




Safety is for life.™

REMBE®
Explosion Safety

Hazard Oriented.
Risk Appropriate.
Reliable.
Sustainable.
Authentic.
Safe.



**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

- 06 | The **Principles** of Explosion Safety.
- 08 | **Typical Applications** for our Products.
- 10 | **Which is the best REMBE® Product** for your requirements?

Deflagration Venting with **Explosion Vents**

- 13 | Product selection guide.
- 14 | **EGV** for zero to low pressure or vacuum.
- 15 | **EDP** for low to medium vacuum + pressure cycling.
- 16 | **ODV, ODU** for high to absolute vacuum + alternating pressure.
- 18 | **EGV HYP** for hygienic applications with zero to low pressure or vacuum.
- 19 | **ERO** for hygienic applications with low pressure + pressure cycling.
- 20 | **TARGO-VENT** Add-on module to reduce the size of dangerous areas.
- 21 | Accessories.
- 22 | Standard sizes and vent areas at a glance.

Flameless Venting

- 26 | **Q-Rohr®** The all-rounder.
- 28 | **Q-Box® R3leaf™** Perfect protection of the environment.
- 30 | **Q-Ball® E** Effective + ultra-lightweight solution for elevators.
- 31 | **Q-Ball® S** Stable + ultra-lightweight solution for oscillating screens + vibrating fluid beds.

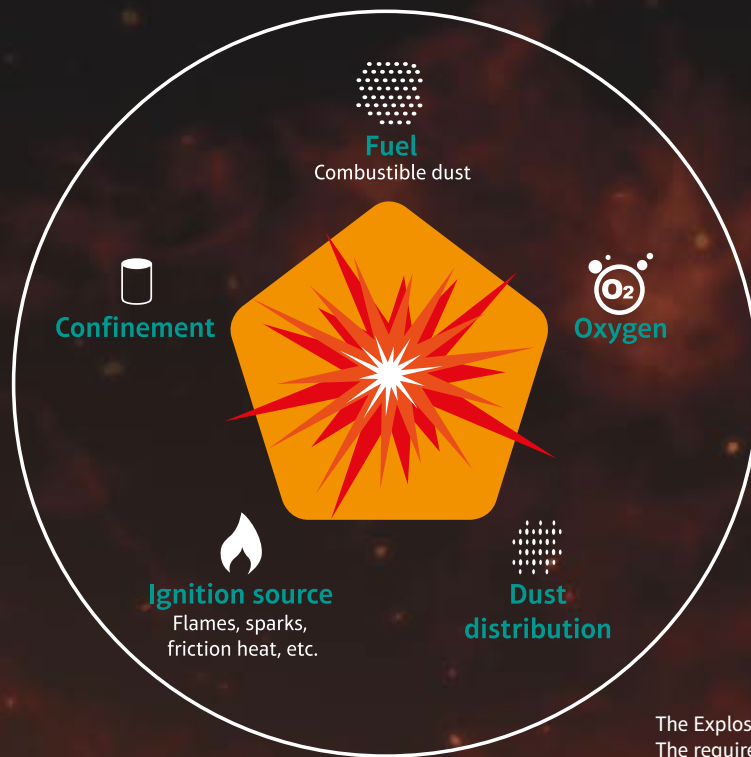
Explosion Isolation

- 33 | Product selection guide.
- 34 | **EXKOP® System** Space-saving, bidirectional isolation.
- 36 | **Q-Flap NX II** Effective Isolation
- 37 | **VENTEX®** Isolation with explosion safety valve.
- 38 | **RSV Active Isolation** even at maximum explosion pressures.
- 39 | **REDEX® Slide** Record closing times, flexible installation at any angle.
- 40 | **Q-Bic™** Active isolation.
- 41 | Sustainable Explosion Safety begins with trust.

Explosion Prevention

- 44 | **CO.Pilot** Combined CO-Detection and humidity measurement.
- 46 | Grounding monitoring with systems from the **SYMEGA series**.
- 47 | **Accessoires** for easy grounding of small containers with the Q.Crodile range.
- 48 | Early detection of explosions + fires with **GSME, HOTSPOT + GSMX-P**.
- 49 | **Digital Explosion Safety** with the **REMBE® iQ SafetyCockpit™**.

- 50 | **Handmade** with passion + team spirit.
- 52 | **Operational safety.**
- 54 | **Sustainability.**
- 55 | **The REMBE® locations.**



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 minimize 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 eliminated 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 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 reduces explosion damages to an acceptable level (see Step 3).

2. Prevention and Organizational 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:

Use only the appropriate equipment (e.g. category 1D) and prevent foreign objects from entering the product stream.

Organizational Measures:

Employees should always receive comprehensive training. Documented cleaning procedures and hot-work permitting programs 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 to prevent the internal pressure from exceeding an allowable limit. Breaking points, such as explosion vents in the walls of the plant or vessel, rupture when the pressure reaches a predefined level maintaining the internal pressure below the enclosure strength.

Flameless Explosion Venting:

This essentially uses the same principle as conventional explosion venting, however; it offers the advantage that the explosion can be safely vented indoors. The flame and pressure wave of the explosion is controlled which eliminates the risk of injury even when working in close proximity to the equipment.

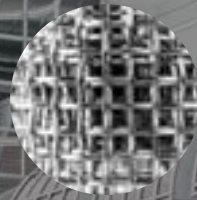
Explosion Suppression:

Electronic sensors detect the initiation of an explosion inside a vessel. Within milliseconds, the system controller triggers the injection of pressurized dry inerting powder. This suppresses the developing explosion before it can reach damaging pressures.

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 these two pages. Please note that industrial explosion safety does not follow a standard recipe but requires

a thorough analysis of each application. We will gladly support you in that respect.

Give us a call at: 704 716 7022 or contact us via email: hello@rembe.us

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 dust collectors especially during 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 safe explosion venting and protect the environment at the same time. If transport or traffic routes are located in the vicinity of the explosion venting, discharge a vent panel in combination with the TARGO-VENT add-on module should be used, to deflect the flame and pressure wave of the explosion to safe areas. Protective systems are used for isolation in order to prevent explosion propagation into interconnected areas. In this example, a Q-Flap NX II isolation flap valve and a VENTEX® isolation valve are shown.



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 protected with vent panels. Different vent panel 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 inhibiting the explosion from propagating further.



Elevators

Elevators convey large amounts of (combustible) bulk materials, and pose a high risk of explosion. The size and strength of the bucket elevator casing influences the number and mounting distance for the required protection 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 explosion propagation through connected aspiration lines.



Spray Dryers

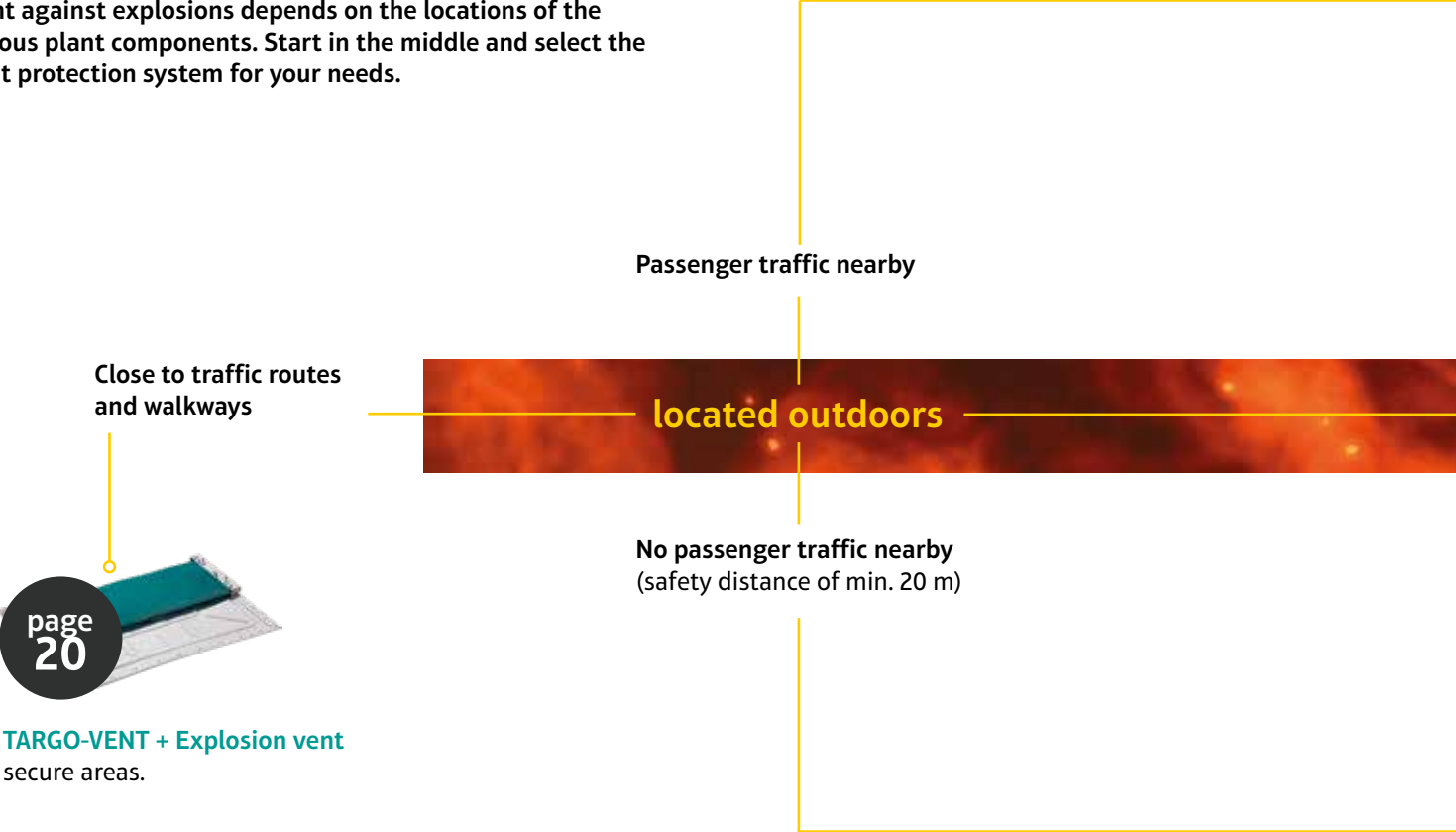
Usually, spray dryers are protected with a combination of explosion isolation systems and vent panels. If free and safe relief is not possible, the vent panels are replaced by flameless venting devices. To prevent explosion propagation, the connecting pipes are usually isolated with a Q-Bic™ chemical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

For hygienically demanding processes, the special vent panels EGV HYP and ERO are used. These CIP compatible vent panels prevent bacteria formation, material deposits and cross-contamination. To protect against the influence of weather, improve the hygienic interface, and reduce noise emissions, KAD covers are installed on vent relief ducts. The combination of ERO and Q-Rohr® also enables flameless venting of these hygienic applications.



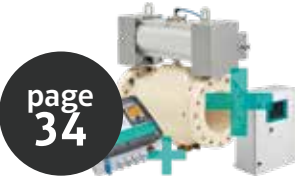
Which is the best REMBE® Product for **your requirements?**

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.



TARGO-VENT + Explosion vent
secure areas.

Explosion Isolation



page 34

EXKOP® System
Space-saving, bidirectional isolation.



page 36

Q-Flap NX II
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.

Flameless venting Explosion suppression

Well away from an external wall

Passenger traffic nearby

Close to an external wall
(1-6 m)

No passenger traffic nearby
(safety distance of min. 20 m)

Explosion

located indoors

Conventional explosion venting with explosion vents

page
12

Explosion vents
suitable for your
application.

page
12

**Explosion vents + vent
ducts**
divert the explosion to
the outside.



Deflagration Venting with Explosion vents.

In the event of a deflagration, an explosion vent will rupture protecting the vessel by limiting the overpressure within it. The explosion is released 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.

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 equipment.

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 the optimum explosion vent for your requirements.

You will receive a complete protection concept that is perfectly adapted to your process.

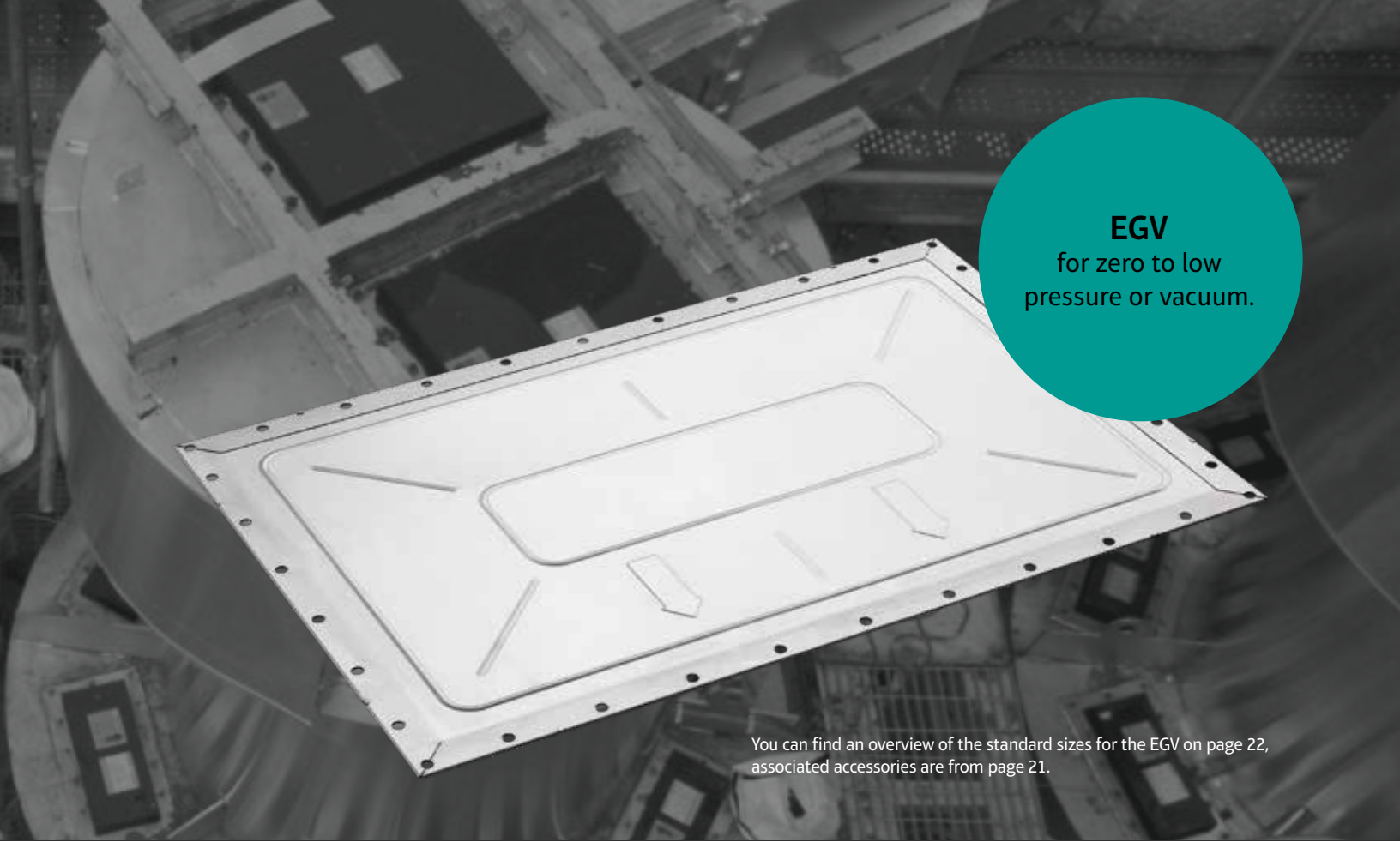
All REMBE® explosion vents are certified in accordance with directive 2014/34/EU (ATEX) and EN 14797. NFPA Compliant.



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 |
| 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.

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 shapes 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-pressurized processes and processes with low vacuum or overpressure (**up to 50% of static burst pressure**). The standard burst pressure is 0.1 bar at 71.6°F (22°C).

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 surfaces**. No complicated flange constructions required.
- ✓ **Adapts perfectly to your process** due to the wide range of EGV sizes and shapes available.
- ✓ **Quick and easy installation** since 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 due to condensation.

Certification



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

**SIL
equivalent**

SIL 4



Meets the
requirements of
NFPA 68

EDP
for low to medium
vacuum and
pressure cycling.

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

Application

The REMBE® EDP domed, single-layer explosion vent 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 71.6 °F (22 °C).

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



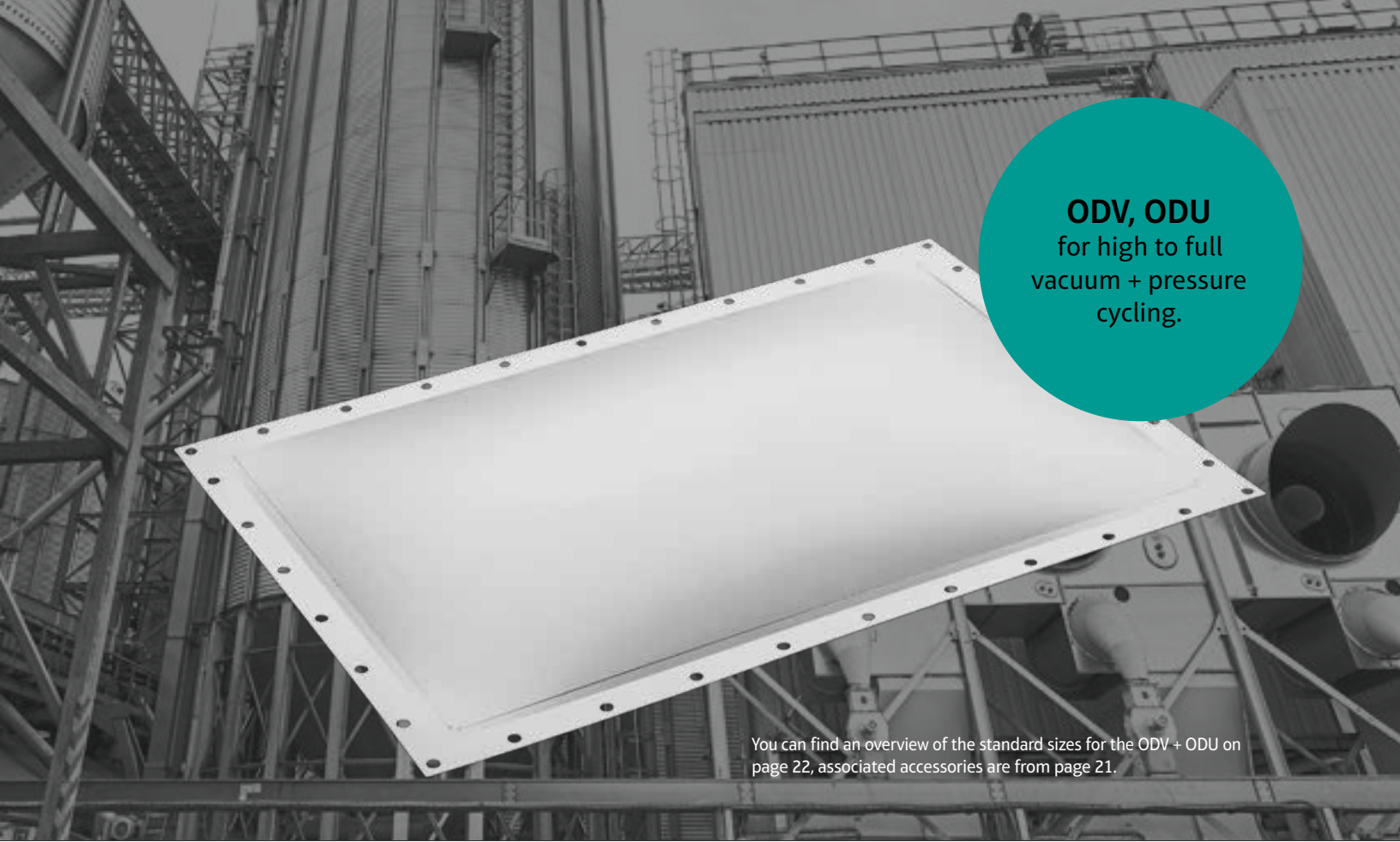
ATEX
EU-type examination
certificate no.
FSA 04 ATEX 1538 X

SIL
equivalent

SIL 4



Meets the
requirements of
NFPA 68



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

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.

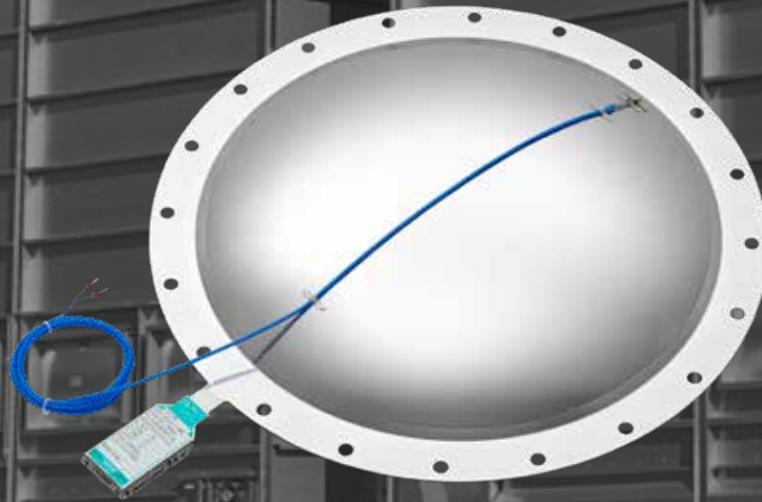
Applications

The REMBE® ODV explosion vent is used under demanding vacuum to overpressure cyclic operating conditions. It is 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 and pneumatic conveying applications. It is **vacuum resistant** and the standard explosion pressure is 0.1 bar at 71.6°F (22°C).

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 customized solutions possible.**

Certification



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

**SIL
equivalent**

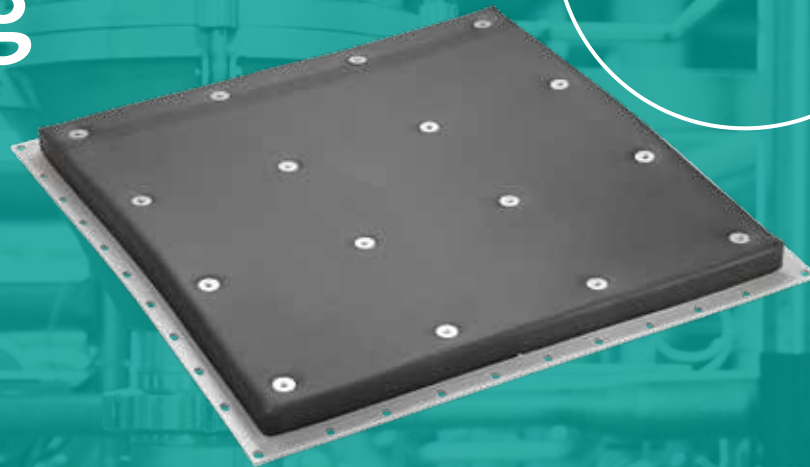
SIL 4



Meets the
requirements of
NFPA 68

Explosion vent for hygienically demanding processes.

EGV HYP
for low
vacuum.



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

With the EGV HYP vent panel, designed for production facilities with highly elevated hygienic requirements, REMBE® is able to provide safety and cleanliness. The innovative sealing feature of the EGV HYP provides continuous and reliable confidence against deposits and bacterial growth. Direct mounting of the vent panel to round vessel bodies is also possible with 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 **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. flow assisting hammers) through vent ducts.

Certification



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

SIL equivalent

SIL 4



Certified in accordance
with EHEDG



Meets the
requirements of
NFPA 68

ERO
for vacuum +
pressure cycling.



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



USDA approval

SIL equivalent

SIL 4



Meets the
requirements of
NFPA 68

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.

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

In the event of a deflagration outside a building, explosion vents open releasing the flame and pressure wave into the environment. Adequate safety areas are crucial. These areas 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 structures. 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 minimizes the size of the safety areas required.

Applications + Industries

Aspiration plants, breweries, filters, wood processing, 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 corrosion-resistant steel.

Certification



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

Accessories for optimum adaption to meet your requirements.



Signaling 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 signaling 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. Signaling 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.

SK Signaling Unit

This signaling unit uses the closed-circuit current principle.

A signaling 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 becomes interrupted.

RSK Signaling Unit

The RSK signaling unit can be retrofitted to explosion vents.

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

BIRD Signaling Unit

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

Mounting Frame and Flange

Galvanized or stainless steel.

Weather Resistant Insulation

Prevent condensation, improve thermal insulation and up to 50% noise emission reduction. 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 ² | | | | |
|--|---|--|---|---|-------------------------------------|
| | 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 | 1000 | 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 ² | | | | |
|--|---|--|---|---|-------------------------------------|
| | 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

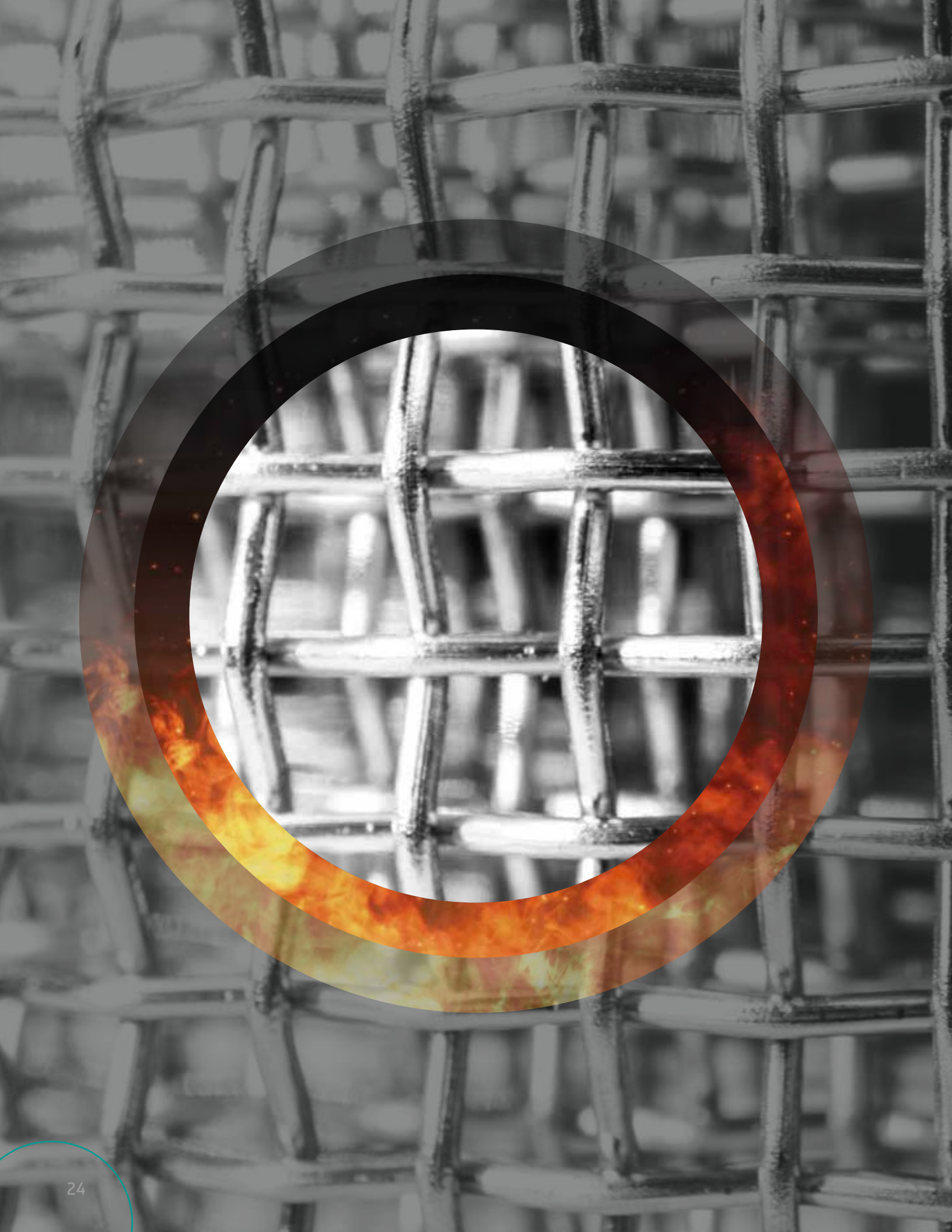
| DN [mm] | Effective venting area, cm ² | | | | | |
|---------|---|--|--------------|--|---|---|
| | ODV For high to full vacuum and pressure cycling | ERO For low to medium pressure, and alternating pressures | | EDP For low to medium vacuum and pressure cycling | EGV For zero to low pressure or vacuum | KAD weather cover for vent pipes/ducts |
| | | < 1000 mm WC | > 1000 mm WC | | | |
| 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 mm WC | | | | |
| 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 mm WC | | | | |
| 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 and ERO vent panels are fundamentally available in any size.

Standard sizes offer the best pricing and availability 586 × 920, 920 × 920, 1000 × 1000, 610 × 1118 and 915 × 1118.

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 arrestor and extinguished immediately. The typical pressure waves and noise pollution that occur outside the vessel 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-optimized manner.

Advantages

- ✓ focus on optimizing process and plant design for maximum efficiency.
- ✓ flame- and dust-free explosion venting.

Flameless indoor explosion venting makes expensive protection systems and complicated vent ducts a thing of the past. Companies are once again free to focus on optimizing 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.

The Q-Rohr® enables you to implement flame arresting and particulate retention explosion venting inside facilities.

Safety and operating efficiency go hand in hand. No complicated ducts for outdoor venting or associated restructuring of production equipment is 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 unrivaled in terms of operating 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. Customized 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 fibrous dusts.**

The optional sanitary cover prevents fibrous dusts accumulation/contamination of the Q-Rohr® flame trap mesh in dusty areas.

Mechanism

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

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 reoccurring 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 signaling unit** for reliable monitoring.
- ✓ **Noise level and pressure rise 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-optimized plant layout.**
- ✓ **No external maintenance costs.**

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

Certification

SIL-Equivalent

SIL-Level 2



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



Meets the requirements
of **NFPA 68**

Q-Box® R3leaf™ Flameless venting



The Q-Box® R3leaf™ is designed for dust explosion-prone equipment applications that include low design strength equipment and the need for large vent areas such as would be required for dust collectors, dryers, sifters, elevators or silos. The Q-Box® R3leaf™ complements the product line of REMBE® flameless explosion venting devices with its optimized performance and sustainability. By the application of innovative design and new materials, the venting efficiency, maximum protected volume and certified K_{st} range are significantly improved. This means fewer 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

Like its two previous models, the Q-Box® R3leaf™ guarantees safe indoor explosion venting in manned areas. Like the Q-Rohr®, the flames are instantly quenched inside the Q-Box® R3leaf™ by high efficiency cooling design.

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 from propagating to the equipment or other interconnected parts of the plant.

Certifications



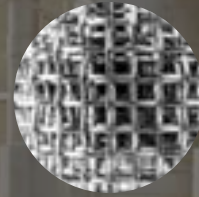
Meets the requirements of
NFPA 68



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 sawed 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.

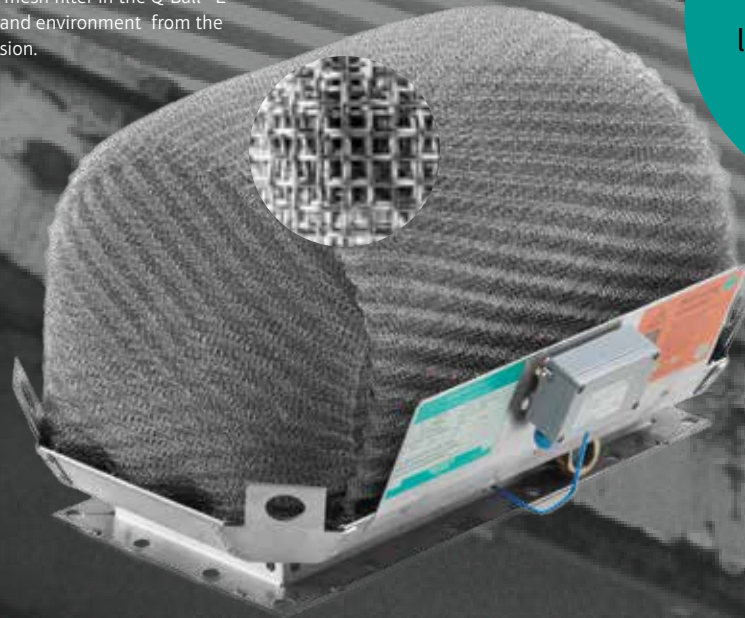
EGGER

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.



Supported by:



on the basis of a decision by the German Bundestag

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 resulting from 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 labor-intensive adjustments of the flanges. Due to the low weight of the Q-Ball® E, any reinforcements of the conveyor's casing are minimized. With the newly developed principle of full body flameless venting, the Q-Ball® E ensures maximum relief efficiency which reduces the quantity of required venting devices.

Application

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

Applications + Industries

Aspiration plants, breweries, elevators, filters, conveyors, wood processing, 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 2732°F (1,500°C), are cooled extremely efficiently in the special stainless-steel mesh filter developed by REMBE®. This reduces the volume of escaping gas and thus extinguishes the explosion flame discharge.

Advantages

- ✓ **Maximum venting efficiency** through a full body flameless venting.
- ✓ **Easy maintenance** through an integrated inspection opening.
- ✓ **Integrated signaling** 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

Certified in accordance with

EN 16009
EN 14797



ATEX
EU-type examination certificate no. GEX 19 ATEX 1001X



Meets the requirements of NFPA 68

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.

Supported by:



on the basis of a decision by the German Bundestag

The Q-Ball® S guarantees safe indoor explosion venting. Efficient cooling inside the Q-Ball® S prevents escaping flames and pressure effects that otherwise result from an explosion. A specially designed substructure and minimal power-to-weight ratio allow the Q-Ball® S to be attached directly to the oscillating system. The Q-Ball® S, with its newly developed spherical quenching factor, ensures maximum venting efficiency so there are no costly extensions or conversions. This provides optimized protection by reducing the required vent area.

Application

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

Applications + Industries

Aspiration plants, breweries, elevators, filters, conveyors, wood processing, 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 2732°F (1,500°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 fireball discharge.

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 signaling** 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

Certified in accordance with

EN 16009
EN 14797



ATEX
EU-type examination
certificate no.
GEX 20 ATEX 1019X



Meets the requirements of
NFPA 68



Explosion Isolation: Comprehensive protection for your plant.

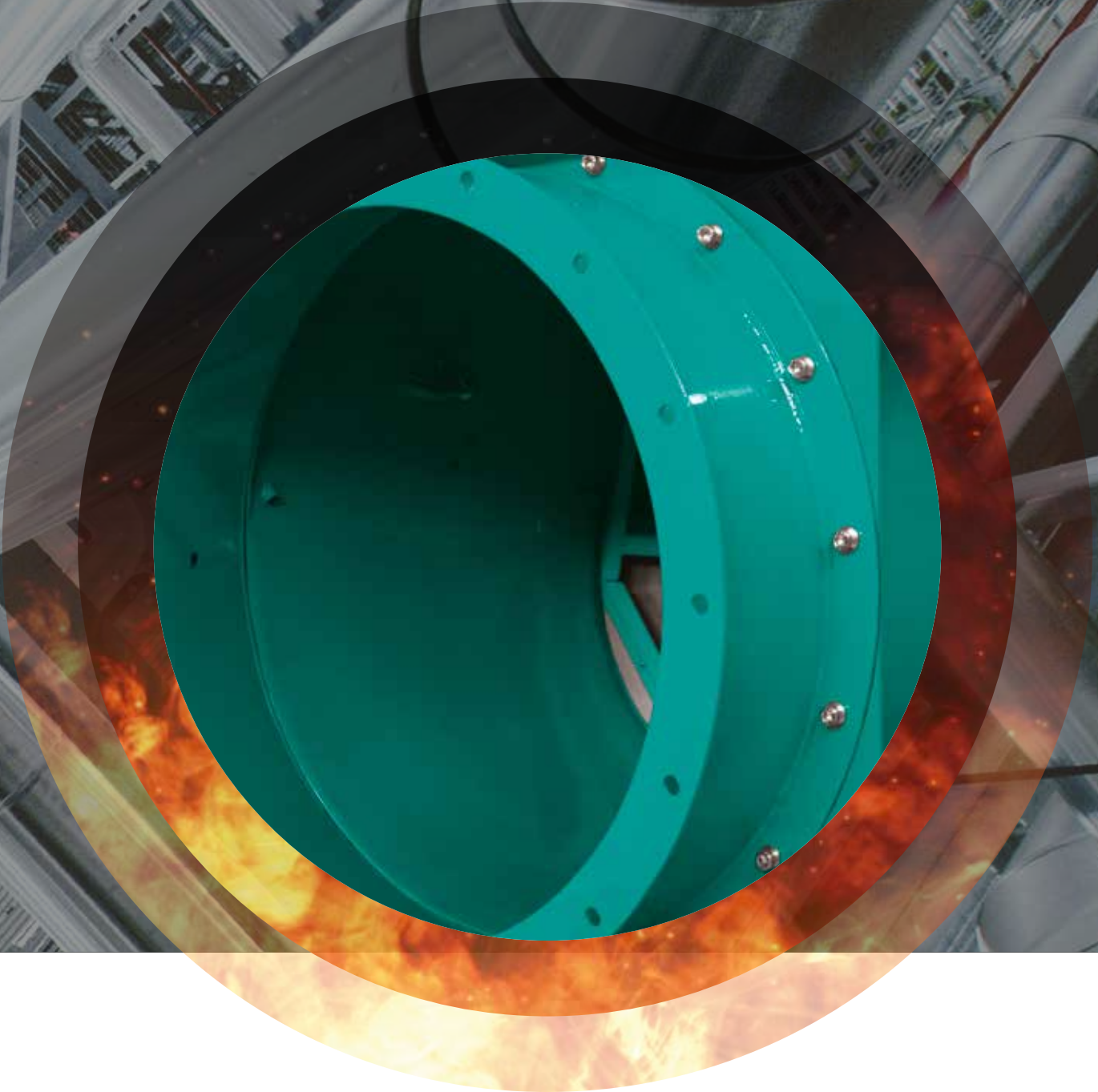
Explosion isolation systems use components such as quench valves and explosion isolation mechanical isolation valves. Chemical extinguishing barriers are also commonly used to smother propagating explosion flames. Valves and extinguishing barriers are capable of isolating components in both directions 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 create a high risk situation.

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, ands or buts.



Product selection guide

| Applications | EXKOP® QV II, QV III | Q-Flap NX II | 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.

Visit rembe.us for detailed information and to contact us or give us a call at T 704 716 7022.



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.

This system isolates plant components in both directions and consists of a self-monitoring EXKOP® controller with data storage, one or more detection devices 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 powder handling systems, the EXKOP® system can also be used as a spark arrester or overpressure limiter.

Applications + Industries

Aspiration plants, breweries, elevators, filters, conveyors, wood processing, 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 signaling unit of the Q-Rohr® or an explosion vent, from a pressure switch or spark detector) and activates the connected EXKOP® quench valves. The quench valves close within a few milliseconds and thus protect interconnected 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-optimized protection** against explosions in adjacent plant components.
- ✓ **Minimal 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 III.

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



Meets the
requirements of
NFPA 69

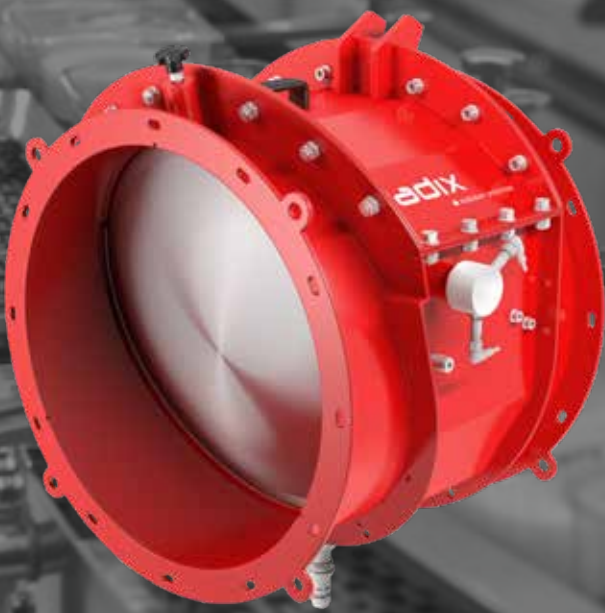
EXKOP® controller

| 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 NX II
Effectively
isolated.

Application

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

Available in sizes from DN 100 to DN 1250 and certified for all dust types including metals, the Q-Flap NX II provides versatile explosion isolation in **pharmaceutical, chemical, food grain and wood industries.**

The unique normally-open design of the Q-Flap NX II allows ultimate flexibility for installation in horizontal, inclined and vertical pipes. Suitable for installation in push and pull flow arrangements and even in opposed flow for downstream isolation in aspiration recycled air ducts. The external locking release handles and full width inspection cover supports reliable and easy maintenance.

Applications + Industries

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

Mechanism

During normal operation the aerodynamic flap blade is held open at an incline with internal rare-earth magnets. In the event of an explosion the advancing pressure wave causes the flap to release, pivot closed and lock. This seals off the upstream area from a propagating fireball and explosion pressure effects.

Advantages

- ✓ **Quick maintenance without the need for a complete dismantling of the device**, simply by completely opening the inspection cover.
- ✓ Certified for all dust types and compliant with NFPA 69 with locking mechanism and integrated sensors.
- ✓ **Flexible use:** Q-Flap NX II is available up to DN 1250 and can be installed in any orientation, in push or pull flow with up to 3 elbows.

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

Certifications

Certified in accordance with

EN 16447



ATEX
EU-type examination
certificate no.
LOM22ATEX1035X



Meets the
requirements of
NFPA 69

VENTEX® Explosion isolation valve.



VENTEX® – Passive
Explosion Isolation.

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 poppet within the valve body. In the event of an explosion, the pressure wave forces the sealing poppet closed against the closing-body gasket. The valve locks the propagation of flames and pressure waves.

Advantages

- ✓ Low response pressure.
- ✓ Short mounting distance.
- ✓ Used for Dust- and/or Gas explosion (Incl. metal dust & hybrid mixtures).
- ✓ Passive closing principle.
- ✓ Bi-directional isolation in horizontal or vertical orientation.

Certifications

Certified in
accordance
with

EN 15089



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



Meets the
requirements of
NFPA 69



RSV
Active isolation
at maximum
explosion pressures.

Whether for 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, 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 in pressurized or vacuum applications.

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 within milliseconds. 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

- ✓ Wide application range.
- ✓ Extremely fast closing times.
- ✓ Short installation distances thanks to a compact design.
- ✓ Flexible installation options at any angle.
- ✓ No pressure drop.

Certifications

**Certified in
accordance
with**

EN 15089



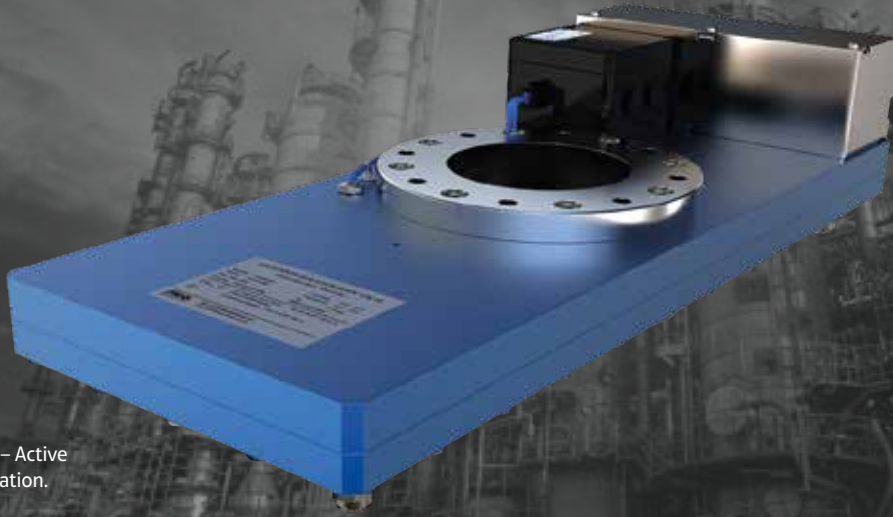
ATEX
EU-type examination
certificate no.
FSA 17 ATEX 1669 X



Meets the
requirements of
NFPA 69

REDEX® Slide

Active isolation
of abrasive
material.



REDEX® Slide – Active
Explosion Isolation.

Whether for 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 80 to DN 150. Thanks to the practical design, 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 within milliseconds. 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

- ✓ Wide application range.
- ✓ Extremely fast closing times.
- ✓ Short installation distances thanks to a compact design.
- ✓ Flexible installation options at any angle.
- ✓ No pressure drop.

Certifications

Certified in
accordance
with

EN 15089



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



Meets the
requirements of
NFPA 69

When it has to be **fast.**

Q-Bic™
Active
Isolation.



red dot design award
winner 2020

In practice, many vessels, silos and devices are connected by pipes, pneumatic conveyors, 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 minimizes the consequences of an explosion. It ensures optimum protection for interconnected parts of the plant.

Application

The explosion isolation system Q-Bic™ is specifically suitable for large pipes or complex elongated geometries 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 pressurized extinguishing powder QXP™. The special nozzle system SJX™ ensures optimum distribution of the extinguishing powder in the pipe ensuring reliable explosion isolation.

Application

- ✓ **Effective discharge of the QXP™ via the spin jet extinguishing nozzle SJX™.**
- ✓ Blue-Green extinguishing powder QXP™ prevents cross contamination after activation.
- ✓ Electrically monitored pressure gauge.
- ✓ Easy handling due to integrated handles.
- ✓ **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 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 dark hair, wearing a black jacket over a black t-shirt and blue jeans, is sitting in a light-colored armchair. He is gesturing with his right hand as if speaking. The background is a plain, light-colored wall.

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 eliminate effective ignition sources. If the process itself may lead

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



**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 material 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 exothermic 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 eliminate them 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).
- ✓ Optimized sampling.
- ✓ Evaluation 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 good grounding. 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 equalization of 0-1 k Ω or 103 Ω for all metallic objects and high-impedance for potential equalization of 0-3 M Ω or 3 x 10⁶ Ω 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 signaling 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 characterized 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 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 16 ft (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 use 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 + industry

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 base 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 unique **diffusion filter technology**.

Mechanism HOTSPOT

HOTSPOTS are freely parametrizable **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.

Installation in an aspiration filtered air exhaust stream 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.
- ✓ **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™

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 remotely from anywhere in the world, the plant operator on site is relieved of the pressure to initiate the important and correct first steps following a fire or explosion event.

Application

The REMBE® iQ Safety Cockpit™ can be used in addition to the process display in the control center or another monitored location.

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.

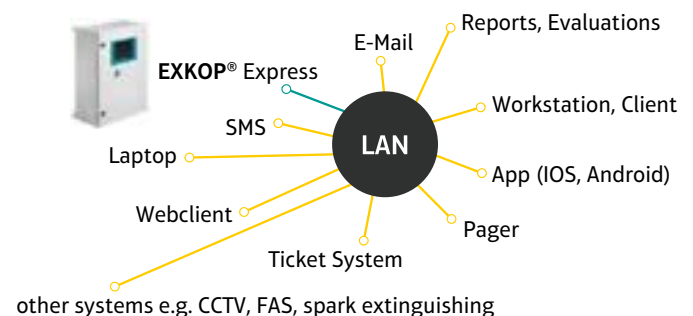
Enhanced Mechanism

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:

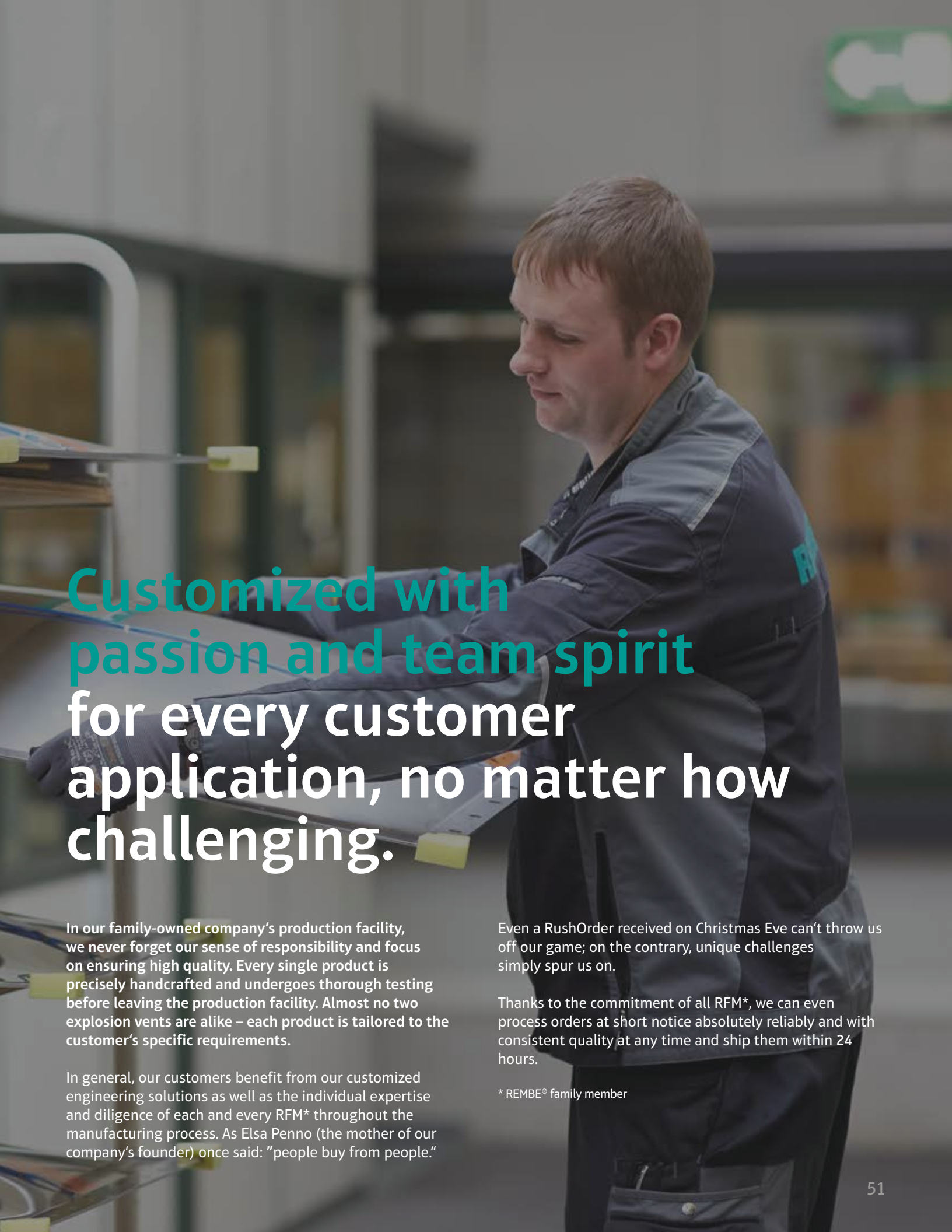
Safety at a glance.

Advantages

- ✓ **Optimal personnel 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 optimized and targeted determination of the cause.
- ✓ **Practical implementation** in any plant area thanks to the customized solutions.
- ✓ **Continuous optimization** of your processes through detailed documentation and evaluation of all results.







Customized 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 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 optimizing your individual processes, production systems and products.

Choosing REMBE® means choosing seamless complete safety.

As an independent medium-sized company, we can offer you products that are engineered 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 in your facilities.

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 shelf? 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 concept for you that is perfectly geared to suit you.

Engineering

We don't just make recommendations.

We give you the best solution.

From 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 time period.

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 signaling 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, ensuring good profitability and regulatory compliance.

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 in 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 call.

Quality

Our products are manufactured according to the latest, up-to-date international standards for management systems, pressure equipment and explosion safety devices. In addition to prioritizing quality and reliability, we attach major importance to eco-friendly technologies, manufacturing processes and compliance with standards. High quality 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 implementing successfully since 1973: Developing and producing protection systems for industry.

We will only offer you a technically worthwhile, economic and sustainable solution for your application-nothing less. 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 and learn more about all projects.



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.

Find the representative responsible for your country at:
T + 49 2961 7405-0,
hello@rembe.de or www.rembe.de

REMBE® Inc.
9567 Yarborough Rd.
Fort Mill, SC 29707, USA
T +1 704 716 7022
hello@rembe.us

REMBE® GmbH Safety+Control
Gallbergweg 21
59929 Brilon, Germany
T +49 2961 7405-0
hello@rembe.de

REMBE® Asia Pacific Pte. Ltd.
140 Paya Lebar Road
#07-13 AZ@Paya Lebar
Singapore 409015, Singapore
T +65 6702 3707
hello@rembe.sg

Representative Office Thailand:
30, Soi Sukhumvit 61
Khwaeng Khlong Tan Nuea
Khet Watthana, Bangkok,
Thailand 10110
T +65 6702 3707
hello@rembe.sg

REMBE® América Latina Ltda.
Rua São Bento, 1859 – Hauer
81630-230 Curitiba PR, Brazil
T +55 41 3099 7699
hello@rembe-lat.com

REMBE® China Ltd.
World Plaza 30I/No. 855 Pudong
South Road
200120 Shanghai, China
T +86 21 33829869
hello@rembe.cn

**REMBE® GmbH Safety+Control
(DMCC Branch)**
DMCC Business Centre
Jewellery & Gemplex Building
Building 3, 1st floor Unit
No. 30-01-1891
Dubai, United Arab Emirates
T +49 162 2702871
james.hay@rembe.ae

REMBE® K.K.
Level 10 Hulic Minatomirai,
1-1-7 Sakuragi-cho, Naka-ku
231-0062 Yokohama, Kanagawa,
Japan
T +81 (0)45 228 5460
hello@rembe.jp

REMBE® Oy
Hitsaajankatu 4C
FI-00810 Helsinki, Finland
T +358 10 6662343
hello@rembe.fi

REMBE® S.r.l.
Via Maja, 2
21051 Arcisate (VA), Italy
T +39 0332 476511
hello@rembe.it

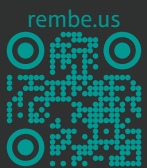
REMBE® ZA
20 Libertas Road
Freeway Park
Boksburg 1459, South Africa
T +27 011 9162807
hello@rembe.co.za



Safety is for life.™

Consulting. Engineering. Products. Service.

The copyright for all content (design, text, pictures, graphics etc.) is the sole property of REMBE® GmbH Safety+Control except where otherwise stated. Reproduction and publication in whatever format, even in part, are strictly prohibited and require our explicit written approval. The specifications, figures and drawings published in our brochures reflect our current understanding of these products. However, they do not represent a binding guarantee of these properties. REMBE® reserves the right to make technical changes or update any information without notice. REMBE® accepts no liability for errors or omissions, technical changes due to research and development or errors in the printing or use of this brochure. It is the sole responsibility of the end user/plant operator to ensure that REMBE® products are used correctly.



REMBE® Inc.

9567 Yarborough Rd. | Fort Mill, SC 29707, USA

T +1 704 716 7022

hello@rembe.us

