HRD
SYSTEM

Chemical Suppression Offers Ultimate Flexibility in Explosion Protection

The HRD system uses suppression bottles with pressures greater than 800 psi of Nitrogen to deliver suppressant into any vessel at a rapid rate before an explosion can develop.

0 ms

Ignition occurs and the deflagration begins to develop inside the volume.

20 ms

The Detex Pressure Detector senses the developing deflagration and signals to the CONEX control system.

40 ms

Suppressant is delivered via a High Rate Discharge propellent of pressurized Nitrogen

60 ms

The deflagration is fully suppressed as a homogenous amount of suppressant fills the volume.

CV TECHNOLOGY®
FIRE AND EXPLOSION PROTECTION

Interceptor® Chemical Suppresion | HRD

HRD

BOTTLES EXPLOSION SUPPRESSION

The Interceptor®-HRD explosion suppression system is designed to provide an active method to protect process equipment from a dust explosion hazard.

The principle of operation for the Interceptor®-HRD system is timely detection of the pressure rise during the initial stage of an explosion, followed by fast injection of an extinguishing agent.

5L Interceptor® HRD bottle

8L/20L/50L Interceptor® HRD bottles

The 5L Interceptor®-HRD bottle includes a low-pressure monitoring switch, OSHA lockout, and a telescopic nozzle as standard features. Each HRD suppression bottle is actuated by a micro gas generator (MGG) that reduces maintenance costs with a 10-year service life. Several suppressant agents are offered to cover both sanitary and non-sanitary applications.

The 8L/20L/50L Interceptor®-HRD bottles includes a low-pressure monitoring switch, OSHA lockout, and a telescopic nozzle as standard features. Each HRD suppression bottle is actuated by a micro gas generator (MGG) that reduces maintenance costs with a 10-year service life. Several suppressant agents are offered to cover both sanitary and non-sanitary applications. The 8L/20L/50L bottles can come equipped with a 90° elbow, straight, or flexible transition for vibrating equipment.

FEATURES

MGG Actuator

The Interceptor®-HRD explosion suppression system contains the Micro Gas Generator (MGG) actuator which allows for rapid, reliable deployment of the chemical suppressant. The MGG has an extended service life resulting in lower maintenance costs.

Effectiveness

The Interceptor®-HRD explosion suppression system incorporates an integrated OSHA Lockout which allows for a safe and easy securing of the HRD bottles, consequently limiting process downtime during plant maintenance.
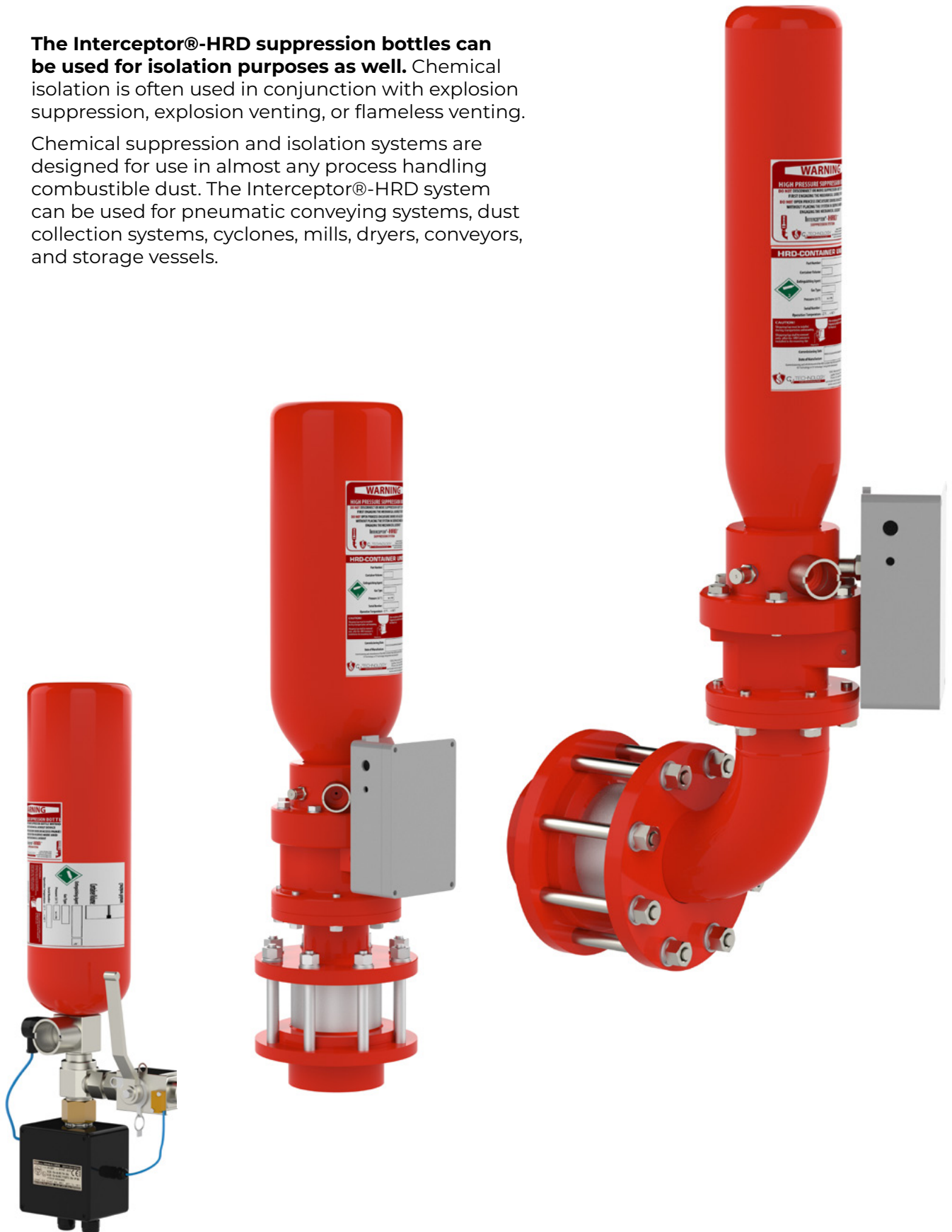
NFPA 69 Compliant

HRD bottles are FM Approved and ATEX certified. The HRD bottle NFPA 69 compliant solution.

Safety Solution

The Interceptor®-HRD explosion suppression system provides the customer with a 24-hour battery backup, ensuring full explosionprotection during a potential power loss.

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FIRE AND EXPLOSION PROTECTION

The Interceptor®-HRD suppression bottles can be used for isolation purposes as well. Chemical isolation is often used in conjunction with explosion suppression, explosion venting, or flameless venting.

Chemical suppression and isolation systems are designed for use in almost any process handling combustible dust. The Interceptor®-HRD system can be used for pneumatic conveying systems, dust collection systems, cyclones, mills, dryers, conveyors, and storage vessels.

SPECIFICATIONS

Interceptor® | **HRD**
Chemical Suppresion

	Description
Compliance and Certifications	NFPA 69 ATEX, EN 14373, EN 15089 FM 7-17, 7-76
Suppressant	Sodium Bicarbonate Furex (Monoammonium Phosphate)
Propellent	Nitrogen gas
Material of Process Shields	PTFE 304 Stainless Steel
Bottle Sizes	5L, 8L, 20L, 50L
Valve Sizes	8L, 20L, 50L – 3" 20L, 50L – 4" 5L – ¾"
Pressure	8L, 20L, 50L – 725 PSI (50 bar) 5L – 1740 PSI (120 bar)
Actuating Device	Micro Gas Generator (MGG)
Lockout	OSHA Lock Out/Tag Out Capable
Type of Nozzles	Telescopic Food Grade Stainless Steel Telescopic Stainless Steel Telescopic USDA Telescopic Flex Connection
Installation	8L, 20L, 50L – Hedgehog 5L – Nozzle
Environmental Ingress	IP 65
Hazard	Maximum Pred < 2.00 bar (29 PSI) Please contact CV Technology for various Kst applications
8L, 20L, 50L Mounting Positions	Elbow: 45°, 90° Straight Flex Connection
5L Hose Lengths	15.75" (400 mm) 27.5" (700 mm)
Shelf Life	10 years

CV TECHNOLOGY®
FIRE AND EXPLOSION PROTECTION

Interceptor® | Conex®
Intelligent Controls

CONEX
2-ZONE CONTROLLER

GV TECHNOLOGY®
FIRE AND EXPLOSION PROTECTION

**The CONEX®
controller** is
designed to be used
in conjunction with
the Interceptor®-
HRD chemical
suppression and
isolation systems.

**The controller features the ability to operate up to two independent
operating zones at a time.** A user interface is provided by a LCD screen,
push button navigation, and signaling lights on the front of the controller
enclosure. The interface includes a searchable data log and electrical lockout
key switches for each zone. Six programmable dry contact relays are provided
by the controller to signal for actuation, faults, or other operational states.

**This controller evaluates information from detectors and subsequently
gives a signal to activate the HRD extinguishing agent delivery system
upon detection of an explosion vent.** It controls the entire system as well as
evaluates any malfunctions and provides the user with an interface for the
HRD system.

**Chemical suppression and isolation systems are designed for use in almost
any process handling combustible dust.** The Interceptor®-HRD system
can be used for pneumatic conveying systems, dust collection systems,
cyclones, mills, dryers, bucket elevators, conveyors, and storage vessels The
Interceptor®-HRD system can be used for pneumatic conveying systems, dust
collection systems, cyclones, mills, dryers, conveyors, and storage vessels.

FEATURES

NFPA 69 Compliant

The CONEX® Controller is a compliant solution in NFPA 69 and is compliant for FM 7-76. CONEX® has an ATEX approval for suppression of a variety of different types of dusts.

Multi Zone Versions

The CONEX® Controller can be configured to 2, 4, 6, or 8 zone variants. Each zone can operate independently or custom programmed.

CONEX® Technology

The CONEX® Controller must be able to reliably detect, evaluate, and activate in milliseconds to properly suppress a dust explosion at an early stage. The Control Unit accomplishes this goal with a fast acting processor and multi-zone interface.
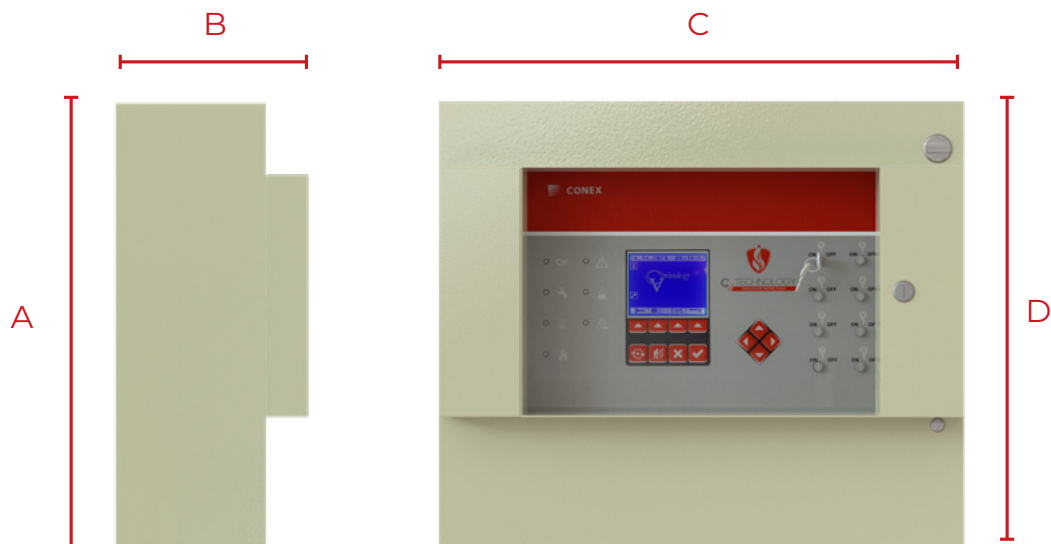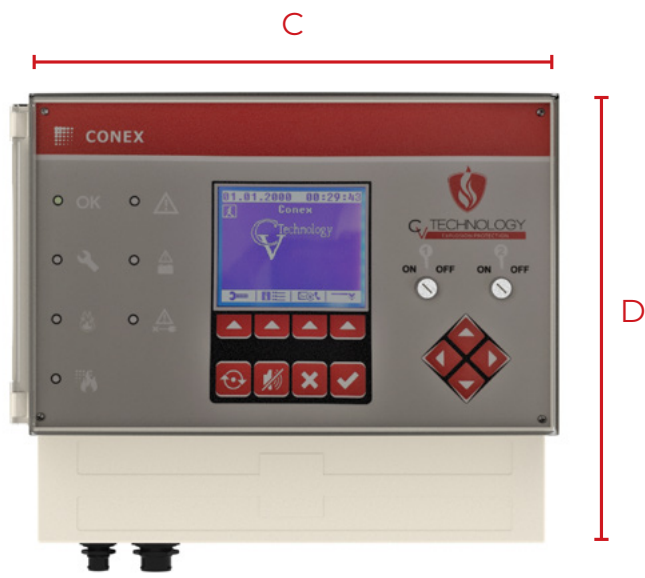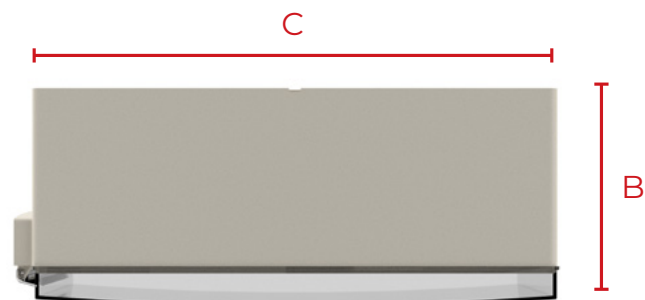
● DIMENSION

A (in.)	B (in.)	C (in.)	D (in.)
23.60	9.25	25.39	23.60

FM APPROVED

● DIMENSION

A (in.)	B (in.)	C (in.)	D (in.)
13.09	6.81	15.10	12.50

SPECIFICATIONS

Interceptor® | Conex®
Intelligent Controls

	Description
Compliance and Certifications:	NFPA 69 ATEX, EN 14373 Certified FM 7-76
Versions:	2-Zone HRD Controller 4-Zone HRD Controller 6-Zone HRD Controller 8-Zone HRD Controller 2-Zone VE and SG Controller 4-Zone VE and SG Controller
Supply voltage:	110VAC to 230VAC
Power supply breaker:	10A
Power Supply Cable:	16 Gauge
Maximum Power Supply Cable:	14 Gauge
Current Consumption:	100mA to 2.5A – 2-Zone 100mA to 10A – 4-Zone, 6-Zone, 8-Zone
Environmental Ingress:	IP65
Response Time:	<3ms
Operating Temperature:	-4°F to 122°F (-20°C to 50°C)
Detection Line (power supply)	24VDC/ 0 to 255 mA
MGG Output Circuit (voltage / current):	24VDC/2A
Relay outputs:	24 VDC/8 A
Display Screen:	LCD Display
Memory Log:	1024x events
Interfacing:	Push Buttons and Key Switches
Battery Back-Up:	HRD – 24 Hours VE/SG – 4 Hours or 24 Hours
Detection Pairings:	Single DetEx Pressure Detector Dual DetEx Pressure Detector LumEx Optical Detector EVS Module
Paired Standard Accessories:	Barrier Box (provided with all HRD Systems) PVM Module (provided with all VE Systems) IVM Module (provided with all SG Systems)

CV TECHNOLOGY®
FIRE AND EXPLOSION PROTECTION

Interceptor® | **Detex®**
Smart Pressure Detection

DETEX
PRESSURE DETECTOR

GV TECHNOLOGY®
FIRE AND EXPLOSION PROTECTION

The DetEx® pressure detector uses a ceramic material embedded in a fluid at the end of each stainless steel detection probe to measure the pressure within the process being protected.

The detector has state-of-the-art programming for both dynamic detection and static detection. The detector programming includes a "floating zero" feature. The floating zero is designed to differentiate and adjust the activation point based on process fluctuations. This allows for minor pressure spikes within the protected process to have no effect on the pressures required by our system for activation. Each detector includes a process adaptor for easy installation. All DetEx® detectors feature data recording and can generate plots that provide second to second recording of the pressure inside the protected volume.

DetEx® Pressure Detector

The DetEx® pressure detector combined with the floating zero technology provides unsurpassed reliability and reaction for chemical suppression systems.

DetEx® Dual Pressure Detector

The dual headed DetEx® includes two probes that can be programmed for a variety of different voting logics. The DetEx® pressure detector combined with the floating zero technology provides unsurpassed reliability and reaction for chemical suppression systems.

FEATURES

Floating Zero

The DetEx® pressure detector programming comes with a "floating zero" feature. The floating zero was designed to distinguish and adjust the activation point based on process fluctuations. When minor spikes occur within the protected vessel, there will be no effect on the pressures required for the system to activate.

Plot Generation

The DetEx pressure detector includes a data recording feature which allows the program to generate plots that provide a second to second recording of the pressure inside the protected vessel. This technology allows the customer to have complete control over their protected volume and any abnormal occurrences.

NFPA 69 Compliant

The DetEx pressure detector is a compliant solution in NFPA 69 and is compliant for FM 7-76. The DetEx has an ATEX approval for detection of a variety of different types of dusts
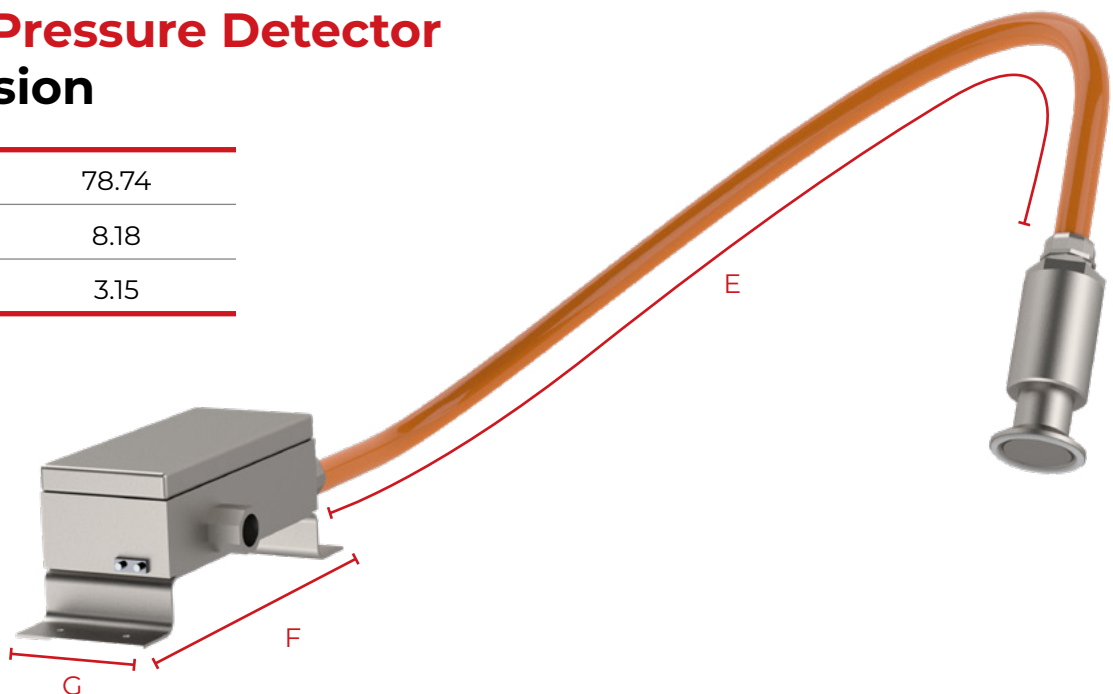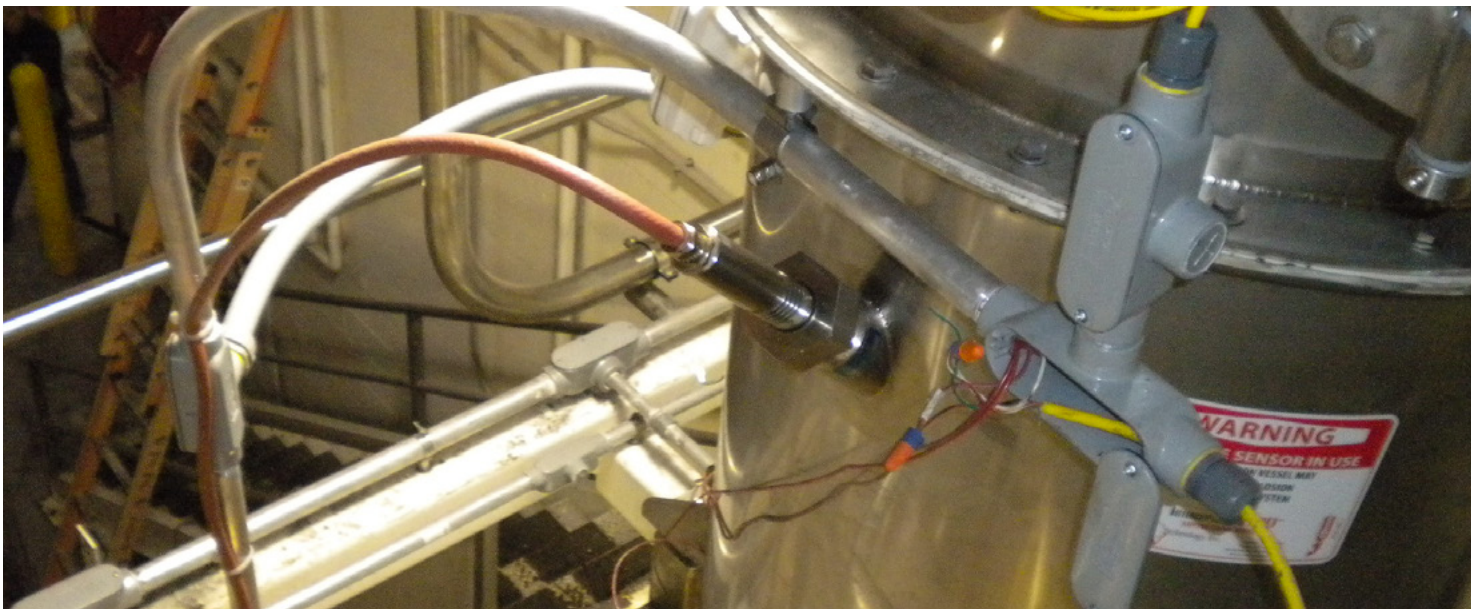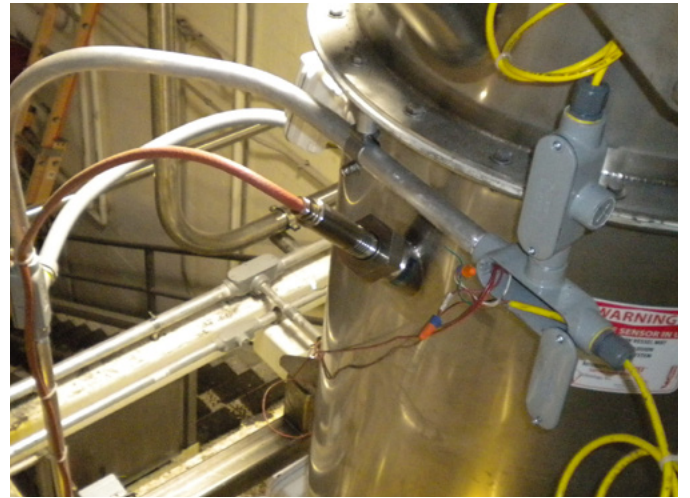
DetEx
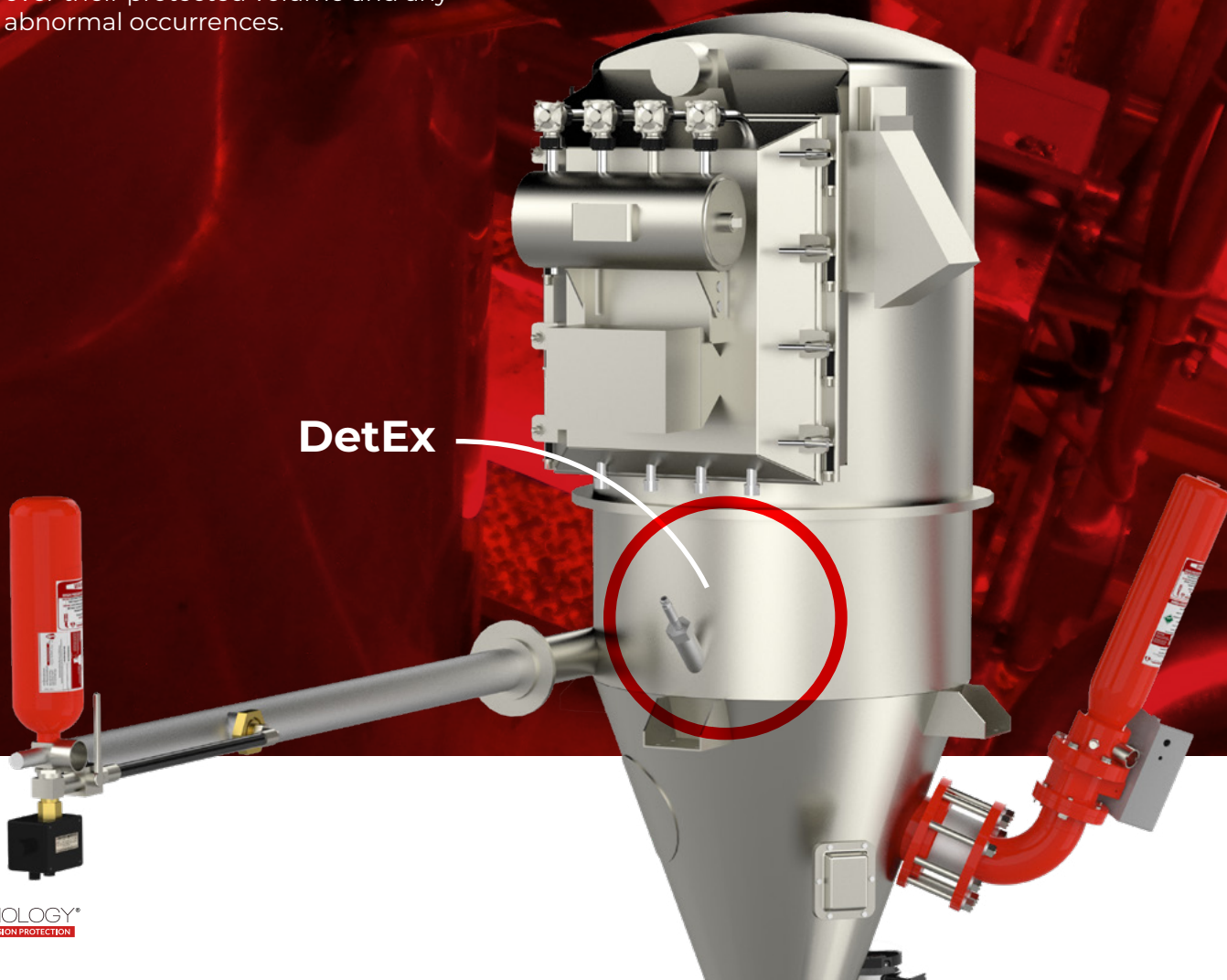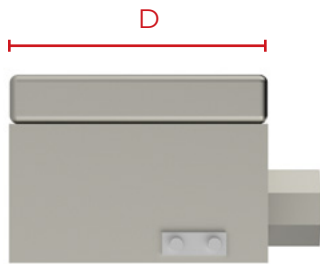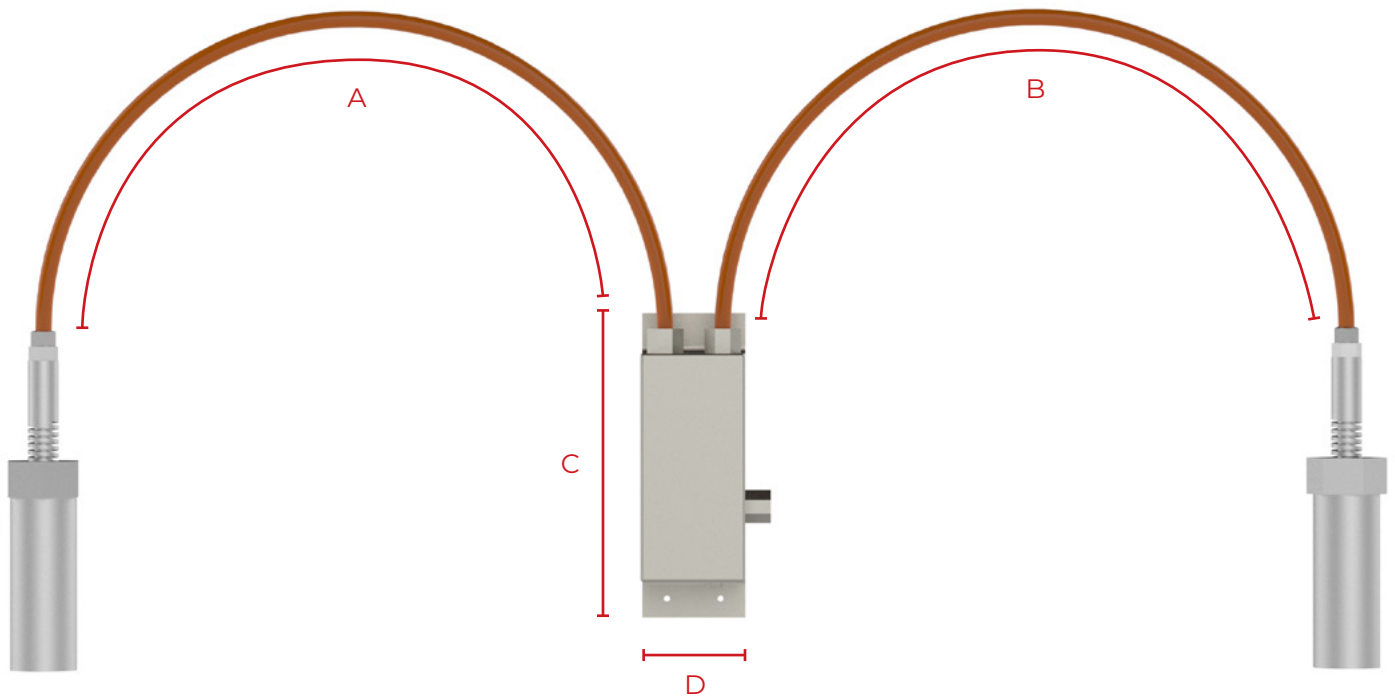
DetEx® Dual Pressure Detector Dimension

A (in.)	B (in.)	C (in.)	D (in.)
78.74	78.74	8.18	3.15

DetEx Pressure Detector Dimension

E (in.)	78.74
F (in.)	8.18
G (in.)	3.15

CV TECHNOLOGY®
FIRE AND EXPLOSION PROTECTION

SPECIFICATIONS

|	Description
Compliance and Certifications:	NFPA 69 ATEX, EN 14373 and 15089 Certified FM 7-76, FM 7-17
Housing Material:	Stainless Steel Body Stainless Steel Welding Ring
Evaluation unit casing material:	Aluminum
Detection Points:	Single or Dual Headed Probes
Detector Options:	Standard High-Temperature USDA Type F
Pressure range:	-11.6 to 17.4 PSI (-80 to 120 kPa)
Response time:	Programmable
Supply voltage:	18 to 27 VDC (Powered by Controller)
Supply current (Single Head):	Less than 45 mA
Supply current (Dual Head):	Less than 60 mA
Process temperature range:	-40°F to 302°F (-40°C to 150°C)
Ambient temperature range:	-4°F to 185°F (-20°C to 85°C)
Environmental Ingress:	IP 65
Cable length (Single Head):	6.5 feet (2 meters)
Cable length (Dual Head):	13 feet (4 meters)
Detector Type:	Smart – Static and Pressure Rise Over Time (dP/dt)
Dimensions of Detector:	6.17" x Ø1.58" (15.7mm x Ø40 mm)
Dimensions of Process Adaptor:	5.9" x Ø2.04" (14.9 mm x Ø52 mm)
Static Set Point:	Ranges from 0.035 bar to 0.15 bar
Adaptors Offered:	Standard Cooling Adaptor for High Temperatures Water Cooling Adaptor Flexible Adaptor for Vibration-Sensitive Areas USDA Type F Adaptor
Hazard:	Maximum Pred < 2.00 bar (29 PSI)

LUMEX
OPTICAL DETECTOR

The LumEx® optical detector is an infrared detector designed for detecting explosions or flame propagations.

LumEx® detectors are often used for detection purposes on isolation applications and bucket elevator suppression solutions. The detector features two IR detection sensors that react to flame. The IR sensors are less sensitive to light sources compared to traditional optical detectors which limits false readings. Each LumEx® detector is provided with a welding adaptor that includes an air sweep connection. The air sweep connection is meant to keep the lens clear of particulates, and the detector has an internal self-checking function to alarm when cleaning is needed. LumEx® detectors also have the ability to record a data log of events including activations and faults.
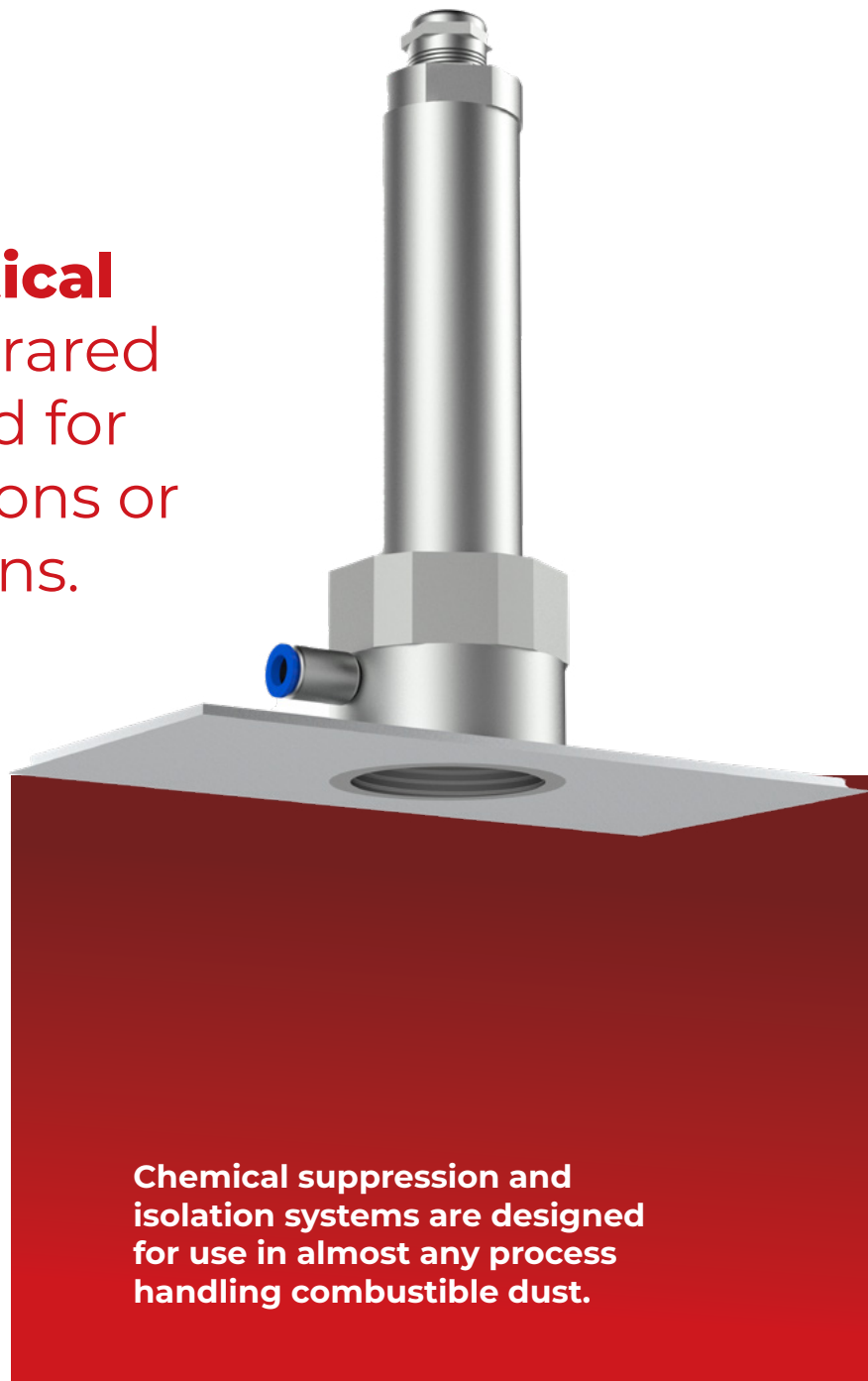
Chemical suppression and isolation systems are designed for use in almost any process handling combustible dust.

The Interceptor®-HRD system can be used for pneumatic conveying systems, dust collection systems, cyclones, mills, dryers, conveyors, and storage vessels.

CV TECHNOLOGY®
FIRE AND EXPLOSION PROTECTION

FEATURES

NFPA 69 Compliant

The LumEx® Detector is a compliant solution in NFPA 69 and is compliant for FM 7-76. LumEx® has an ATEX approval for the detection of a variety of different types of dusts.

Air Sweep Connection

The LumEx optical detector also includes an air sweep connection in the welding adaptor. The air sweep connection keeps the lens clear of particulates which could affect the precision of the sensor. Additionally, the detector has an internal self-checking function which will alarm when cleaning is necessary.

Light Sensitivity

The LumEx® optical detector includes two IR detection sensors which are less sensitive to light sources in comparison with traditional optical detectors. This technology limits the LumEx® from providing the customer with false readings.
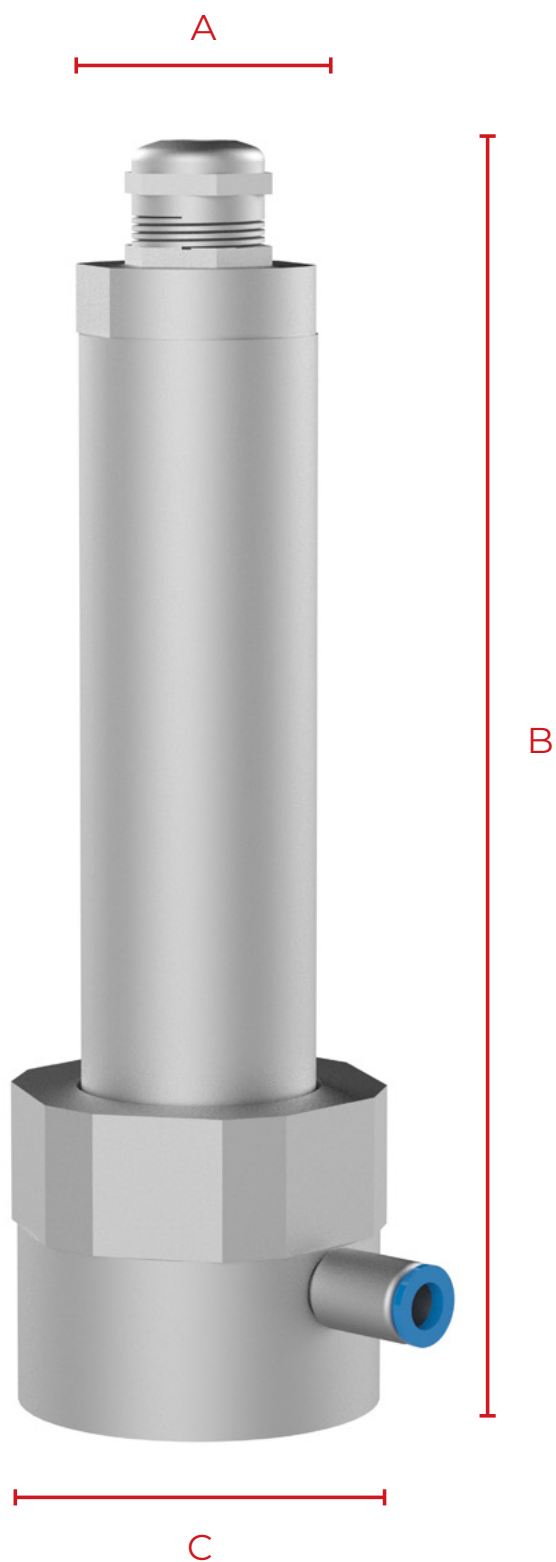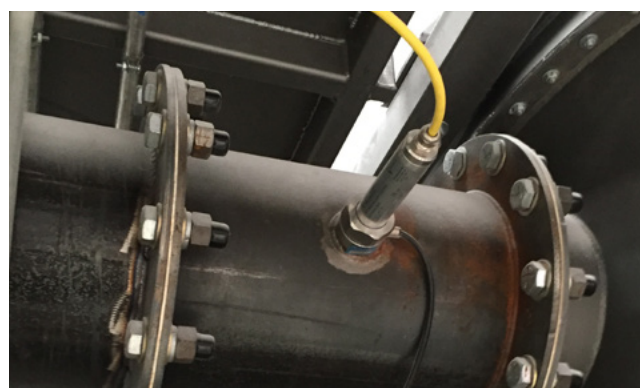
LumEx®

CV TECHNOLOGY®
FIRE AND EXPLOSION PROTECTION

DIMENSION

A (in.)	0.74
B (in.)	7.72
C (in.)	2.43

SPECIFICATIONS

Interceptor® | **Lumex**®
Optical Detection

	Description
Compliance and Certifications:	NFPA 69 ATEX, EN 14373 and 15089 Certified FM 7-76
Housing Material:	Stainless Steel Body Stainless Steel Welding Ring with air sweep connection included
Detector Lens Material:	Borosilicate or Polycarbonate
Viewing Angle:	110°
Response Time:	3 ms
Detection Wavelengths:	780 nm to 1100 nm
Supply Voltage:	8 to 27 VDC (Powered by Controller)
Supply Current:	Less than 30 mA
Process Temperature Range:	-4°F to 176°F (-20°C to 80°C)
Ambient Temperature Range:	-4°F to 176°F (-20°C to 80°C)
Environmental Ingress:	IP 65
Weight:	3.4 lbs. (1,560 g)
Anti-explosion design (dust) **Anti-explosion design (gas):**	II 1D/2D Ex ta/tb IIIB T109°C Da/Db II 3G Ex ec IIB T4 Gc
Hazard:	Maximum Pred < 2.00 bar (29 PSI)

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FIRE AND EXPLOSION PROTECTION
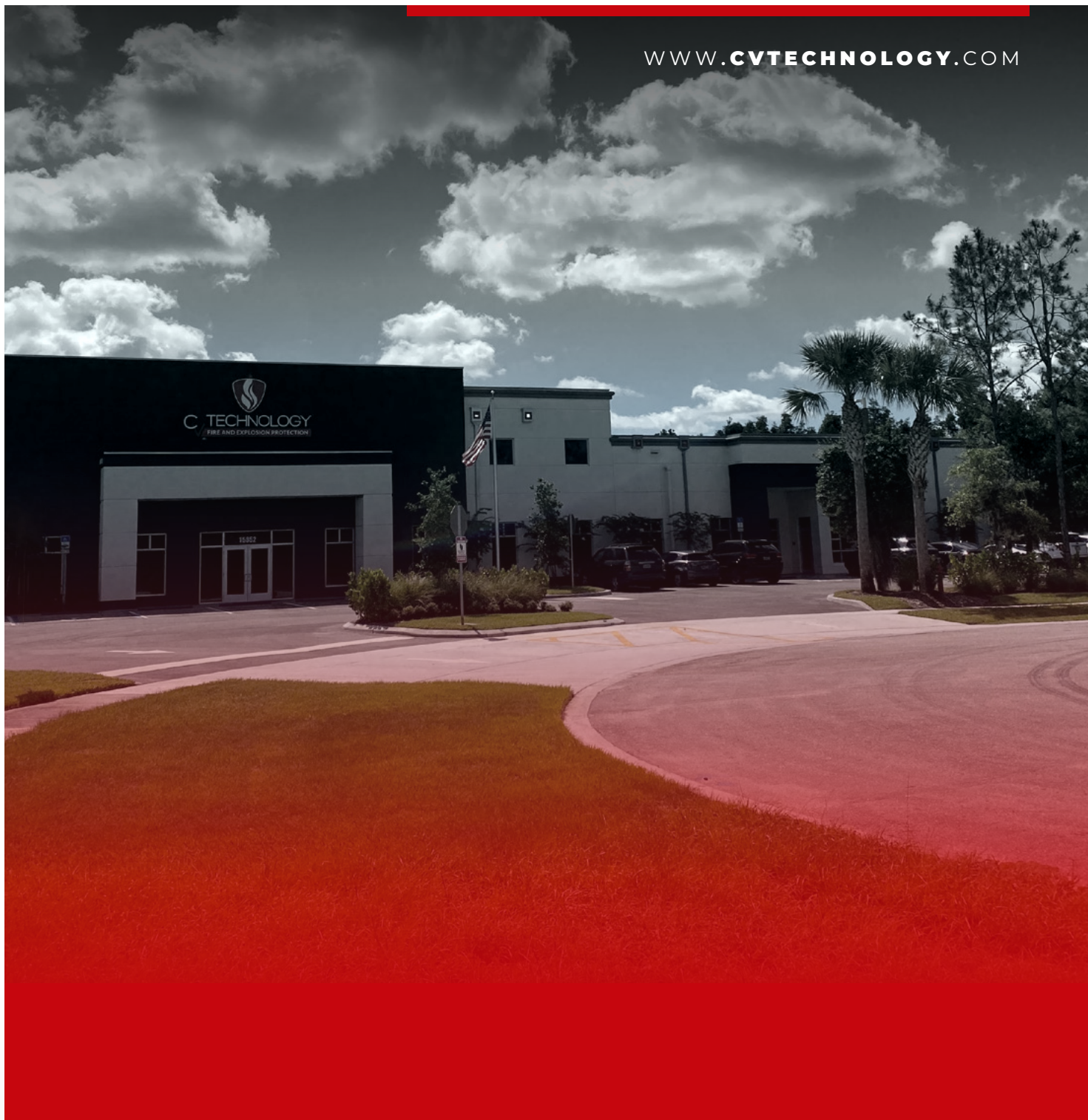
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