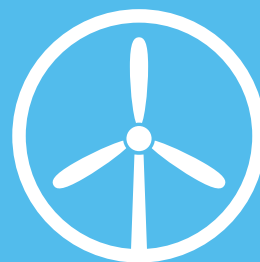




**Wind Turbines | Electrical Cabinets**

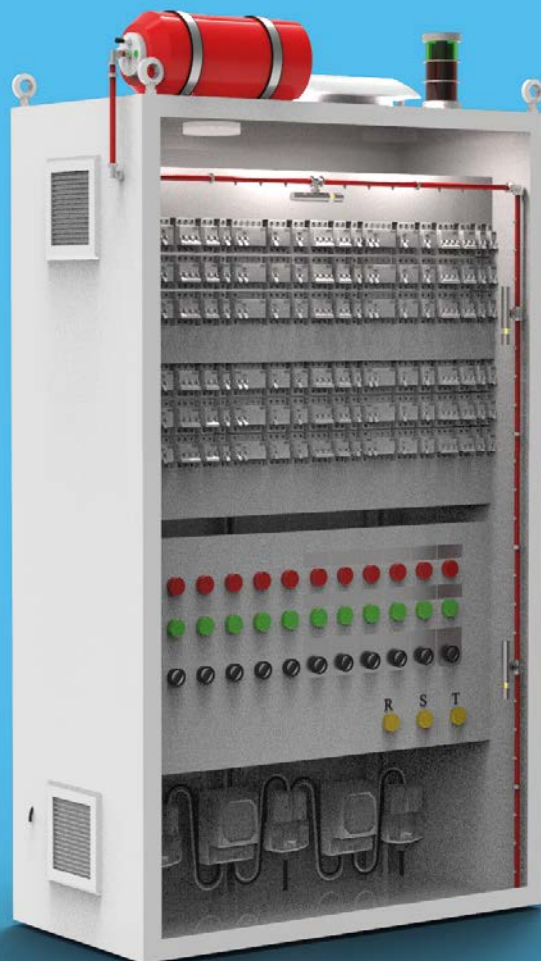


# Revolutionary Fire Suppression Systems

Made in Germany

**detexline**  
electric

**Reliability is our main character**  
You need the Simplicity and Robustness,  
that makes detexline the most used solution  
in Wind Generators leading manufacturers



No Maintenance

No Pressure

No Electricity

Robust

Super-Fast Detection & Extinguishing

Long term saving





**TiboRex**  
ABSOLUTE

Liquid Extinguishing Agent

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

In addition, after all the extinguishant has been dispensed, the propellant Nitrogen gas from the patented container will be discharged, resulting in a hybrid suppression system, further ensuring that no oxygen gets on to the surface.

# fine-spray

## **LIQUID FIRES**

**Fuel, lubricant and hydraulic fluids**

## **SOLID FIRES**

**Plastic, rubber, wood, sawdust, cables**

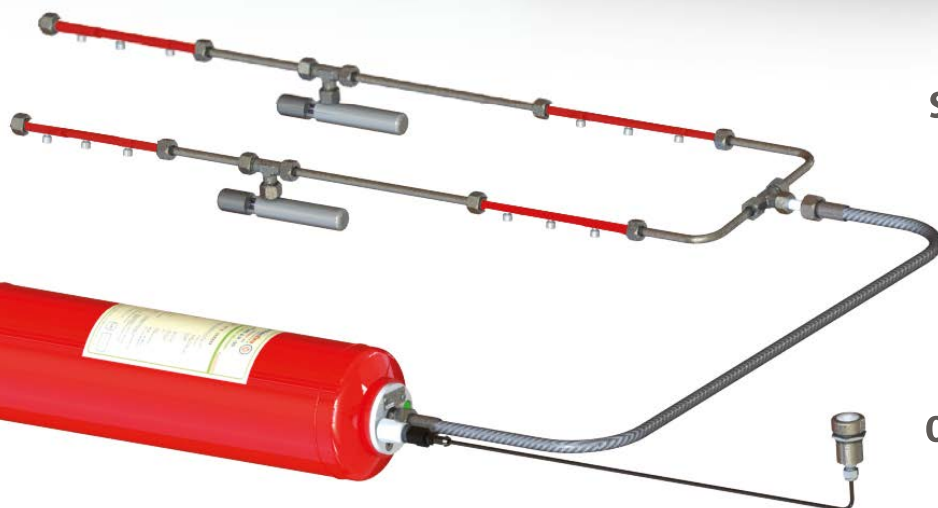
## **ELECTRICAL FIRES**

**Electric cabinets**



# technology

## Robustness of German Technology

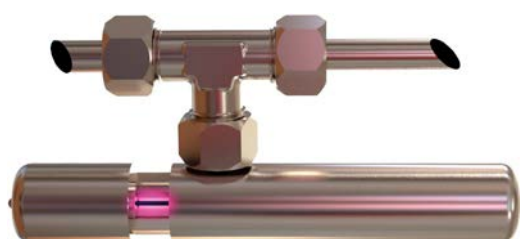


### Stainless Steel Container

Safe and Robust  
Internal Activation System  
No maintenance  
Stainless-Steel

### Optic and Acoustic Alarm

Compact control panel  
Acoustic Signal  
Test Button



### Spy - Thermo-pneumatic Detector

Patented  
Multiple temperature range  
Sensitive to hidden fires  
Robust and Precise  
Stainless-Steel



### Fine Spray Nozzles

Patented  
90°Angle spray  
Robust and Precise  
Stainless-Steel  
Very small and fits virtually anywhere

# New extinguishing agent - Tiborex Absolute



**TiboRex**  
ABSOLUTE

## NEW AND ABSOLUTE PREDATOR

### TiboRex Absolute

Our proprietary extinguishing agent meets the highest expectations in terms of effectiveness and environmental friendliness

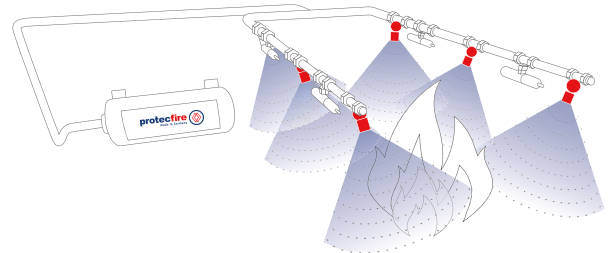
### The cooling effect

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

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.

- ultra fast cooling liquid agent
- fluorine-free
- biodegradable
- non-corrosive
- non-toxic
- use at -50°C to 80°C ambient temperatures
- surface blanketing / quenching effect



# Extinguish Agents Comparison

COMPARISON OF FIRE EXTINGUISHING AGENTS	TiboRex Absolute	Water	Foam	Wetting Agent	Powder	Gas
Fast Temperature Reduction	+	-	-	-	-	-
Surface Blanketing	+	-	+	+	-	-
Quenching Effect	+	-	+	-	-	+
Fine-Spray Technology	+	+	-	+	-	-
Fluorine Free	+	+	-	-	-	+
Temperature Range -50°C a +80°C	+	-	-	-	+	-
Danger to Persons	+	+	-	-	-	-

## Ultrafast extinguishing

Only small amounts of extinguishing agent required  
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

## Quenching effect

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

## Blanketing fat and oil fires

When cooking 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





## Single line system detection / extinguishing

**No Electricity** /No electrical power is needed in the system

**No Pressure** /No pressure in all the pipeline

**Maintenance Free** /no parts to be replaced for 5 years

**Simple & Easy to install** /Both for new system or retrofit

**Limited Space required** /Due to small sized system components

**Applicable temperature: -50°C to 80°C**

**Able to work in extreme conditions**

**Works in highly ventilated systems and open spaces**

**Works in open cabinets** /unlike gas than can skip through the ventilation

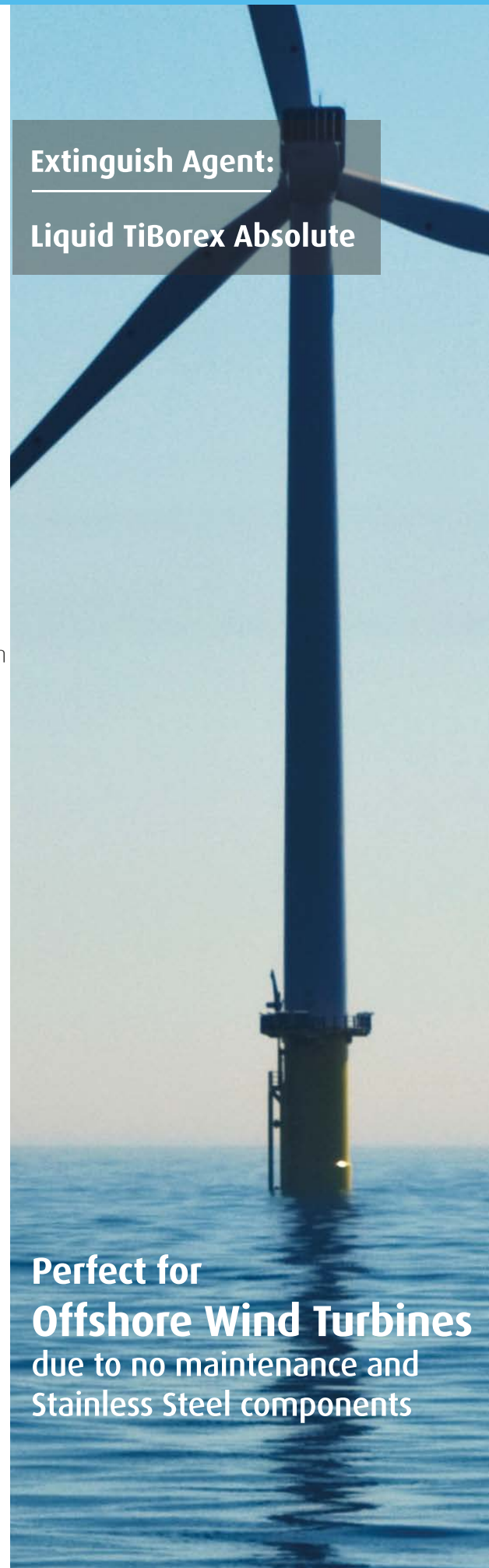


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**Extinguish Agent:**

**Liquid TiBorex Absolute**

**Perfect for  
Offshore Wind Turbines**  
due to no maintenance and  
Stainless Steel components





trusted by main wind turbines companies



**NORDEX**  
We've got the power.

**acciona**

**Vestas**

**ENERCON**  
ENERGY FOR THE WORLD

certifications



UNECE



ISO 9001

**DMT**



**RISE**



**RAG**  
Deutsche Steinkohle







- Headquarters
- Subsidiaries
- Distributors

### Protecfire (Asia Pacific) Ltd

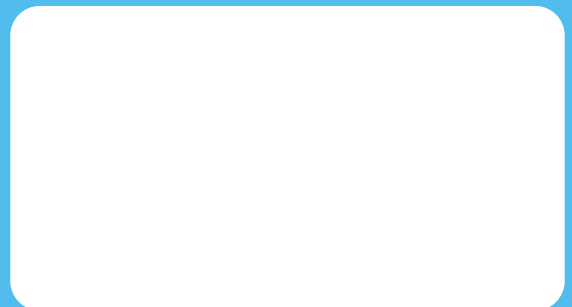
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