Thermal Management and Signaling Technology

for Wind Energy

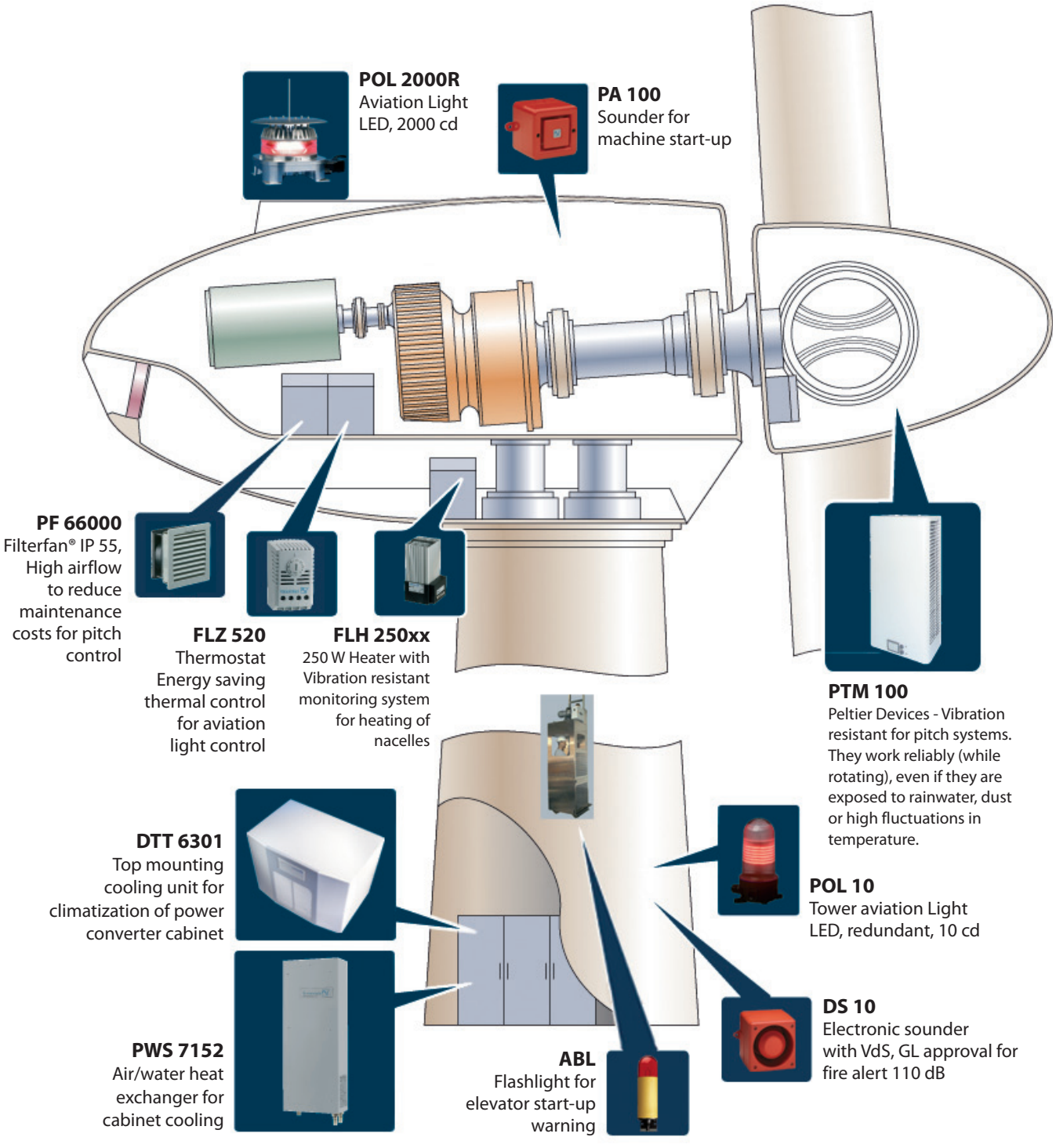
SHARING COMPETENCE

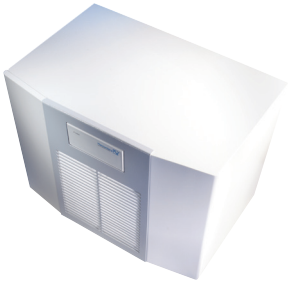
Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY

In demand worldwide ... *Innovative Equipment for Wind Power Plants*

Wind energy is one of the most cost-effective forms of renewable energy being used on an increasing worldwide scale. The problem: smooth functioning of the turbines demands reliable cooling of some very important areas, such as the pitch control cabinet or the shafts in the gondola. The performance of this equipment is affected by exposure to fluctuating temperatures, sand, dust or salt water. This is where Pfannenberg's proven experience in cooling technology & thermal management can offer you high quality products that work properly - even when used under extreme environmental conditions. Maintenance provided by our global service network will also help avoid costly downtimes.

Pfannenberg is a leading thermal management and signaling solution supplier for wind energy OEM's and their supply chains. We provide innovative solutions like real Type 12 / IP 55 protected Filterfans®- with 300% longer service life for extreme environments or Top Mount Cooling Units with a unique condensate safety feature for cabinets in the tower button or other areas where space is limited.





DTT Top Mounted Cooling Units
1200–14000 Btu/h

DTS 3000 Indoor/Outdoor Cooling Units 2000–24000 Btu/h

- **High reliability** using the best available components & design tools
- **Excellent security level** due to patented condensate management system - which prevents condensate from penetrating the enclosure.
- **Perfect service-friendliness** and long maintenance intervals
- **Product variety:** multiple performance levels available
- **Environmental protection** thanks to energy efficiency and recyclability
- **Easy mounting:** quick release mounting frame & quick mount design

Filterfans®

With the 4th Generation, our company can look back on over 50 years of successful development of Filterfans®

- Installation size 6, air flow rate up to 462 CFM
- Three performance classes, cut-out compatible
- System of protection IP 54 and IP 55, NEMA type 12
- UL, cUL to NITW2 Category and CE approved, CSA pending
- UV-resistance / EMC options available

Peltier Cooling Units
100–500 W

Use in sensitive areas- circuitry and small control cabinets.

- Ideal for cooling of operating and control elements
- Particularly suitable for support arm systems
- Vibration-free, also usable for precision processes
- Pinpoint cooling of hot spots

FLH Fan Heaters

- Heating performance ratings of 250 and 400 Watts
- Integrated fan that assists the natural convection
- Fast and even distribution of the heat

FLZ Thermostats

- Available with N.C. / N.O. and changeover contacts.
- In combination with FLH heaters, they provide temperature control inside the control cabinet.
- In combination with filterfans, they provide for additional savings on energy, materials and time.

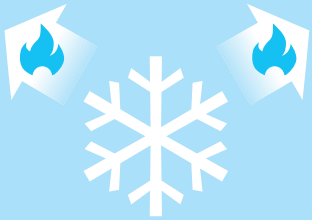
PWS Air/Water Heat Exchangers
650–10000 W

- Compact design- install or mount externally and internally
- Seal requires no reworking of the cut-out
- Maintenance-free design
- High IP protection, NEMA 3R/4 optional
- Usable under aggressive conditions
- System compatible with chillers
- Can be integrated into existing cooling circuits

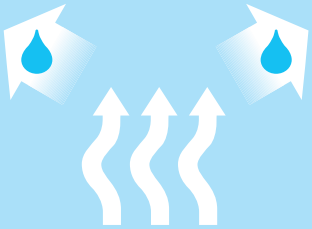
Pfannenberg is certified manufacturer for GL, VdS, CCC, GOST and ATEX products and member of German WindEnergy Association (BWE)

Life Expectancy and Operational Reliability

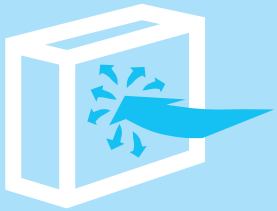
To keep temperatures inside cabinets within limits for optimum performance, 3 factors should be considered:



Cooling and avoiding hot spots



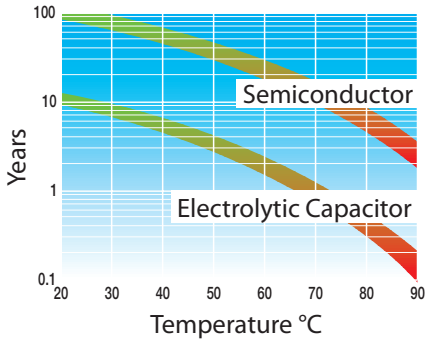
Heating and avoiding condensate



Appropriate ingress protection (IP)

Avoid Costly Downtimes

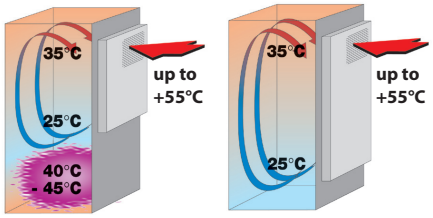
Unsuitable or improperly sized cooling units and thermal management components can affect the service life of your wind turbines, causing technical malfunctions, downtimes and increases in maintenance costs. By using Pfannenberg cooling technology, you can reduce the costs of operation significantly.



Intelligent Product Design

- Promotes natural convection
- Maximum distance between air intake and air outlet
- Optimum distribution of heat inside the cabinet eliminates hot spots

Distribution of heat inside the cabinet



Low clearance between air intake and air outlet- Danger of heat pockets

High clearance between air intake and air outlet- No hot spots

Reliability and Efficiency

- Service-friendly, power-saving, reliable, and long-lasting systems
- High internal airflow to reduce hot spots
- Energy efficient designs save resources
- Filter-less designs reduce maintenance requirements

Innovative Product Features

- 3 mm fin spacing of heat exchanger prevents clogging by contaminants
- Integrated condensate evaporator, reliable condensate management
- Effective sealing, preservation of Type 12 rating
- Impact resistant steel cover (also available as stainless steel version)
- Easy service access to all cooling unit components

Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY

Pfannenberg Incorporated
68 Ward Road, Lancaster, New York 14086
Phone: 716-685-6866
Fax: 716-681-1521
sales@pfannenbergusa.com

www.pfannenbergusa.com