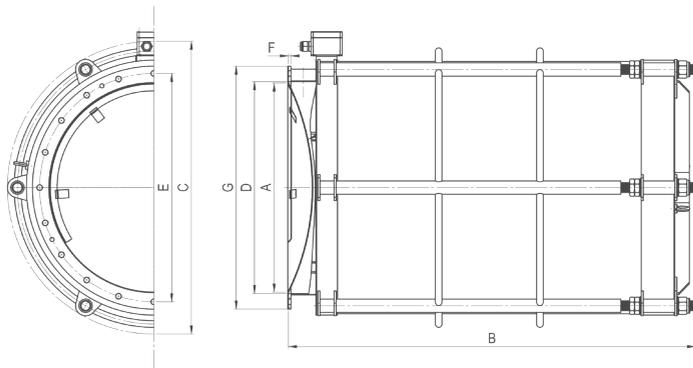


TECHNICAL DATA:

Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight (kg)	VMP dimension*
FLEX C1 PRO	315	580	485	320	350	5	375	30	DN 300
FLEX C1 PRO S	315	879	633	320	350	5	375	80	DN 300
FLEX C2 PRO S	445	1075	633	450	486	5	525	87	DN 450
FLEX C3 PRO S	505	1286	705	510	550	6	585	126	DN 510
FLEX C4 PRO S	625	1385	1020	630	680	6	705	243	DN 630
FLEX C5 PRO	815	2215	1020	820	860	6	895	291	DN 800

* FLEX is standardly equipped with a VMP of a given dimension.



APPLICATION:

Dust type	FLEX C application
Organic dust	✓
Melt and coarse dust	✓
Light metal dust	✓

OPTIONAL ACCESSORIES:

- sanitary bag
- intrinsically safe relay



EXPLOSION ISOLATION FLAP VALVE B-FLAP I – EXPLOSION ISOLATION

B-FLAP I is a mechanical device designed to prevent the transfer of flame and pressure between technologies during an explosion. The innovated explosion isolation flap valve B-FLAP I is certified according to EN 16447 and EN 15089.

During normal operation, the explosion isolation flap valve is kept open using the RPD (Reducer of Pressure Drop) mechanism. This solution significantly reduces pressure losses in the piping system, or due to airflow in the pipeline. During the explosion, the protected pipe will be closed and locked.

ADVANTAGES:

- suitable for all types of dusts, including metal dust, up to St 3
- installation on horizontal and vertical pipes
- reverse flow application
- certified for dusts with extremely low values of MIE and MIT
- suitable for push and pull system
- low pressure losses, high pressure resistance
- easy installation, inspection, and maintenance
- explosion isolation flap valve is locked when closed
- possibility of application on pipes with elbows and / or obstacles
- standardly equipped with an RPD mechanism
- optional possibility to produce in a stainless steel version

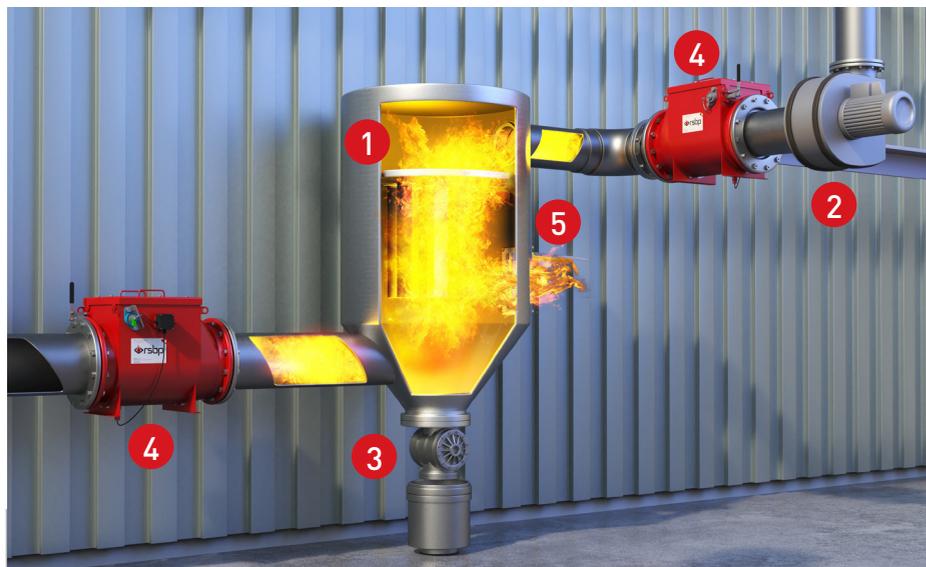
The innovated B-FLAP I is suitable for use to prevent the transfer of an explosion through pipelines between filters, cyclones and other equipment where there is a risk of dust explosion. It is suitable for pipes of sizes DN 100 - DN 800.



APPLICATION:

Organic dust	Melting dust	Light metal dust
✓	✓	✓

DIAGRAM OF B-FLAP I INSTALLATION ON PIPELINE



1. filter
2. fan
3. rotary valve
4. back pressure flap B-FLAP I
5. explosion venting device VMP

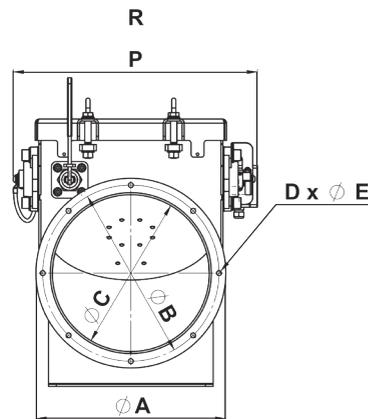
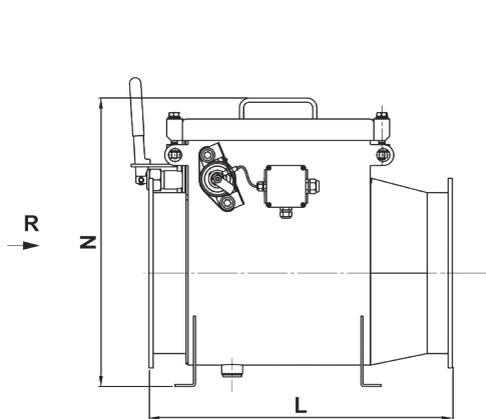
OPTIONAL ACCESSORIES:

- inductive sensor
- dust sensor
- J-Box (junction box)
- intrinsically safe relay
- counter-flanges



TECHNICAL DATA:

Dimension	ØA (mm)	ØB (mm)	ØC (mm)	D x ØE	L (mm)	N (mm)	P (mm)	Weight (kg)
DN 100	152	132	100	4 x 9,5	280	287	244	9
DN 125	177	157	125	4 x 9,5	305	308	269	11
DN 150	202	182	150	6 x 9,5	330	337	294	13
DN 200	253	233	200	6 x 9,5	390	387	344	18
DN 250	303	283	250	6 x 9,5	510	502	417	40
DN 280	343	317	280	8 x 9,5	560	537	447	47
DN 300	363	337	300	8 x 9,5	580	552	467	50
DN 315	378	352	315	8 x 9,5	600	567	482	53
DN 355	418	392	355	8 x 9,5	630	607	522	61
DN 400	464	438	400	8 x 9,5	695	652	568	77
DN 450	514	488	450	8 x 9,5	750	702	619	88
DN 500	564	538	500	8 x 9,5	800	752	669	101
DN 560	664	629	560	16 x 14	930	838	745	157
DN 630	734	698	630	16 x 14	1005	908	815	180
DN 710	814	775	710	16 x 14	1156	1102	967	305
DN 800	904	861	800	24 x 14	1246	1193	1057	351



QUICK-ACTING SLIDE VALVE GATEX – EXPLOSION ISOLATION

The GatEx quick-acting valve is used to completely close the pipe in the event of an explosion. The GatEx quick-acting slide valve is activated when an explosion is detected. The detector sends an explosion signal to the control panel, which activates the slide closing mechanism. GatEx is closed pneumatically.

ADVANTAGES:

- use for pipes from DN 50
- **pressure resistance up to 21 bar**
- extremely fast reaction time
- **short installation distance**
- respects fail-safe design

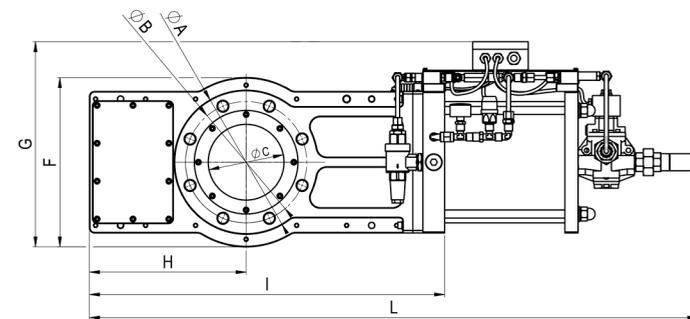
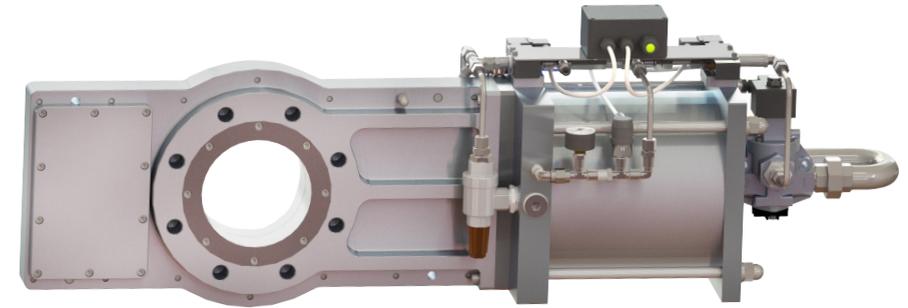
The quick-acting valve GatEx is especially suitable for pneumatic transport but also for preventing the transmission of the explosion between two production technologies. It is also suitable for technology designed for maximum explosion pressure.

OPTIONAL ACCESSORIES:

- heating bag

APPLICATION:

Organic dust	Melting dust	Light metal dust
✓	✓	✓



INSTALLATION OF GATEX ON FILLING DUCT



TECHNICAL DATA:

Dimension	A (mm)	B (mm)	C (mm)	F (mm)	G (mm)	H (mm)	I (mm)	L (mm)	Weight (kg)
DN 50	165	125	50	230	336	193	436	837	44
DN 65	185	145	65	245	344	202,5	468	884	48
DN 80	200	160	80	260	351	205	493	924	51
DN 100	220	180	100	280	379	235	553	1004	58
DN 125	250	210	125	305	391	273	628	1104	64
DN 150	285	240	150	335	406	310	703	1204	73
DN 200	340	295	200	390	458,5	385	853	1404	100

1. silo
2. explosion venting devices VMP
3. GatEx
4. control unit CONEX
5. filling duct



The HRD barrier is an active explosion protection system to prevent the transmission of an explosion and is characterized by the extremely fast introduction of extinguishing agent into the pipeline connecting the protected technological equipment and thus stopping the increase in pressure. In the event of an explosion, the explosion pressure first spreads through the pipe, followed by a flame. Both of these quantities can be detected by special detectors.

ADVANTAGES:

- **quick system response**
- independent storage of data from the detector
- variability of use of detectors, control units, and container units
- high-quality components
- possibility of adjustment according to quality requirements
- application indoor and outdoor

The HRD barrier prevents the transmission of explosions in pipes in filters, tanks, mills, crushers, dryer separators, cyclones, and other technological equipment.



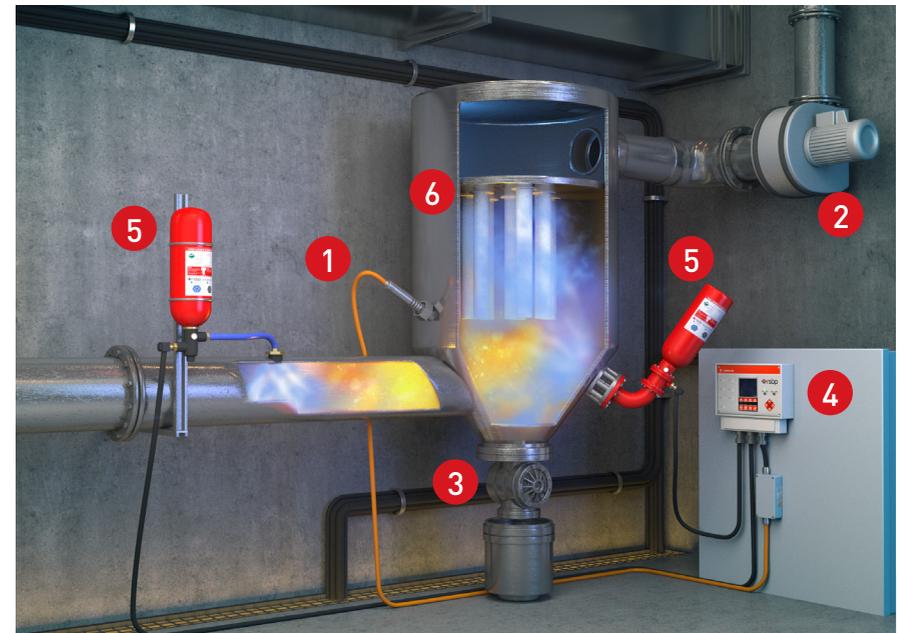
APPLICATION:

Organic dust	Melting dust	Light metal dust
✓	✓	✓

The HRD barrier is also suitable for use in such technological units with increased demands on hygienic requirements - for example in the pharmaceutical or food industry. The barrier can be used both alone or in combination with the HRD system for explosion suppression on technologies connected by piping.

The HRD barrier is also designed for use on equipment with different operating conditions, such as vibration processes or high temperatures. The HRD barrier works on the principle where the detectors transmit a signal to the control unit, which activates the HRD container units. These are equipped with quick-opening valves capable of immediately releasing the extinguishing agent into the protected space and thus creating an effective barrier of the extinguishing medium.

DIAGRAM OF HRD BARRIER INSTALLATION ON PIPELINE



1. detector
2. fan
3. rotary valve
4. control unit CONEX
5. HRD container units
6. filter



HRD SYSTEM – EXPLOSION SUPPRESSION

The HRD (high rate discharge) system is a verified explosion suppression system. It detects the initial phase of an explosion inside the device and subsequently suppresses the explosion of combustible dust in industrial technologies. The reaction time of the control unit CONEX is in milliseconds. Thanks to its overall function, the HRD system effectively suppresses the explosion and reduces the explosion pressure inside the device below the limit of its pressure resistance, thus preventing its destruction. The HRD system eliminates damage to technology, but above all, it protects human health and lives.

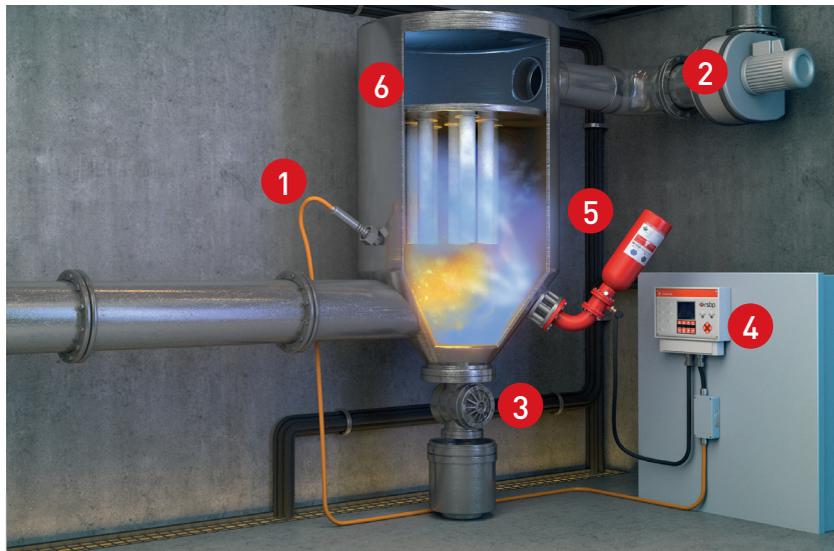
ADVANTAGES:

- **quick system response**
- highly efficient technology
- application indoor and outdoor
- **suitable for toxic and otherwise hazardous materials**
- independent archiving of data from the detector
- possibility of adjustment according to customer requirements
- variability of component use

HRD system protects against the consequences of explosion in filters and filtration units, industrial vacuum cleaners, silos, mills, elevators, dryers, cyclones, conveyors, powder containers, mixers, crushers, and other industrial equipment.



DIAGRAM OF HRD SYSTEM INSTALLATION ON THE FILTER



1. detector
2. fan
3. rotary valve
4. control unit CONEX
5. HRD container unit
6. filter

The HRD system is also suitable for use in technological units with increased demands on hygienic requirements - for example in pharmaceutical, chemical, or the food industry.

The HRD system can be used alone or in combination with the HRD barrier - a system for isolating explosions in pipelines.

The design of the HRD system is also adapted for use on devices with different operating conditions, such as vibration processes or high temperatures.

The HRD system works on the principle of very sensitive detectors, which can detect the emerging explosion in the order of milliseconds. The control unit sends a signal to open the valves. The pressure of the fire extinguisher will eject the special telescopic nozzles, which will ensure the effective dispersion of the fire extinguisher into the entire protected area. Thanks to the HRD system, the explosion pressure is under control and its side effects are minimized.

BASIC PARTS OF THE HRD SYSTEM

CONTROL UNIT CONEX



A dual or multi-zone control unit CONEX is a key part of the whole system. It evaluates, stores information from detectors, sends a signal to apply a fire extinguisher to a protected area and provides data to superior systems. It serves as a user interface for the operating personnel.

EXPLOSION DETECTOR



Pressure detectors constantly monitor operating conditions and are able to immediately detect an early explosion. They transmit this information within milliseconds to the control panel. The main advantage is the short reaction time and the variability in use.

HRD CONTAINER UNIT



Special HRD container units, equipped with a quick-opening valve and other accessories. They keep the fire extinguisher under constant pressure. If an explosion is detected, they ensure the immediate and effective induction of the extinguishing medium into the protected equipment. The advantage is the variability of the size of the HRD container unit (8, 20, or 50 liters), fast and effective explosion suppression in its initial phase, easy handling, and simple maintenance.

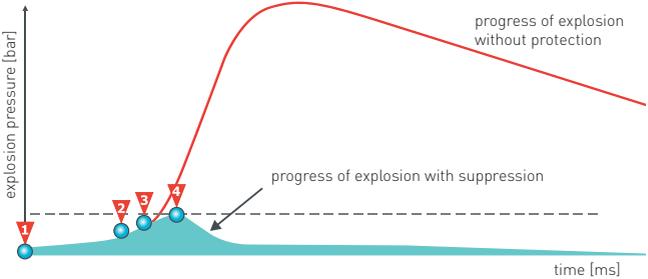
EXPLOSION SUPPRESSION PROCESS

Time:	0 ms	5 – 35 ms	40 ms	60 ms
Pressure:	0 bar	0,03 – 0,15 bar	0,1 – 0,25 bar	0,2 – 0,4 bar



- 1. initiation
- 2. detection of explosion origin
- 3. extinguishing agent injection
- 4. explosion pressure reduction
- 5. explosion suppression

PROGRESS OF EXPLOSION PRESSURE INCREASE RELATED TO TIME



- 1. initiation
- 2. detection of explosion origin
- 3. activation of HRD container unit (extinguishing agents injection, explosion pressure reduction)
- 4. explosion suppression



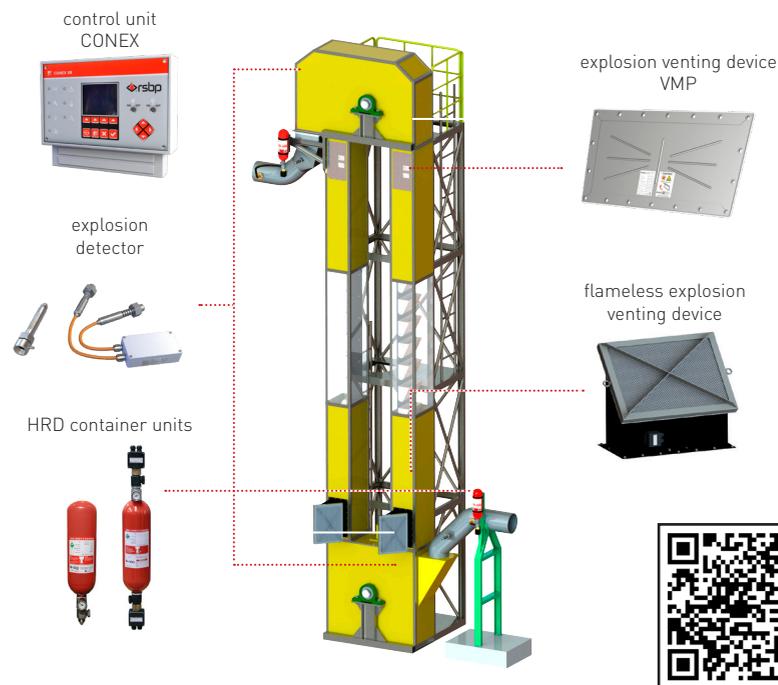
ELEVEX – EXPLOSION PROTECTION OF BUCKET ELEVATORS

ELEVEX is an effective solution for the protection of vertical conveyors of bulk materials against the devastating consequences of an explosion. Using a compact, sophisticated, highly efficient, tested and certified ELEVEX protection system is a safe and effective way to protect a bucket elevator or other vertical conveyor.

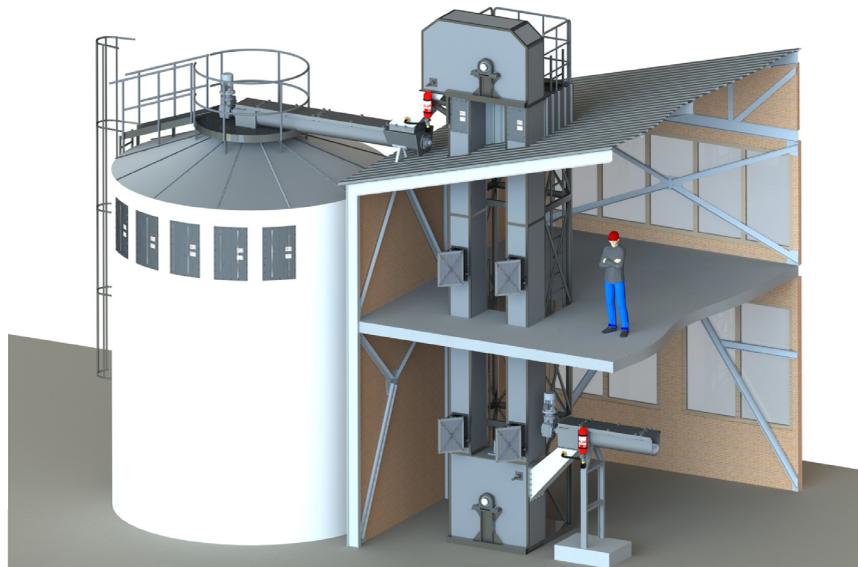
ADVANTAGES:

- **verified and certified protection system**
- high quality of used components
- easy installation even on existing technology
- maximum protection with minimum costs
- **suitable even for high elevators**
- variability of components

The ELEVEX system is suitable for interior and exterior applications. It is a variable system due to the diversity of components used, so it can provide maximum protection with minimum costs and without the need for any construction modifications.



INSTALLATION DIAGRAM OF ONE OF THE ELEVEX SYSTEM VARIANTS



THE ELEVEX SYSTEM INCLUDES VARIABLE PROTECTION FOR INTERIOR AND EXTERIOR

In the event of an explosion inside the elevator, there is a great risk not only of destroying the entire production technology but also the risk of endangering human health. In the case of destruction of unprotected equipment, there are incredibly high costs associated with the acquisition of a new bucket elevator and resumption of production.

THE MOST FREQUENT INITIATION SOURCES:

- sparks caused by deflection of the traction system from the axis
- sparks from the elevator drive or hot surface of the elevator caused by friction
- hot particles introduced together with the transported material
- bearing friction, etc.

The ELEVEX system reduces the explosion pressure to an extremely low value - this means that even existing and used technologies can be safely protected in the event of an explosion without any destructive consequences. The list of factors that can cause an explosion in a bucket elevator or similar vertical conveyor system is long, and the probability that an explosion will occur during operation is significant.

VARIANTS OF EXPLOSION PROTECTION OF BUCKET ELEVATORS

**EXPLOSION SUPPRESSION**

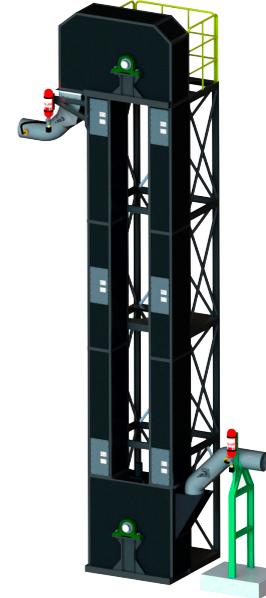
Explosion suppression is the most common method of explosion protection for bucket elevators.

COMPONENTS:

- explosion detector
- HRD barriers preventing the propagation of an explosion at the entrance and the exit to connected technologies
- suppression on the top and bottom of the elevator
- control unit CONEX

ADVANTAGES:

- reduces explosion pressure to an extremely low value - even existing and used technologies are safely protected in the event of an explosion without destructive consequences
- a safe and suitable way to protect elevators that are located both outside and inside the building

**EXPLOSION VENTING**

The main purpose of explosion venting is that the flame and pressure wave will be released through the venting panels into a safe zone.

COMPONENTS:

- explosion detector
- HRD barriers preventing the propagation of an explosion at the entrance and the exit to connected technologies
- explosion venting devices
- control unit CONEX

ADVANTAGES:

- extremely fast decrease of explosion pressure
- an efficient, cost-effective solution, and easy installation
- optional explosion venting panel opening sensors and thermal insulation
- suitable for elevators located outside
- in the event of an explosion, it will safely protect existing and already used technologies without destructive consequences

**FLAMELESS EXPLOSION VENTING**

The flameless explosion venting device FLEX which stops flame, thermal fronts and at the same time reduces pressure in the protected equipment.

COMPONENTS:

- explosion detector
- HRD barriers preventing the propagation of an explosion at the entrance and the exit to connected technologies
- flameless explosion venting device FLEX
- control unit CONEX

ADVANTAGES:

- effective arrest of flame and temperature and provision of a secure zone for the movement of people, technology, and buildings
- effective dust retention
- high efficiency and system reliability
- easy installation and maintenance-free operation
- elimination of expensive building modifications



© RSBP spol. s r.o.

Pikartská 1337/7
716 00 Ostrava
Czech Republic

E-mail: rsbp@rsbp.cz
Phone: +420 596 252 170

www.rsbp.cz/en

05 / 2021

Products, specifications and all data in this literature can be change without notice.

Fire and explosion protection