



ORBIS FIRE SUPPRESSION

Pre-Engineered Fire Suppression Systems

Wind Turbine Fire Suppression

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Orbis® Pre-Engineered Fire Suppression Systems

Wind Turbine Fire Suppression

Datasheet No: FS-DT-WT-100

Description

Wind turbines operate in remote, high-value environments where fire poses a significant risk to both equipment and continuity of power generation.

The Orbis® DLP (Direct Low Pressure) and DHP (Direct High Pressure) systems provide reliable, autonomous fire suppression within critical turbine components such as nacelles, control panels, and converters.

Using clean, inert, or gaseous agents (CO₂, Nitrogen (IG-01), or Argon (IG-100)), these pre-engineered systems deliver rapid, localized fire suppression without reliance on external power or complex detection infrastructure.

Each system is self-contained, automatically activated through a heat-sensitive polymer detection tube, and designed for the challenging environmental conditions of wind turbine installations.

System Types

DLP – Direct Low Pressure (IG-01 / IG-100 Systems)

The DLP configuration is designed for nitrogen (IG-01) or argon (IG-100) applications.

The pressurized agent is stored at 13.5 bar nominal pressure and discharged directly through the detection tube, which ruptures at the point of highest heat.

Ideal for compact electrical panels, control enclosures, and converter cabinets.

Advantages:

- Non-corrosive, residue-free inert gases
- Safe for energized equipment and personnel
- Low maintenance and refilling cost
- Stable performance across temperature variations
- No PFAS



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System Types

DHP – Direct High Pressure (CO₂ Systems)

The DHP configuration uses carbon dioxide (CO₂) stored at 56 bar (850 psi) for rapid fire suppression in critical turbine compartments.

Upon tube rupture, CO₂ is instantly released at high velocity, displacing oxygen and cooling the combustion zone.

Suitable for nacelle spaces, yaw control panels, and transformer enclosures.

Advantages:

- Fast suppression and cooling action
- Compact high-pressure storage
- Effective in unoccupied turbine compartments
- Ideal for enclosed machinery and electrical faults
- No PFAS

Pre-Engineered Key Features

- Automatic detection and suppression — no electrical power required
- Compact, modular, and maintenance-friendly design
- Rugged stainless steel construction for harsh offshore and onshore environments
- Compatible with Orbis® control panels and detection accessories for hybrid systems
- Available in multiple agent configurations (CO₂, IG-01, IG-100)
- Complies with NFPA 12, NFPA 2001, and ISO 14520 standards
- No PFAS



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Applications

1. Control Cabinet

Role: Houses PLCs, relays, and control electronics for turbine operation.

Risks:

- Short circuits or arc faults from control relays
- Cable insulation overheating
- Contact failure due to vibration or dust buildup

Best Protection:

System Type: DLP (Direct Low Pressure)

Agent: IG-01 (Nitrogen) or IG-100 (Argon)

Reason:

Non-corrosive, non-conductive inert gases provide clean suppression without risk to electronics, ideal for compact enclosures that are often occupied by sensitive control logic hardware.

2. Converter Cabinet

Role: Manages conversion between AC/DC, often with high voltage and heavy current components.

Risks:

- Power transistor overheating (IGBT failures)
- Arc flashes due to voltage switching
- Cable and busbar insulation fires

Best Protection:

System Type: DHP (Direct High Pressure)

Agent: CO₂

Reason:

CO₂ rapidly displaces oxygen and cools the heat source. Perfect for unoccupied, sealed compartments that experience high transient temperatures. It's fast-acting and highly effective for Class C (electrical) fires.



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Applications

3. Medium Tension Cabinet

Role: Controls power output and grid connection, often housing switchgear, fuses, and breakers.

Risks:

- Electrical arcing and component failure
- Overheating contactors or busbars
- Accumulated dust and moisture ignition

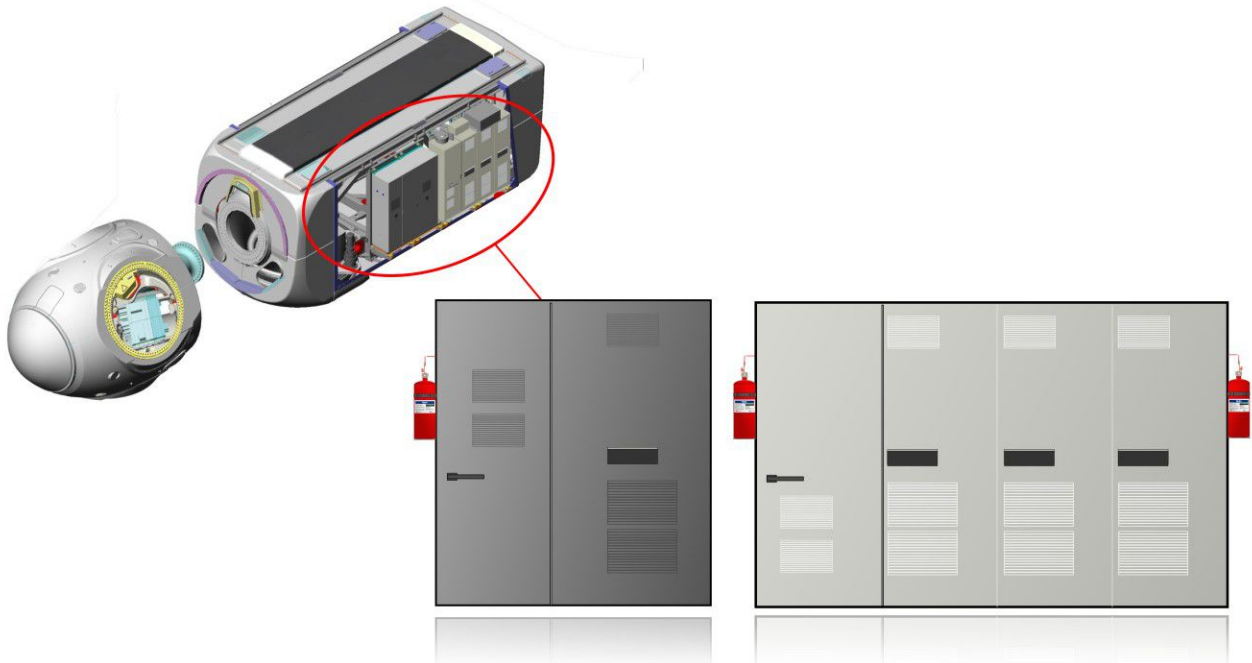
Best Protection:

System Type: DLP (Direct Low Pressure) or ILP (Indirect Low Pressure), depending on enclosure volume

Agent: IG-01 (Nitrogen) or IG-100 (Argon)

Reason:

Inert gases offer safe, residue-free suppression for electrical switchgear areas, with the option to scale up nozzle distribution (ILP) for larger medium-voltage cabinets.



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Technical Specifications		
Parameter	DLP (IG-01 / IG-100)	DHP (CO ₂)
System Type	Direct, low-pressure tube discharge	Direct, high-pressure tube discharge
Agent Type	Nitrogen (IG-01) / Argon (IG-100)	Carbon Dioxide (CO ₂)
Cylinder Pressure	13.5 bar (195 psi) @ 21°C	55 bar (800 psi) @ 21°C
Activation	Heat-sensitive polymer detection tube	Heat-sensitive polymer detection tube
Discharge Method	Direct release through rupture point	Direct release through rupture point
Cylinder Material	Stainless steel / carbon steel	Stainless steel / carbon steel
Temperature Range	–20°C to +60°C	–20°C to +60°C
Pressure Monitoring	Optional pressure gauge or pressure switch	Optional pressure gauge or pressure switch
Compliance	NFPA 2001 / ISO 14520	NFPA 12 / ISO 6183



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