



*Wind Turbines | Electric Cabinets | Transformers | Others*

# **Revolutionary Fire Suppression Systems**

Made in Germany



**firespy**  
*wind*

**ROBUST - PATENTED - UNIQUE!**

*firespy wind® combines simplicity and robustness,  
making it the leading fire suppression  
solution for the most demanding conditions.*

**Reliability and low maintenance**  
*Trusted by leading wind turbine manufacturers*

**VdS**

. ISO9001  
. approved products  
. approved systems

**TiboRex**  
ABSOLUTE





# Efficiency & Robustness

## Fully Autonomous Fully Pneumatic - self-contained



### The power of liquid extinguishing agent

A large amount of fine droplets of liquid agent is sprayed through the special patented nozzles forming a huge cooling reaction surface. Thus, the fire will be quickly deprived of thermal energy, leading to a rapid temperature drop. The cooling effect breaks the reaction necessary to support combustion.

In addition, after the entire extinguisher has been dispensed, nitrogen propellant gas will be discharged from the patented container, resulting in a hybrid suppression system, also ensuring fire suffocation.

**100% Stainless Steel**  
No plastics in the core system



### LIQUID FIRES

Fuel, lubricant and hydraulic fluids

### SOLID FIRES

Plastic, rubber, wood, sawdust, wires, cables, fibre

### ELECTRICAL FIRES

Electrical cabinets, substations, transformers and other equipment



**VdS**

ISO9001  
approved products  
approved systems

## Always On, Always Reliable!

- ✓ **No-Pressure System**
- ✓ **No Electricity Required**
- ✓ **Constructed Entirely in Stainless Steel**





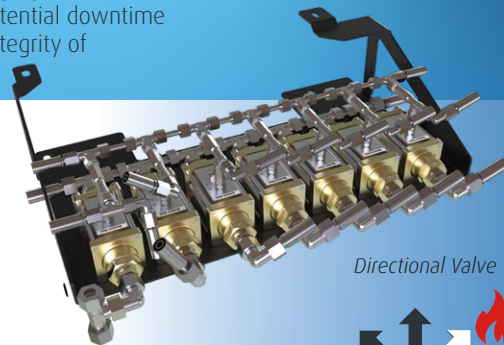
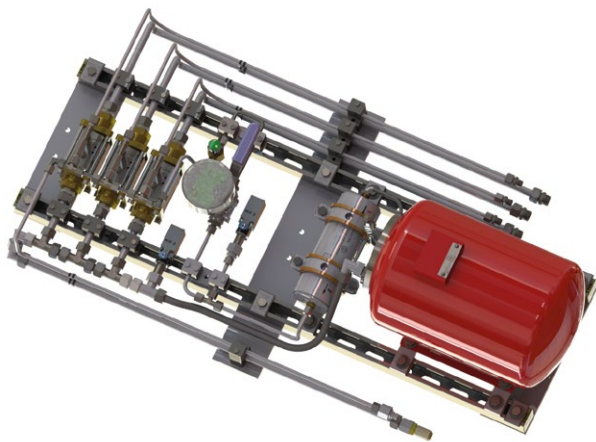
# Coming soon: **Offshore** wind turbine protection

*Due to its near maintenance-free operation and construction from stainless steel components*

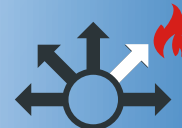
## **Directional Valve** Precision Sectorization for Wind Turbines

protectfire's advanced directional valve technology introduces a new level of control and efficiency in fire suppression for wind turbines. Designed with sectorization in mind, this innovative solution allows multiple fire zones—such as the nacelle, generator, transformer, and tower base—to be protected individually or simultaneously, all managed from a single system: Less equipment, less extinguishing agent.

By enabling independent activation of each suppression circuit, the directional valve significantly reduces system complexity while enhancing safety, reducing agent consumption, and optimizing response time. This not only minimizes potential downtime but also ensures that only affected areas are targeted, preserving the integrity of unaffected components.



Directional Valve



**Innovative and Disruptive  
Engineering**  
*Unmatched in its class!*

## **Versatile architecture allows multiple configurations from a single system**

### **Advantages:**

- **Sectorized Protection** – Tailored suppression for each turbine component.
- **One System, Multiple Zones** – Simplifies installation and maintenance.
- **Reduced Agent Usage** – Only the necessary zones are activated.
- **Rapid and Reliable Response** – Pneumatically controlled for maximum safety.
- **Almost Maintenance-Free** – Engineered with no parts prone to failure and no electricity

With this technology, protectfire sets a new standard in fire protection for the wind energy industry—combining modularity, efficiency, and unmatched reliability.







**2 Line System** (detection and extinguishing)  
Separated pipelines for detection and extinguishing.



**No Pressure**  
The extinguishing agent container is made of stainless steel and is pressure-free in the operating state. The tubing is also pressureless.



**No Electricity**  
No electricity needed in the system.



**5 Years - No Parts Change**  
Long savings - durable and resistant parts.



**Ultra-fast Detection**  
Response speed: Ultra Fast Response.  
False alarm proof. Based on "temperature" parameter for pneumatic activation.



**Operation Temperature Range: -30°C to 80°C**  
Prepared for extreme climates, whether in the desert or in the mountains.



**Capable of Working in Extreme Conditions**  
Shock and vibration resistant.



**Stainless Steel**  
Precision manufacturing - highly durable stainless steel.



**Very Low Maintenance**  
The absence of pressure, combined with the system's simplicity, means maintenance is almost exclusively visual.



**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.

Possibility of multiple temperature ranges in a single system.  
57 °C | 68 °C | 79 °C | 93 °C | 110 °C | 141 °C | 182 °C | 230 °C | 260 °C

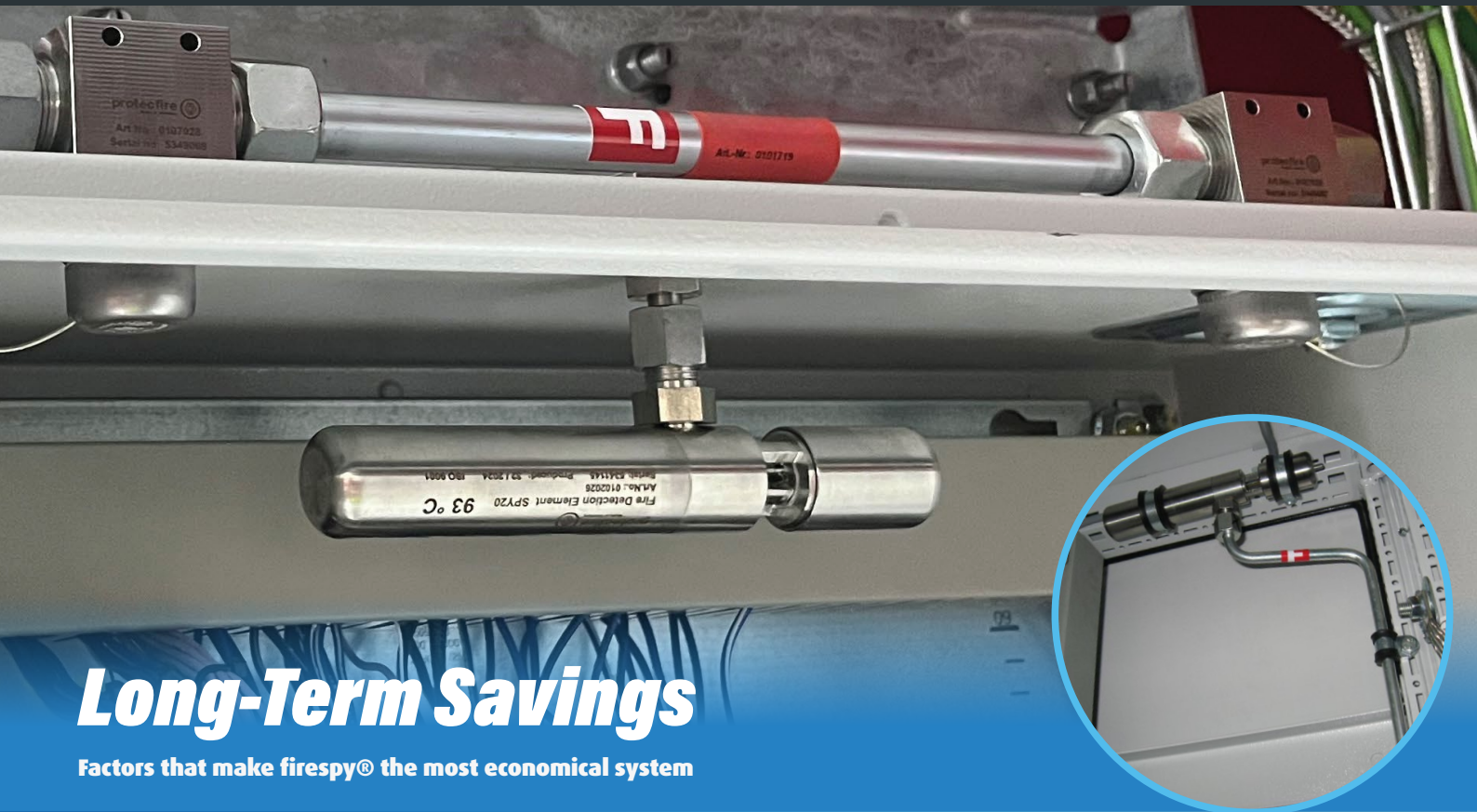
Operates in highly ventilated places and in open spaces



**Effective on:**  
*Open doors / ventilated cabinets*







## Long-Term Savings

Factors that make firespy® the most economical system

### Almost Maintenance-Free for 5 years:

No need for the usual annual maintenance as it is not pressurized!

### No False Alarms:

Patented, accurate and reliable detection system.

### Make Your Own Maintenance:

Your own staff - no need for external companies.

## How it Works

The firespy system operates with an unpressurized container and piping network, ensuring maximum safety during standby.

Activation occurs through SPY thermal detectors, which respond to excessive heat. When triggered, the detectors release the pressure in the pilot line and cylinder control valve, initiating the discharge of the extinguishing agent.

Tiborex Absolute is then deployed through fine spray nozzles, creating an immediate cooling effect and extinguishing the fire within seconds.

The system can also be manually activated remotely, and optional alarm and test buttons can be integrated for added functionality and system monitoring.

Name	firespy® wind
Temperature Range	-50°C / -30°C to 80°C
Detection Technology	Rise of Pressure
Detection and Extinguishing Line	2 independent lines
System Pressure	No pressure
Detection Technology	SPY detection element - Stainless steel
Trigger Temperature	Glass ampoule, 9 independent temperatures
Life of Detectors	up to 15 years
Nozzle Type	Fine spray nozzle
Extinguishing Agent	TiboRex Absolute
Extinguishing Agent Volume	10, 20, 50L
Extinguishing Technology	Fine spray technology
Extinguishing Container (pressure)	Pressureless (sealed cartridge inside)
Product Material	Stainless steel
Alarm Signal Switch	Yes
Maintenance Inspection	Annually
Parts Replacement Duration	5 to 15 years

### Certifications for protectfire various systems:



TÜVNORD

DMT

KBA

cesmec

RAG

RI SE

SBF127:17  
FA127  
SPCR183  
UNECE R-107



## System Components



### SPY Thermo-Pneumatic Detector

- Unique patented detector
- No electricity required
- High-finish stainless steel
- Response speed: Ultra Fast Response RTI 12
- Available detection temperatures:
  - -57°C -68°C -79°C -93°C -110°C -141°C -182°C -230°C 260°C

### Directional Valve

The system redirects the extinguishing agent only to the area where the detector was triggered, allowing for accurate suppression and minimal agent consumption.



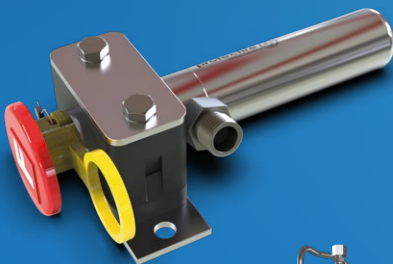
### Fine-Spray Nozzles

- Unique patented nozzle solution
- Quick and easy to install - Reduces installation time by ~70%.
- Very small - Virtually fits anywhere
- Stainless steel
- k4 factor - Fine spray technology
- Up to 130° spray pattern
- High quality, heavy-duty nozzle caps



### Pneumatic Manual Actuator

- Unique patented pneumatic activation system
- Stainless steel
- Safety locking system
- Argon gas activation



### Maintenance device

- System shutdown to maintenance mode
- Safety control for wind turbine operational mode
- ✓ Enables safe maintenance
- ✓ Ensures the wind turbine can only be activated when the fire suppression system is in operational mode



### Extinguishing Agent Container

- Patented - Unique Pneumatic Release System
- Can be placed in any position!
- Stainless steel
- Patented technology
- Liquid Agent: Tiborex Absolute - exclusive protectfire agent
- Effective against liquid, solid, grease, and fibre fires





## 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.

### 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

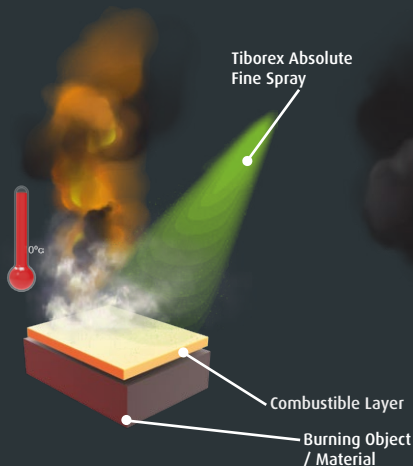
Ecological and 100% fluorine-free extinguishing agent. Biodegradable. Non toxic to humans and animals.

**Cooling effect due to 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.

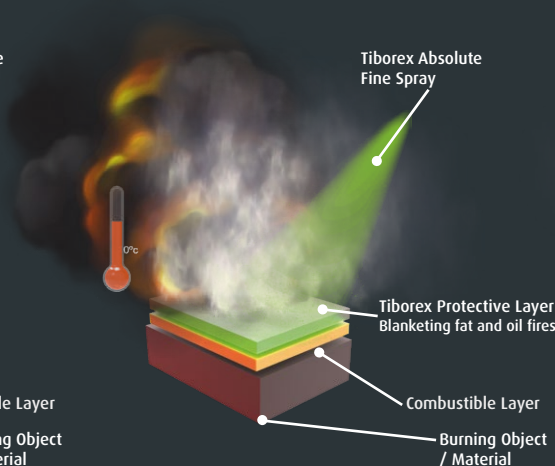
**Cooling effect due to sublimation:** During the evaporation of the aqueous phase some of Tiborex Absolute's main components form crystalline structures. With the still existing combustion temperature, these solid structures change from the crystalline phase to a gaseous phase. The enormous enthalpy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

## 3 stages fire suppression

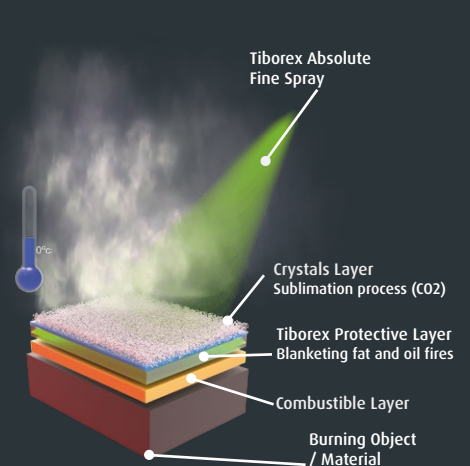
### 1 Cooling Effect Fine Spray Droplets that penetrate fire



### 2 Oxygen Suffocation by evaporation



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





**firespy**  
*wind*



## **Fire Suppression Systems for Generators | Electrical Panels | Transformers | Wind Turbines**

**protecfire**   
Made in Germany

protecfire GmbH  
Weidekamp 10  
D-23558 Lübeck  
Germany

Tel.: +49 (0) 451 399 61-10  
Fax: +49 (0) 451 399 61-20  
@: [info@protecfire.de](mailto:info@protecfire.de)  
[www.protecfire.de](http://www.protecfire.de)

Brochure Information / Warning  
firespy® 2025

The information presented in this brochure is for general informational purposes only. While every effort has been made to ensure accuracy, the content may contain errors or inaccuracies and is subject to change without prior notice. Nothing herein shall be construed as a binding offer or specification.

All rights reserved. No part of this brochure may be reproduced or used without express written permission from protecfire GmbH.

Any images or representations, including 3D models, are intended solely for visualization, educational, and informational purposes. These materials are illustrative and may not fully represent the final product or installation. They are to be used exclusively for product evaluation, demonstration, or conceptual reference related to protecfire solutions.  
Photo credits page 3 to Brigitta Schneider.

Mentions of third-party companies or installations are provided for reference only and do not imply any affiliation, sponsorship, or endorsement unless expressly stated.

Version: ENG-protecfire-FireSpy-Wind-29072025



**[www.protecfire.de](http://www.protecfire.de)**

