



introduction

The Raptor Series

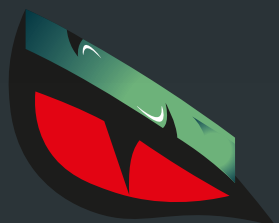
Automatic Fire Protection Systems

The **Raptor Series** is developed for a high-end customer that needs a **quality product** and a **value offer** for its fleet.

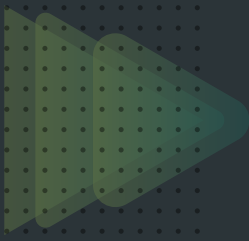
Price and quality demand meet each other in one **extremely efficient** product, made with the top end **German Technology** and research, with the unique solution **patented by protecfire**.

Raptor detex is a robust system that is electricity-free, **has no pressure in the piping and hoses**, works on a single line (detection and extinguishing).

high quality entry level systems
A new predator is on the loose



RAPTOR
detex



Some of the Sectors we Protect



Transformer



Conveyor Belt



Construction



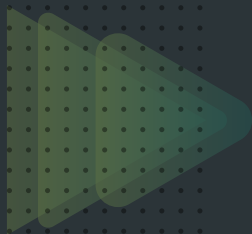
Heavy Machinery



Mining



Public Transports



UNIQUE TECHNOLOGY

German Engineering

Automatic Fire Protection System Solution

Autonomous & Self Contained



Single-line system (det-ex)

Detection and extinguishing in a single pipe line.



RoP - Rise of pressure system

Non-pressurized pipeline while in standby mode.



No Electricity

No electricity needed in the system.



10 Years

Component replacement period up to 10 years



Ultra-fast detection

Response speed: Ultra Fast Response RTI 20.
False alarm proof. Based on "temperature" parameter for pneumatic activation.



Operation temperature range: -50°/-30°C to 80°C

Designed for extreme climates, whether in the desert or in the mountains.



Capable of working in extreme conditions

Shock and vibration resistant.



Stainless steel

All crucial components in stainless steel. Optional: piping



Very low maintenance

Due to system simplicity, maintenance is practically only a visual inspection (annually).



Fully Mechanical / Pneumatic

The entire system is self-contained. It does not require manual operations and does not depend on external controls, such as control panels or electrical detectors.

Technical Specifications



| | |
|------------------------------------|---|
| Name | Raptor Detex |
| Temperature Range | -30 to 80C |
| Detection Technology | Rise of Pressure |
| Detection & Ext. Line | One integrated line |
| Detector Line Pressure | No pressure |
| Detection Technology | Stainless steel SPY86 |
| Trigger Temperature | Glass ampoule, 9 independent temperatures |
| Life of Detectors | Up to 5 years |
| Nozzle type | X1 or S1 |
| Extinguishing Agent | Tiborex Absolute |
| Extinguishing Agent Volume | 4L, 6L, 10L, 20L, 30L, 50L |
| Extinguishing Technology | Fine Spray technology |
| Extinguishing Container (pressure) | Pressurized |
| Product Material | Stainless Steel |
| Alarm Signal Switch | Yes |
| Maintenance Inspection | Yearly |
| Parts Replacement Duration | Up to 5 years |

According to NFPA 17a , NFPA 96-17A , NFPA 750 , NFPA 850

Installation

The Raptor System is a “pre-engineered” system.

No electric components.

All the parts are fixed by clamps and screwed into fixing places.

The maximum distance from the tank is 15 meters.

The tank can be placed in any position (Vertical / Horizontal).

Maintenance

Visual Check all the elements (detector, piping, manual trigger, alarm).

6 Months Maintenance - Tank pressure check.

How it Works

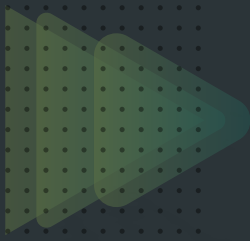
The Raptor Tank is pressurized, though the piping network is not.

SPY86 Detectors will activate through thermal detection hence releasing pressure into the pipeline and to the cylinder Control Valve which then activates the release of the extinguishing agent.

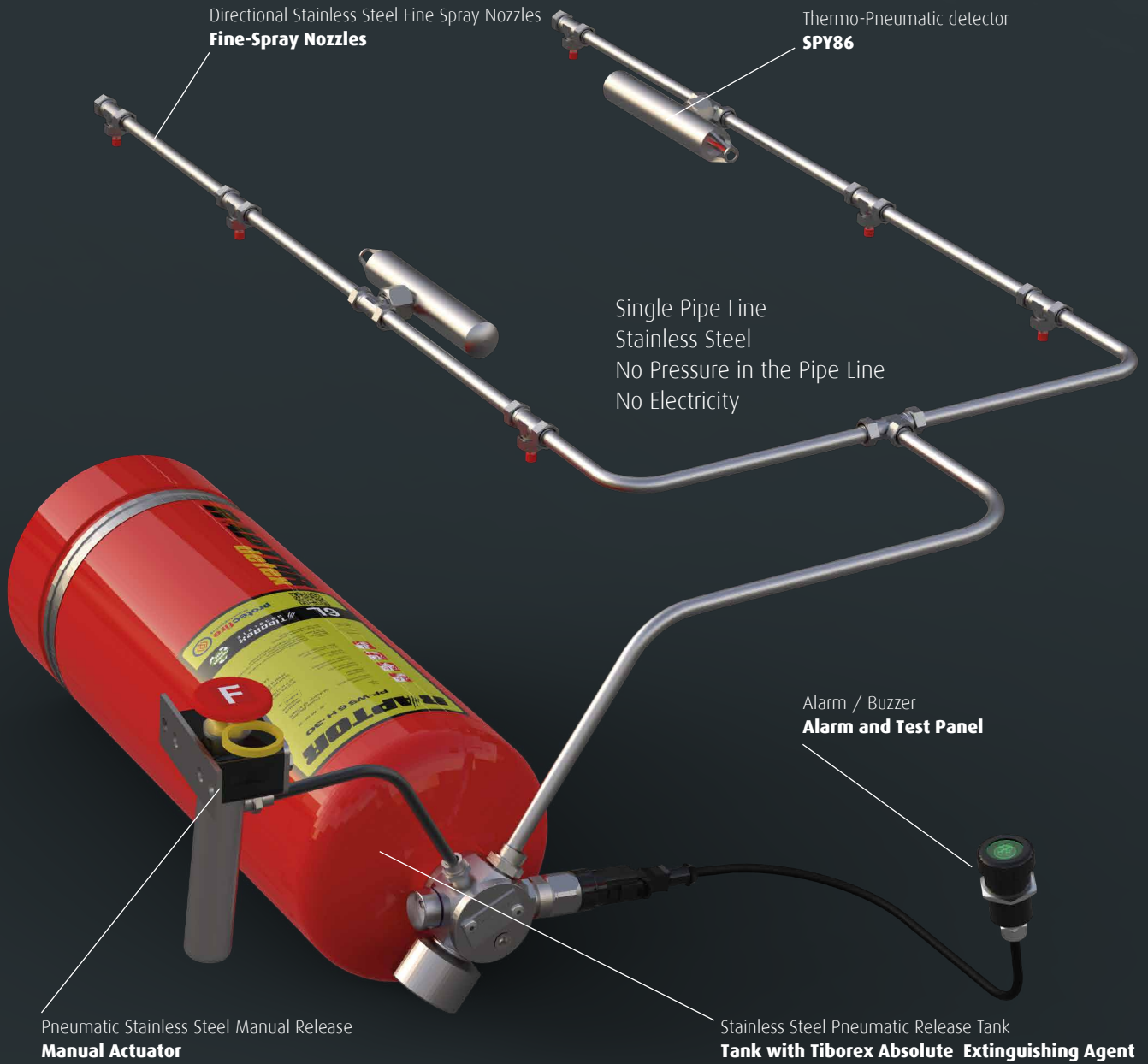
Fine spray nozzles will disperse the Tiborex Absolute providing the cooling effect and effectively extinguishing fires in the first seconds.

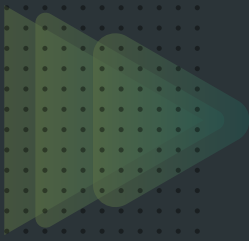
It can be remotely manually activated.

An alarm/buzzer and test button can be installed.



System Components





Automatic Fire Protection System for Vehicles

Off-Road and On-Road Vehicles | Other Equipments



System Components



SPY86 Thermo-Pneumatic Detector

Patented Unique Detector
No Electricity Required
Stainless Steel CNC Machined

Available Detection Temperatures
57°C、68°C、79°C、93°C、110°C、141°C、182°C、230°C、260°C

Fine Spray Nozzle Bars / X1 Nozzles

Patented Unique Nozzle Solution
Easy and fast to install - Reduces installation time by 70%.
Very Small - virtually fits anywhere
Stainless Steel
S1 0.5 Factor - Fine Spray Technology / K1.5 factor on X1 Nozzles
Up to 120° Spray Pattern
High Quality and Resistant Nozzle Caps



Fine Spray Bars - s1 Nozzles

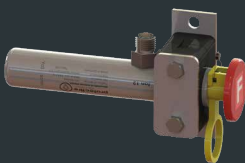


X1 Fine Spray Nozzles

Extinguishing Agent Tank

Patented - Unique Pneumatic Release System
Can be placed in any position (vertical or horizontal)
Stainless Steel with Powder Coating Finish Paint Ral3000
Patented - Stainless Steel Valve System

Liquid Agent: Tiborex Absolute - Exclusive protectfire Clean Agent
Effective against Liquid, Solid, and Grease fires



Pneumatic Manual Actuator

Patented Unique Pneumatic Activation System
Stainless-Steel
Safety Lock System
Argon Gas Activation



Alarm / Test Panel

Easy to install
One button Operation for testing
Buzzer for Alarm
Optical Led light for Test / Alarm



Liquid Extinguishing Agent

Ultra-Fast Extinguishing
Quenching Effect
Blanketing Effect
Environmental Friendly (non toxic | Biodegradable)
Fluorine Free
Residue Monitoring by Uv Light



protectfire
Made in Germany



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Reference



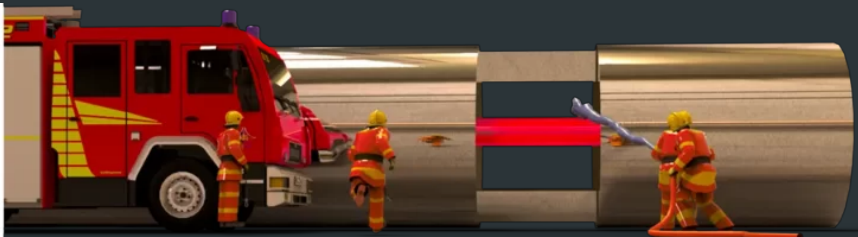
Transformer



Rubber Belt Conveyor Protection



SPY
Thermo-pneumatic
detection



protectfire
Made in Germany



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HIGH QUALITY
 GERMAN ENGINEERING





Extinguishing Agents Comparison

| | TiboRex Absolute | Water | Foam | Powder | Gas |
|----------------------------------|------------------|-------|------|--------|-----|
| Fast Temperature Reduction | + | - | - | - | - |
| Surface Blanketing | + | - | + | - | - |
| Quenching Effect | + | - | + | - | + |
| Fine-Spray Technology | + | + | - | - | - |
| Fluorine Free | + | + | - | - | + |
| Temperature Range -50°C to +80°C | + | - | - | + | - |
| Danger to Persons | + | + | - | - | - |

Ultrafast extinguishing

Only small amounts of extinguishing agent required. Tiborex rapidly delivers a huge cooling power. The object to be protected remains almost undamaged.

Ultrafast cooling

Enormous reduction of surface temperature. Avoidance of re-ignition. Reduced effect of fire. Quick interruption of combustion process.

The cooling effect

The enormous cooling effect of Tiborex Absolute is mainly based on **two physical properties:**

Quenching effect

Rapid removal of thermal energy therefore removing heat, hence no combustion or fire in hidden cavities.

Blanketing fat and oil fires

When mineral, animal or vegetable fats and oils burn, Tiborex Absolute uses chemical reactions to form a closed, gas-proof protective layer quenching the fire and protecting the hot fat or oil from re-ignition by cooling them down very quickly.

Cooling effect due to water evaporation: The fine-spray nozzles developed specially for Tiborex Absolute produce very fine droplets, smaller than 100µm, when discharging the extinguishing agent. As a result, ultra-fast evaporation of the liquid share in the extinguishing agent is achieved. Due to the required enthalpy of evaporation of 2.26 MJ/kg (equivalent to 1 litre of water) energy is extracted from the burning object in a minimum of time and it cools down substantially.

Residue monitoring and guaranteed quality

Residues of the extinguishing agent on the object can be identified with the help of ultraviolet light. A chemical analysis (DNA) can verify and confirm that the original Tiborex Absolute was used.

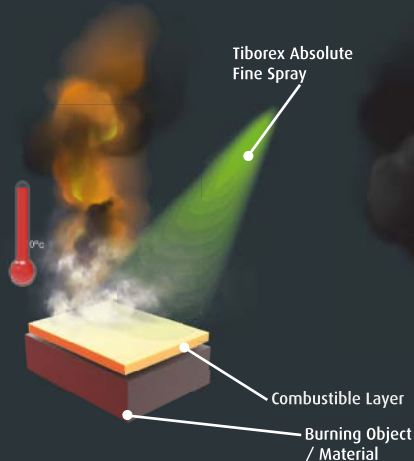
Environmental friendliness

Ecological and 100% fluorine-free extinguishing agent. Biodegradable. Non toxic to humans and animals.

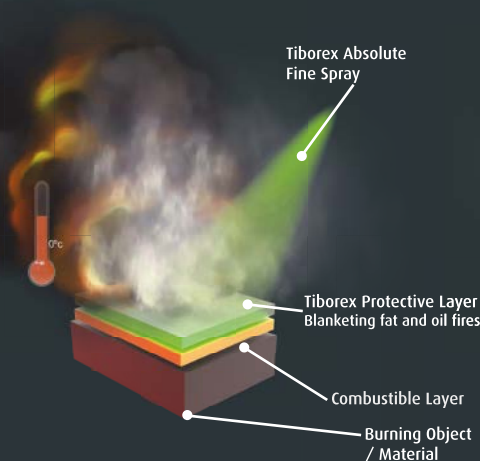
Cooling effect due to sublimation: During the evaporation of the aqueous phase some of Tiborex Absolute's main components form crystalline structures. With the still existing combustion temperature, these solid structures change from the crystalline phase to a gaseous phase. The enormous enthalpy of evaporation (heat) required for this amounts to 7.23 MJ/kg.

3 stages fire suppression

1 Cooling Effect Fine Spray Droplets that penetrate fire



2 Oxygen Suffocation by evaporation



3 Ultra Cooling through Sublimation Layering with solid crystals that convert to gas

