXKOP® quench valves. These close within a few milliseconds and thus protect adjacent plant components. After being triggered, the quench valves can be put back in operation once again at the touch of a button.

### Advantages

- ✓ **Effective protection** through high-speed detection of explosion events.
- ✓ **Returns to operation** again immediately after triggering.
- ✓ **Self-monitoring safety electronics** with operating data storage.
- ✓ Modem-compatible system analysis allows for **remote maintenance** (optional).
- ✓ **Instant status** forwarding to customer PLC (Alarm, failure, maintenance, etc.).
- ✓ Processes wide range of trigger signals for **easy retrofitting** to existing plants.
- ✓ **Fail Safe mechanism** automatically closes the valve if the power/compressed air fails or the valve is manipulated.
- ✓ **Reliable, process-optimised protection** against explosions in adjacent plant components.
- ✓ **Avoid downtime** after the mechanism is triggered.

The EXKOP® system is ideal in combination with explosion vents or flameless explosion venting solutions.



Isolation of a pipe with EXKOP® QV II.

## Certifications



ATEX

EU-type examination certificate no.

FSA 04 ATEX 1537 X

FSA 15 ATEX 1659 X

## Certified in accordance with

EN 16009

EN 14797

### EXKOP® controller

Product

Up to 3 quench valves

More than 3 quench valves

In- and Outputs configurable

Q-Bic™

Knife gate valve REDEX®, RSV

EXKOP® TriCon

(✓)\*

EXKOP® Express

✓

✓

✓

✓

✓

(✓) Can only be used in special cases

\* only QV II

### EXKOP® quench valve

Product

Pipe diameter up to 250 mm

Pipe diameter greater than 300 mm

Installation in hygienic Processes

EXKOP® QV II

✓


✓

EXKOP® QV III

✓

✓

**Q-Flap RX™**  
Effectively  
isolated.

Reliable. German.  
Safety. 

## Application

In the event of an explosion, the Q-Flap RX™ isolation flap valve effectively isolates plant components in almost all industrial sectors. The Q-Flap RX™ is also perfectly suited **for the aspiration lines of dust collectors and for the suction intake lines of mills.**

The nominal pipe sizes up to DN 400 are primarily used for decentralised extraction systems in the **pharmaceutical and chemical industries**, whereas nominal pipe sizes between DN 450 and DN 710 are mainly used for centralized dust extractors in the **grain and food industry**. Nominal pipe sizes from DN 800 to DN 1000 are common in the **wood and heavy industry**.

In order to meet the highly diverse requirements for these individual industries, the Q-Flap RX™ product range offers three different design versions. The nominal pipe sizes up to DN 710 feature an inspection flap, the larger nominal pipe sizes have a modular design. This ensures that a maintenance and servicing of any pipe size can be carried out easily.

## Applications + Industries

Aspiration plants, breweries, petrochemical, filters, wood processing industry, food production, mixers, mills and grinding plants, food, recycling, animal feed production

## Mechanism (DN 140 to DN 710)

During normal operation, the explosion isolation flap valve is kept open by the air flow of the system. When the system is shut down, the valve blade rests in an inclined position. In the event of an explosion, the valve blade is closed by the pressure wave of the explosion.

## Advantages

- ✓ **Quick maintenance without the need for a complete dismantling of the device**, simply by completely opening the inspection flap on pipe sizes up to DN 710.
- ✓ **Optionally: longer maintenance intervals** by integrating a supervision function.
- ✓ **Flexible use:** Q-Flap RX™ available up to DN 1000. More sizes available on request.

The Q-Flap RX™ ensures reliable explosion isolation to protect your plant and minimize the effects of an explosion.

## Certifications



Meets the  
requirements of  
**NFPA 69**



**ATEX**  
EU-type examination  
certificate no.  
DNV 25 ATEX 68995X  
(DN 140 bis 1000)

**Certified in  
accordance  
with  
EN 16447**



**VENTEX®**  
Isolation with  
explosion safety  
valve.



VENTEX® – Passive  
Explosion Isolation with  
swiss reliability.

VENTEX® valves are often used when **explosion-proof decoupling of pressurized containers** is required or **air supply openings** have to be secured effectively against flame and pressure discharge. The decades proven design offers you an effective, passive explosion safety solution. These valves can be controlled with or without external energy and offer simple and reliable explosion safety due to their extremely low response pressure and ease of maintenance.

### Applications

VENTEX® can be used in plants that process **combustible dusts** (incl. metal dusts), **gases** or **hybrid mixtures**.

### Applications + Industries

Aspiration plants, breweries, petrochemical, chemical industry, filters, wood processing industry, food production, mixers, mills and grinding plants, food, recycling, animal feed production, pharmaceutical industry

### Mechanism

Without air flow, the closing body is in the open position. In normal operation, the air flows around the open closing body. In the event of an explosion, the pressure wave presses the closing body against the closing-body gasket. The valve locks and thus prevents the propagation of flames and pressure waves.

### Advantages

- ✓ Low response pressure.
- ✓ Short mounting distance.
- ✓ Used for Dust- and/or Gasexplosion (Inkl. metaldust & hybrid mixtures).
- ✓ Passive closing principle.
- ✓ Bi-directional isolation.



### Certifications



ATEX  
EU-type examination  
certificate no.  
FSA 21 ATEX 1708 X

**Certified in  
accordance  
with**

EN 15089



**RSV**  
Active isolation  
at maximum  
explosion pressures.

RSV – Explosion Isolation  
with swiss reliability.

Whether it is silos, mills or extraction systems, our slide valves enable safe isolation, and are also available for demanding CIP, dust or gas applications. The RSV slide valve is suitable for the isolation of fully developed explosions to the maximum explosion pressure.

### Application

The RSV slide valve is available in nominal pipe sizes from DN 50 to DN 500. Slide valves are also particularly suitable for abrasive media. Thanks to their practical design, both knife gate valves are suitable for all flow velocities and dust loads, they do not cause any pressure drop, and can be installed vertically, horizontally or at any angle.

### Applications + Industries

Aspiration plants, breweries, chemical industry, petrochemical, food production, mixers, mills and grinding plants, food, silos, pharmaceutical industry, recycling, hydrogen

### Mechanism

The system to be protected is equipped with pressure and/or infrared detectors. These can detect an explosion and send a signal to the knife gate valve. Depending on the size, one or more gas generators are activated, which close the slide valve due to the generated pressure. The closed slider blade effectively prevents the propagation

of flames and pressure waves. Fast closing times also enable extremely short installation distances. During normal operation, the slide valves can be opened and closed pneumatically.

### Advantages

- ✓ Variably applicable.
- ✓ Extremely short closing times.
- ✓ Short installation distances thanks to a compact design.
- ✓ Flexible installation options at any angle.
- ✓ No loss of pressure.

### Certifications



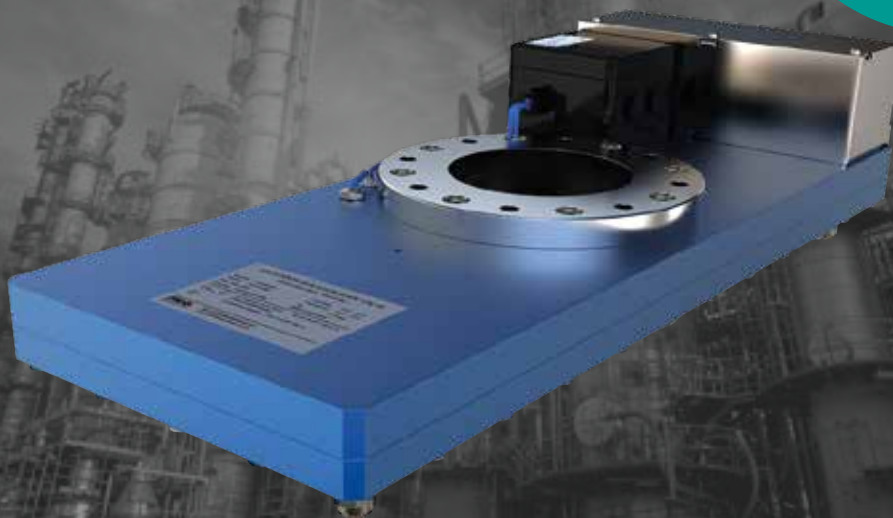
**ATEX**  
EU-type examination  
certificate no.  
FSA 17 ATEX 1669 X

**Certified in  
accordance  
with**  
EN 15089

## REDEX® Slide

Active isolation  
of abrasive  
media.

REDEX® Slide – Active  
Explosion Isolation with  
swiss reliability.



Whether it is silos, mills or extraction systems, our slide valves enable safe isolation, and are also available for demanding CIP, dust or gas applications. The REDEX® Slide has been specifically developed for the isolation of pressure-relieved devices with a reduced explosion pressure.

### Application

The REDEX® Slide is available in nominal pipe sizes from DN 50 to DN 150. Thanks to their practical design, both knife gate valves are suitable for all flow velocities and dust loads, they do not cause any pressure drop, and can be installed vertically, horizontally or at any angle.

### Applications + Industries

Aspiration plants, breweries, chemical industry, petrochemical, food production, mixers, mills and grinding plants, food, silos, pharmaceutical industry, recycling

### Mechanism

The system to be protected is equipped with pressure and/or infrared detectors. These can detect an explosion and send a signal to the knife gate valve. Depending on the size, one or more gas generators are activated, which close the slide valve due to the generated pressure. The closed slider blade effectively prevents the propagation of flames and pressure waves. Fast closing times also enable extremely short installation distances. During normal operation, the slide valves can be opened and closed pneumatically.

### Advantages

- ✓ Variably applicable.
- ✓ Extremely short closing times.
- ✓ Short installation distances thanks to a compact design.
- ✓ Flexible installation options at any angle.
- ✓ No loss of pressure.

### Certifications



ATEX  
EU-type examination  
certificate no.  
FSA 14 ATEX 1647 X

**Certified in  
accordance  
with**

EN 15089



# When it has to be pretty fast.



red dot design award  
winner 2020

Reliable. German.  
Safety. ●●●

**Q-Bic™**  
Active  
Isolation.

In practice, many vessels, silos and devices are connected by pipes, pneumatic conveyors and dust extraction or aspiration lines. If a dust explosion occurs, the flames and pressure waves can spread through these pipelines to other parts of the plant. Pre-compression and flame jet ignition exacerbate the explosion in connected vessels. The result is a series of secondary explosions that cause even more catastrophic damage.

An isolation system prevents explosions from propagating and thus minimises the consequences of an explosion. It ensures optimum protection for adjacent parts of the plant.

## Application

The explosion isolation system Q-Bic™ is specifically suitable for large pipes or complex shafts geometrics for example in conveyors or bucket elevators in various industry applications.

## Applications + Industries

Aspiration plants, breweries, chemical industry, petrochemical, filters, wood processing industry, food production, mixers, mills and grinding plants, food, pharmaceutical industry, screens, silos, destoners, spray dryers, animal feed production

## Mechanism

The Q-Bic™ explosion isolation system detects an explosion in its very earliest stages and extinguishes the explosion flames within milliseconds by introducing the extinguishing powder QXP™. The special nozzle system SJX™ ensures optimum distribution of the extinguishing powder in the pipe. Thus ensured a secured isolation.

## Advantages

- ✓ **Effective discharge of the QXP™ via the spin jet extinguish nozzle SJX™.**
- ✓ Blue-Green extinguishing powder QXP™ prevents cross contamination after activation.
- ✓ Electrical monitored pressure gauge.
- ✓ Easy handling due to integrated transport holder.
- ✓ **Most cost-effective way to isolate large pipes.**
- ✓ **Flexible use due to variable mounting distances.**
- ✓ Suitable for use at ambient temperatures from -20 °C to +50 °C.
- ✓ The assembly materials comply with the hygiene standards in the in the food industry.
- ✓ **Smart triggering device without explosives simplifies import.**

The combination of Q-Bic™ and Q-Rohr® prevents pressure and flames from spreading to other parts of the system.

A man with short dark hair, wearing a black jacket over a black t-shirt and blue jeans, is sitting in a modern-style chair. He is gesturing with his right hand, palm facing up, while looking towards the camera. The background is a plain, light-colored wall. The overall tone is professional and conversational.

# Sustainable explosion safety starts with **trust.**

„In the global Trust in Professions 2018 ranking firefighters are ranked number one. And that is precisely how we see ourselves. We don't want to be considered an ordinary supplier, but rather a respectful

and value-adding partner – hence, sometimes selling starts by not selling but by consulting.“

Dr.-Ing. Johannes Lottermann, Chief Business Development Officer Explosion Safety





# Explosion Prevention: Warns you before things heat up.

Prevention either aims to eliminate combustible materials or explosive atmospheres or to safely exclude effective ignition sources. If the process itself may lead

to ignition risks, the use of ignition source control by preventative safety systems is obliged to reduce the risk for both, human beings and the installation itself.

The background image shows a complex industrial facility, likely a drying plant, featuring large horizontal cylindrical vessels, various pipes, and structural steel frameworks. A teal line graph is superimposed over the upper portion of the image, showing a fluctuating upward trend. The text is positioned in the lower-left area, with the last part of the sentence in teal to match the graph's color.

Ready for take-off:  
Explosion prevention  
for drying plants  
in new spheres.





**New**

**CO.Pilot**  
Combined  
CO-Detection and  
humidity  
measurement.

Industrial drying systems always harbor an increased risk of fires and explosions. The fire properties of the media change as a result of the removal of moisture. Especially in spray dryers, caking occurs due to the very high entry moisture in case of suboptimal process control. This caking can heat up in the course of operation up to the so-called Maillard reaction. This leads to an exothermal reaction between protein, carbohydrates and water. The resulting heat cannot be dissipated and accumulates until the medium starts self-combustion. If such glowing embers loosen or open, it can ignite existing explosive atmospheres and mixtures. The carbon monoxide (CO) concentration in the process is used as a parameter for early detection of such a situation.

### **Application**

The CO.Pilot is a detection system for monitoring of CO concentration in drying plants based on the tunable Laser absorption spectroscopy.

### **Mechanism**

With the help of the CO.Pilot, Maillard reactions, smoldering embers and fires within the processes and systems are detected at an early stage in order to prevent them out as an ignition source for a fire and an explosion. In addition to monitoring the CO concentration, the system also provides information about the moisture content of the process air so that your process can always be optimally controlled.

### **Applications + industry**

Aspiration plants, chemical industry, petrochemical, filters, conveyors, food production, mills and grinding plants, food, pharmaceutical industry, spray dryers, flash dryers, animal feed production

### **Advantages**

- ✓ Unsurpassed precision in the large measuring range (0-1000 ppm).
- ✓ CO and humidity measurement combined.
- ✓ No cross-sensitivities with other gases.
- ✓ Constant comparison with Hitran database.
- ✓ Fast reaction time.
- ✓ Can be adapted to the type of firing by the RFA (REMBE® flow algorithm).
- ✓ Optimised sampling.
- ✓ Checking of all gas streams.
- ✓ Adjustment of the limit values depending on the process parameters.
- ✓ Display of the respective absolute measured values in real time.

# Electrostatic grounding.

**SYMEGA.VO**  
Grounding  
monitoring system

## Application

The SYMEGA.VO self-monitoring grounding system was developed for grounding when filling or emptying mobile containers. As part of a progressive automation process, Symega systems are primarily used in the chemical, food, pharmaceutical, cosmetics, oil and gas and timber industry.

## Applications + Industries

Brewery, chemical industry, petrochemical, hazardous goods containers, wood processing industry, food production, food, oil and gas industry, petrochemical plants, pharmaceutical industry, refineries, recycling, silos, animal feed production, hydrogen

## Mechanism

The SYMEGA.VO grounding monitoring system contributes significantly to plant safety through protection against electrostatic charge in potentially explosive atmospheres. It establishes a safe connection between stationary and mobile, metallic or conductive and dissipative objects and a good earth. The built-in LEDs signal the actual status of the grounding process. Thanks to the two built-in potential-free changeover contacts, this status can be fully integrated into the process control system and therefore represents the highest possible level of safety. The measurement can be carried out in two variants:

low-resistance for potential equalisation of 0-1 k $\Omega$  or 103  $\Omega$  for all metallic objects and high-impedance for potential equalisation of 0-3 M $\Omega$  or 3 x 106  $\Omega$  for type C big bags.

## Advantages

- ✓ Easy on-site installation thanks to its **compact design**.
- ✓ Approved for use in **hazardous zones 1 and 21 areas**.
- ✓ Integrated signalling for **reliable monitoring**.
- ✓ Connection of up to 4 objects.
- ✓ One hardware for all object types.
- ✓ Maximum protection against electrostatic discharge during the process.

## Certifications



ATEX  
EU-type examination  
certificate no.  
TPS 18 ATEX 92819 002 X





# Accessories for easy grounding of small containers with the Q.Crodile range.



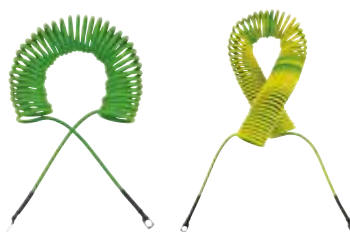
## Q.Crodile Grounding clamps

Approved and reliable grounding clamps are characterised by their high clamping forces, and ability to penetrate through existing insulating layers such as dirt, grease, paint and rust. This establishes an effective metal-to-metal connection and guarantees a secure grounding.



## Grounding cable

The clamps can be supplied individually or optionally in combination with the matching grounding cables. This enables a location-appropriate selection. The single-core, spiral grounding cables are available in different lengths.



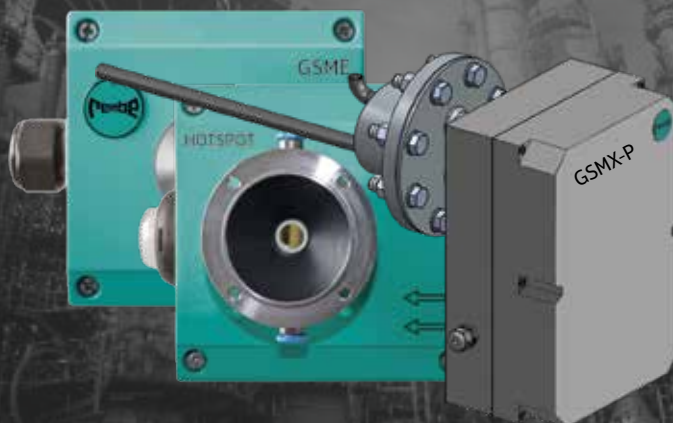
## S-RL grounding reel

When grounding an object more than 5 m away from the grounding point, we recommend the use of grounding reels. Through their locking mechanism, the grounding reels have no resetting force, which means that even smaller, lighter objects can be safely grounded. In addition, the cable is rolled back into the steel housing after the utilization in order to avoid tripping hazards.



# Early detection of explosions + fires in dust-handling equipment.

**GSME,  
HOTSPOT,  
GSMX-P**  
to safeguard  
your processes.



## Application

The HOTSPOT thermographic detector and the compact GSME pyrolysis gas detector are specifically tailored for the early detection of hot surfaces and fire in dust-handling equipment, such as silos, dryers, mills, conveyors or dust collectors.

## Applications + Industries

Aspiration plants, battery and energy storage systems, breweries, chemical industry, petrochemical, elevators, filters, conveyors, wood processing industry, power plants, food production, mixers, mills and grinding plants, food, pharmaceutical industry, recycling, screens, silos, destoners, dryers (excluding spray dryer), animal feed production

## Mechanism GSME

The well-proven multi-criteria technology on a semiconductor basis already enables **foolproof early detection by the GSME** of all types of concealed and open **glowing embers and smouldering fires** in the emergent phase. The sensor elements of the detectors are **protected from dust and moisture** with the unique **diffusion filter technology**.

## Mechanism HOTSPOT

HOTSPOTS are freely parametrisable **infrared camera systems** in the form of detectors with **integrated signal evaluation**. In addition to process monitoring, they are also particularly suitable for the detection of **overheating plant components and glowing embers**.

## Mechanism GSMX-P

Based on the proven GSME technology, the GSMX-P pyrolysis gas detector has been developed. The new design now also allows applications in ventilation pipes up to DN 1000.

Due to its passive venturi effect, even small quantities of gases resulting from combustion can be detected in a long-term stable manner.

An application after a filter/a dust collector allows both the monitoring of the filter and all machines connected to it, such as shredders, pellet presses, mills, conveyors and more.

## Advantages

- ✓ Explosion prevention with **early detection of smouldering and developing fires (GSME)**.
- ✓ **Detection of glowing embers, flames and hot surfaces** with HOTSPOT.
- ✓ **Highest moisture and dust resistance** with unique diffusion filter technology.
- ✓ Approvals in accordance with **ATEX and IECEx**.
- ✓ **Comprehensive explosion safety concepts** through the integration of the detectors into the REMBE® EXKOP® Express control unit.



# Digital Explosion Safety: Safety at a glance.



iQ Safety Cockpit™

Reliable. German.  
Safety. ●●●

With the iQ Safety Cockpit™, REMBE® offers a system to ensure that plants can be operated more safely and more reliably in the future. In addition to the system statuses, which can be monitored in real time, if desired, even mobile from anywhere in the world, the plant operator on site is relieved of the pressure to initiate the important and correct first steps.

## Application

The REMBE® iQ Safety Cockpit™ can be used in addition to the process display in the control centre or another manned position.

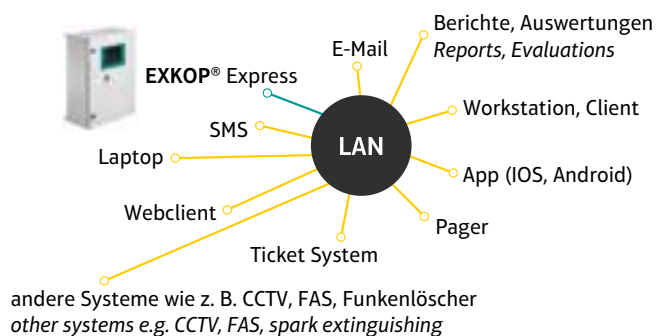
In the event of a system disruption or explosion event, the operator can be instructed, in a targeted manner, using pre-defined and individually plant-configured applications and process scenarios according to the emergency management procedures.

## Enhanced mechanism

Since the REMBE® iQ Safety Cockpit™ can be used with any analogue or digital signal, there are almost unlimited possibilities for use. In addition to the autonomous protective systems such as active explosion isolation systems or safety accessories such as the REMBE® NIMU for overpressure rupture discs, GreCon spark extinguishing systems, camera systems or even fire detectors can be combined and connected to the cockpit: Safety at a glance.

## Advantages

- ✓ **Optimal personal and plant safety** through direct notification in case of a plant disruption to the desired communication medium.
- ✓ **Quick response time** by a prepared emergency management.
- ✓ **Reduced downtime** due to optimised and targeted determination of the cause.
- ✓ **Practical implementation** in any plant area thanks to the customised solutions.
- ✓ **Continuous optimisation** of your processes through detailed documentation and evaluation of all results.

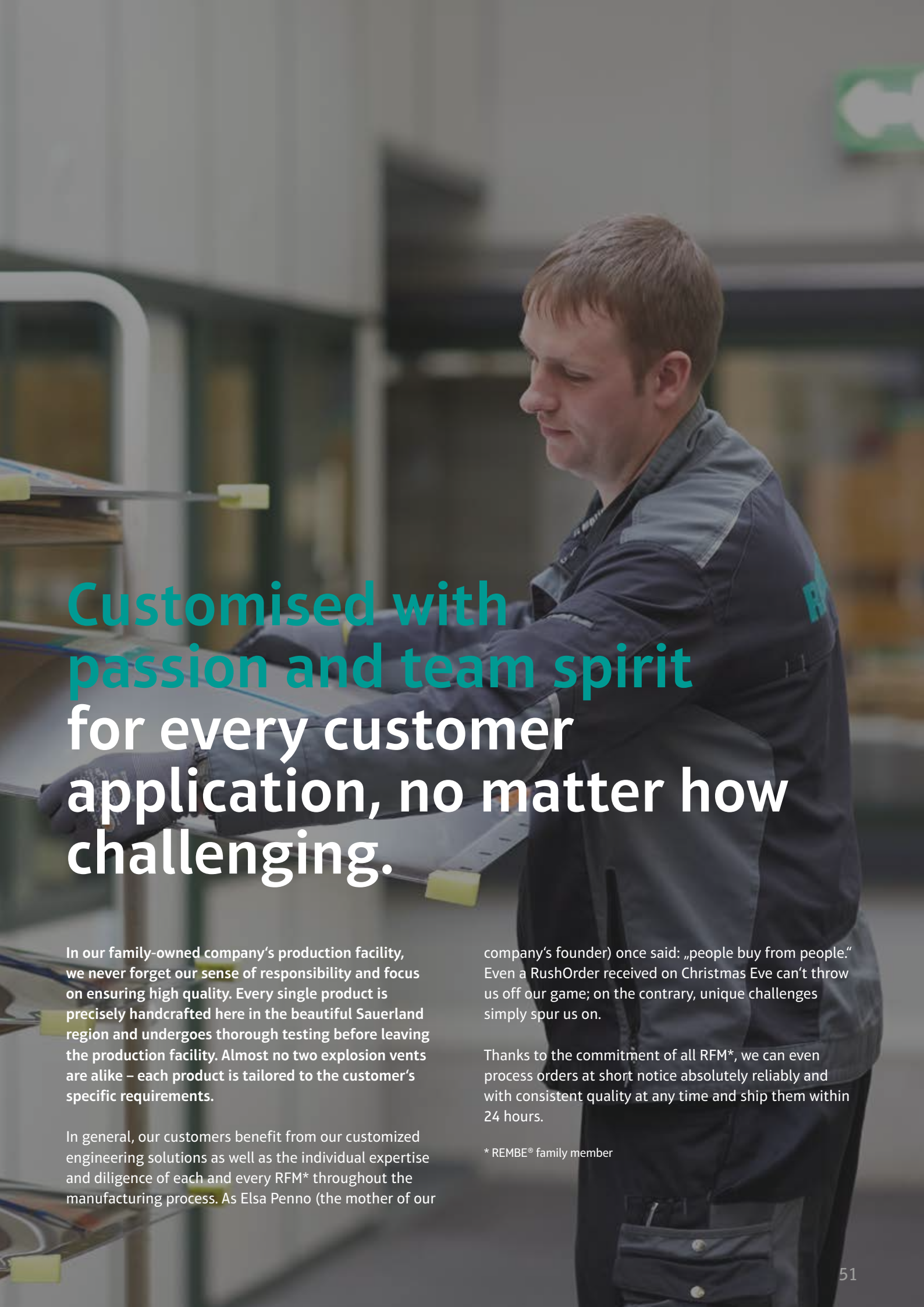




Our Products are

● ● ●  
engineered  
designed  
certified  
customized  
safe  
unique.





# Customised with passion and team spirit for every customer application, no matter how challenging.

In our family-owned company's production facility, we never forget our sense of responsibility and focus on ensuring high quality. Every single product is precisely handcrafted here in the beautiful Sauerland region and undergoes thorough testing before leaving the production facility. Almost no two explosion vents are alike – each product is tailored to the customer's specific requirements.

In general, our customers benefit from our customized engineering solutions as well as the individual expertise and diligence of each and every RFM\* throughout the manufacturing process. As Elsa Penno (the mother of our

company's founder) once said: „people buy from people.“ Even a RushOrder received on Christmas Eve can't throw us off our game; on the contrary, unique challenges simply spur us on.

Thanks to the commitment of all RFM\*, we can even process orders at short notice absolutely reliably and with consistent quality at any time and ship them within 24 hours.

\* REMBE® family member





Safety is for life.™

# Operational safety 5.0 is a huge responsibility. It is a task to which we have dedicated ourselves with unwavering commitment since 1973.

Our specialists pursue only one goal worldwide: the optimal protection of your plants and processes. You thus benefit from our decades of experience, which enable us to guarantee an honest risk analysis and high-quality products. With due care and responsibility, we focus on optimising your individual processes, production systems and products.

Choosing REMBE® means choosing seamless complete safety.

As an independent German medium-sized company, we can offer you products that are engineered in Germany for added safety. In addition, our experts in Process Safety and Explosion Safety are always ready to assist you: 365 days a year, 24 hours a day.

That's our promise.

## Consulting

We don't just work at our desks.

We also work on your premises.

Each production facility is different and has different requirements. This is why our experts have a close look at your entire plant with you to determine what's genuinely reasonable and what will be the best solution for you. It's your perfect investment in safety.

Solutions off the peg? Not from REMBE®.

Once we have looked at all the relevant documents, we will identify all the existing space for improvement and create a profitable safety policy for you that is perfectly geared to suit your company.

## Engineering

We don't just make recommendations.

We give you the best solution.

From the paper to production: you will have a safety system that is perfectly tailored to suit your processes and operational requirements.

Whether it's explosion safety or process safety, our engineering ensures that you get the best solution at all times – Made in Germany.

## Products

Our products are not just excellent.

They are approved and certified.

Good is never good enough for us. So we keep putting ourselves on the test bench. The result is safety products licensed under globally recognised and industry-specific standards and regulations.

Moreover, we are the first company worldwide to offer SIL-equivalent parameters for mechanical (flameless) explosion venting products and the relevant signalling units. This high quality standard makes perfect economic sense for you. Our extensive product range ensures that you always receive the most cost-effective and reliable solution for your needs.

We take responsibility for the big picture. With us you get everything from a single source, thus ensuring good profitability and legal security.

## Service

Downtime costs money.

Our service never stands still – throughout the world.

From start-up to regular maintenance – we ensure that your production runs smoothly and without disruptions. All the products we produce can be identified by their batch and serial numbers for many decades, allowing exact reproduction.

If you're ever in a dreadful hurry, why not use our RushOrder Service? We can guarantee that you are given the highest priority and that your product is made straight away. Depending on the destination, we'll deliver within less than 24 hours. This also applies to spares and custom designs.

„REMBE® speaks your language“. Our global network of offices and our many international experts can guarantee that we always understand you and your needs. Just give us a ring.



## Quality

Our products are manufactured according to the latest, up-to-date international standards for management systems, pressure equipment and explosion safety devices. As well as prioritising quality and reliability, we attach major importance to eco-friendly technologies, manufacturing processes and compliance with standards. Highquality materials from controlled sources ensure that our products have exceptionally long lifetimes.

## Certifications

### Management systems

DIN EN ISO 9001:2015, KTA 1401, DIN EN ISO 14001:2015, DIN ISO 45001:2018

### Products

RL 2014/34/EU (ATEX), IECEx, RL 2010/35/EU (TPED), TR ZU 004/2011, TR ZU 012/2011, TR ZU 020/2011, FM Global, GL, EHEDG, RL 2014/68/EU (PED), ASME Sec. VIII, Div. 1, China Manufacture License, KOSHA (South Korea), TR ZU 010/2011, TR ZU 032/2013

### Testing standards

AD 2000-Merkblatt A1, EN ISO 4126-2, DIN EN 1127-1 /-13463/-14373/-14491/-14797/-14994/-15233/-16009/-16447, EN IEC 60079-0/-60079-11/-60079-31, VDI 3673, NFPA 68, NFPA 69, IEC 61508

### Approval of German Aviation Authorities

Known Consignor (DE/KC/00912-01 + DE/KC/00912-02)

### Approval of German Customs Authorities

AEO CS – Customs Simplifications/Security and Safety (DE AEOF 126130)

# Sustainability

**Bhopal, Chernobyl, Seveso, Fukushima Are synonyms for environmental catastrophes of past decades in the industry – with devastating consequences for man and nature. They could have all been avoided with reliable safety technology.**

REMBE®'s rupture discs and explosion protection systems safeguard processes in all industries worldwide and contribute every day to making this planet safer. We not only provide professional protection for your plant and machinery and protect human lives, but also avoid harmful emissions sustainably eliminate leaks and/or reduce leakages and/or reduce noise pollution. All REMBE® products meet the requirements for environmental protection through reducing emissions.

We at REMBE® achieve maximum impact in terms of environmental protection by doing even more intensively and sustainably what we have been what we have been

implementing successfully since 1973: Developing and producing protection systems for industry.

We only offer you a technically worthwhile, economic and sustainable solution for your application. Our objective is to produce even more sustainably. Certification according to DIN EN ISO 14001:2015 as well as environmental projects that we promote within the framework of the REMBE® green initiative demonstrate our commitment to more sustainability.

Visit [rembe-green.de](http://rembe-green.de) and learn more about all projects.



[rembe-green.de](http://rembe-green.de)

# Globally local: The REMBE® locations.

We have founded a number of companies around the world to provide you with local service. REMBE® is represented in more than 80 countries globally by well-known and long-standing partners.

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Safety is for life.™

Consulting. Engineering. Products. Service.

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