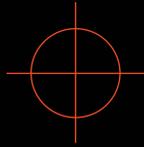




SITE

SPECIFIC



PROTECTING

YOUR

MICRO-ENVIRONMENT

**WIND ENERGY
FIRE PROTECTION SOLUTIONS**



FIRETRACE[®]
AUTOMATIC FIRE SUPPRESSION SYSTEMS

Fires account for 7% of wind energy insurance claims and 9% of insurance losses – far exceeding storm damage's 4% of claims and 2% of losses (non-lightning related storm damage).



The problem

Wind energy's impact on world power supplies is rapidly expanding in virtually every country. As this growth continues, the industry faces many challenges in securing support for new facilities. Local concerns often include aesthetic, environmental, and safety concerns.

In the area of safety, fire is typically an area of specific concern. Fires in a wind turbine present a very difficult problem. With the turbine unit's location hundreds of meters in the air, suppression of the fire from the ground is nearly impossible even for turbines located in easily accessed locations. For turbines in more challenging locations – or offshore – the likelihood of a timely response is highly unlikely. The usual result: the complete loss of the turbine.

Until now, there have not been good fire suppression options for these turbines. Traditional fire systems have been impractical due to the environment within the wind turbine. The added weight and complexity of these systems would not fit within the nacelle, and the vibration, temperature extremes, dust and airflow resulted in a difficult challenge for systems to effectively detect or suppress a fire.

The solution

Firetrace offers a fire protection solution to overcome the difficulties a traditional system would face. In the nacelle, there are specific areas which may be prone to fire including:

- Electronic Control Boxes
- Generators
- Braking Systems
- Electrical Enclosures
- Transmission Enclosures

Firetrace protects these areas with site-specific fire protection. As these are smaller enclosures within the larger nacelle, much smaller amounts of agent are needed, resulting in systems that add a few pounds rather than a few hundred pounds.

Firetrace systems utilize the proprietary Firetrace Detection Tubing for detection of a growing fire. This pneumatic tubing reacts only to the heat and radiant energy of a fire; therefore it is impervious to false discharges caused by dust and contaminants interfering with the detection.



How it works

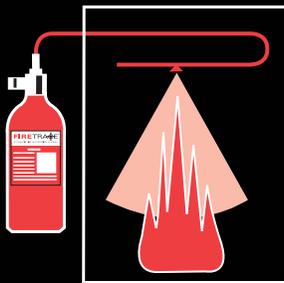
Firetrace is a totally self-contained fire detection and suppression system. It requires no electricity to operate and offers automatic 24/7 protection for the machine.

The proprietary red Firetrace Detection Tubing is the key to detecting fires where they start. By routing the tubing through the areas to be protected, Firetrace's detection can get right to the source of the fire.

Firetrace tubing is constructed from a proprietary polymer composition; it is immune to the dirt, vibration and shocks associated with wind turbines. When the tubing is exposed to the heat and radiant energy from a fire, the tubing bursts and delivers the fire suppressing agent directly to the source of the fire.

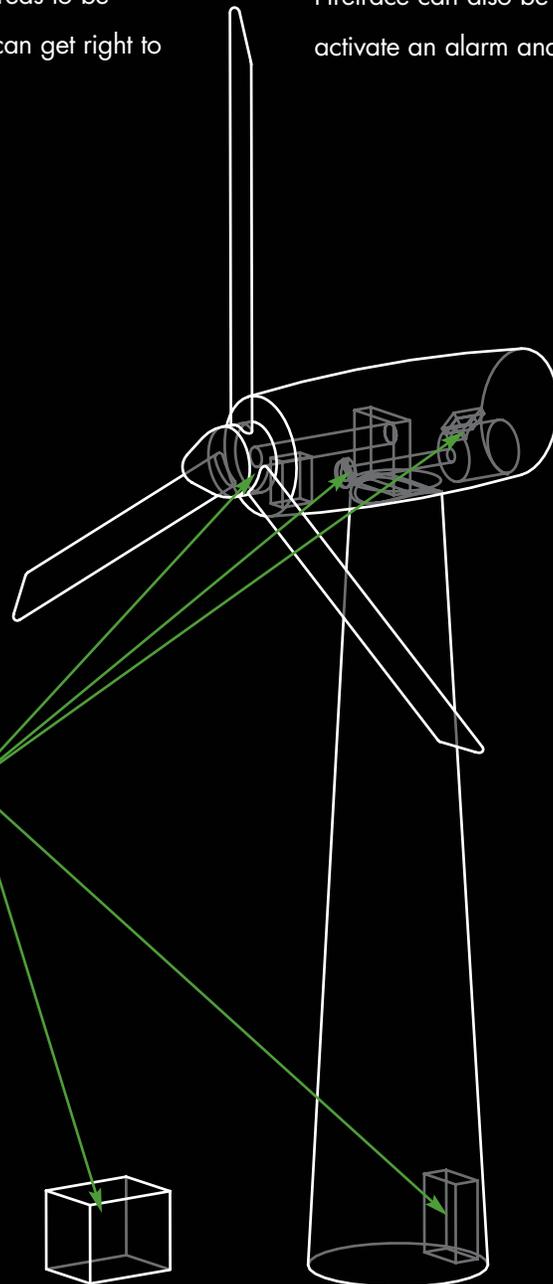
Firetrace can also be integrated with system controls to activate an alarm and initialize the turbine's shut down.

DIRECT DELIVERY



Typical areas protected by Firetrace

- Controller
- Transformer
- Converter
- Switching System
- Generator
- Disc Braking System



Firetrace's Wind Power Applications

Firetrace has more than 45,000 systems installed protecting critical equipment worldwide. Firetrace has its origins in the late 1980's in the United Kingdom as a special hazard fire suppression system. Through the 1990's applications expanded to include enclosures such as machines, fume hoods, data centers and electrical cabinets as distribution increased in Europe.

In 2001, the worldwide rights to Firetrace were purchased by Firetrace USA, a group of fire suppression industry veterans who saw the value in creating fire suppression systems for "micro-environments." This concept is simply providing supplemental protection that suppresses fire quickly within the protected space before larger room or building systems would activate. As a result of this supplemental protection, fire damage, both direct and collateral, and costs associated with cleanup and downtime are significantly reduced or eliminated. Available in multiple system sizes (ranging from one pound systems to 50 pound systems) utilizing a variety of

fire suppressing agent options, Firetrace is now the choice fire suppressing system for virtually any enclosed application, including modern wind turbines.

Firetrace can be fitted in virtually any turbine, new or existing.

- Fast, reliable fire detection
- Requires no power to operate, offering 24/7 protection
- Installs in new or existing turbines
- Tolerant of the harsh working environment, including temperature extremes and vibration
- Doesn't interfere with installation or maintenance of equipment

FIRETRACE[®]
AUTOMATIC FIRE SUPPRESSION SYSTEMS

Distributor:

Firetrace is available exclusively through our worldwide distributors, each of which has been properly trained in the installation and maintenance of Firetrace systems. To locate the Firetrace distributor nearest you please contact us at:

Firetrace International

15678 N. Greenway-Hayden Loop, Suite 103
Scottsdale, AZ 85260 USA

1-866-607-1218 (US and Canada)

1-480-607-1218 (Elsewhere)

1-480-315-1316 (Fax)

Firetrace@firetrace.com

www.firetrace.com

Firetrace has more than 20 international approvals and listings including:



Approvals and listings vary by system type and agent.