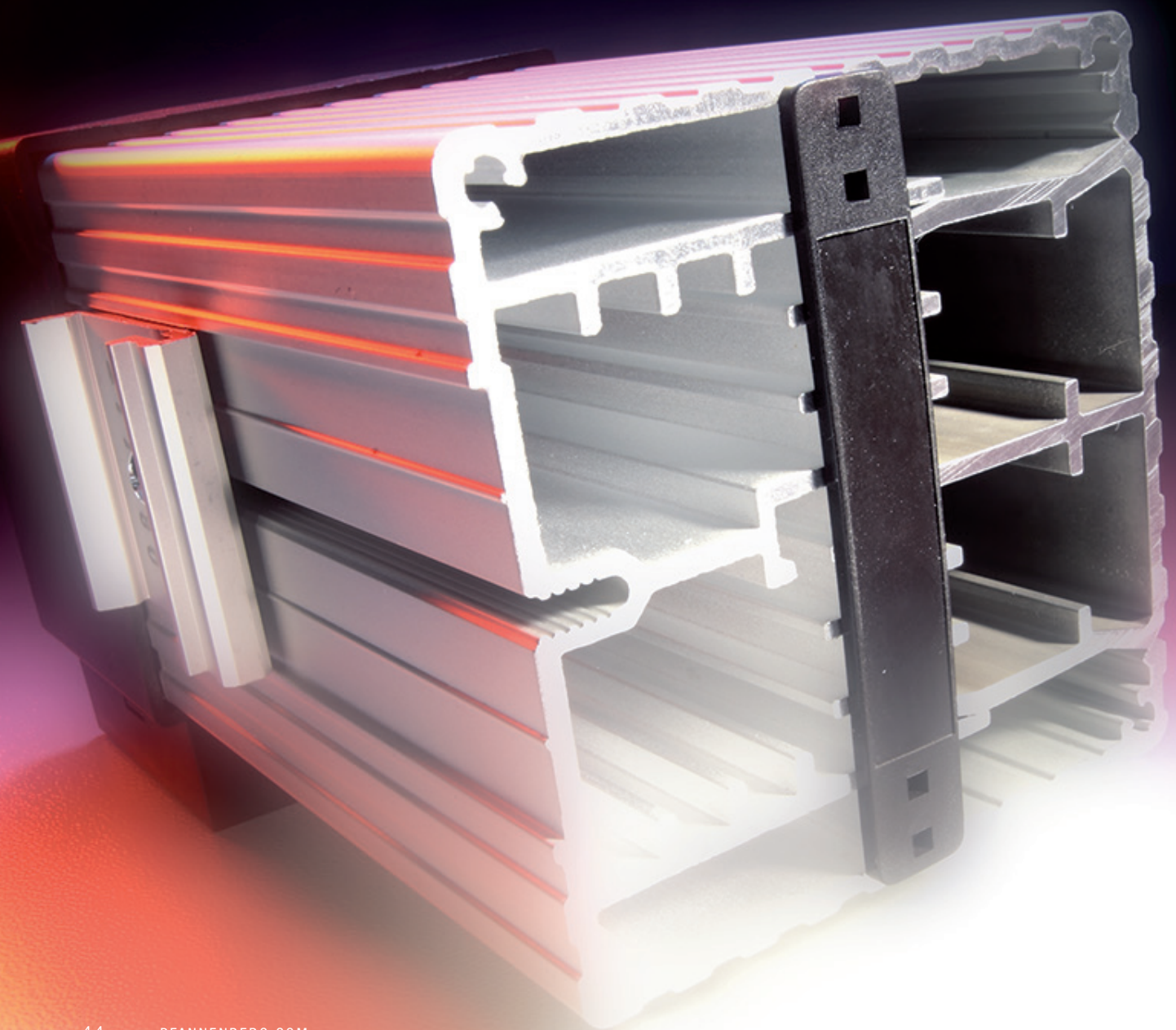


Life insurance.



Heaters, Thermostats and Hygrostats.

The formation of condensation is one of the largest dangers for electrical enclosures. As long as they are working under load, the heat dissipation from the components will prevent any condensation from forming within the enclosure. When there is no longer any heat load due to system downtime, there is a potential danger that components within the cabinet will form condensation. And this is precisely where the function of the Pfannenberg control cabinet heaters begins (radiant heaters and fan heaters). With the addition of the PFH-T series, which is a collection of fan heaters with an internal thermostat for the regulation of the fan and heater, prevention of condensation in the cabinet is guaranteed.

Various performance classes of FLH control cabinet heaters are ideally complemented by thermostats and hygrostats from the FLZ series. Combined, they ensure that the temperature inside the control cabinet is always correct and that the formation of condensation is prevented.

The control of 4th generation filterfans by thermostats from the FLZ series represents an intelligent use of filterfans for control cabinet air conditioning to suit individual needs. It increases energy efficiency and reduces CO₂ emissions. Accordingly, the combination with thermostats and hygrostats offers a better environmental balance through higher energy efficiency. It also results in greater reliability of your production process.

Pfannenberg's heaters, thermostats and hygrostats perfectly complement Pfannenberg's filterfans, heat exchangers and cooling units.

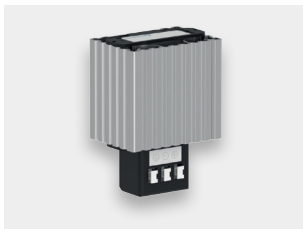
Protecting man, machine and the environment.

6 different heating series:
Always the right solution.



PRH Mini – Mini-Radiant Heaters.

- For very compact housings.
- Heating at certain points.
- For small heating requirements.



FLH – Radiant Heaters.

- Standard radiant heating for all applications.
- Wide performance range according to the application.
- Various connection possibilities.
- Ideal for small housings.



FLH SL – Fan Heaters.

- With railway certification for all sectors with increased shock and vibration requirements, (wind energy, mobile).
- Ideal also for outdoor applications; starts up to $-40\text{ }^{\circ}\text{C}$.
- With classical screw fastening.



FLH-T – Fan Heaters with integrated Thermostat.

- With railway certification for all sectors with increased shock and vibration requirements (wind, telecom, train).
- Integrated thermostat for automatic control.
- Ball bearing fan for long service life.
- Plastic housing for safe operation.



PFH – Compact Fan Heaters.

- New fan heater; standard solution with PTC for all electrical enclosures.
- Very compact construction, especially for smaller housings.
- Due to quick heating-up, especially where the plant needs to start up quickly (wind).
- Plastic housing for safe operation.



PFH-T – Compact Fan Heaters with integrated Thermostat.

- Like PFH, but with integrated thermostat.
- Same application – but no additional space for thermostat necessary.
- Energy-saving automatic temperature control.
- Plastic housing for safe operation.

3 different thermostat and hygrostat series: For every application.



FLZ 510–530 – Thermostats.

- The standard solution to control heaters and filterfans.
- All applications in industry.
- Protects heating and fan.



FLZ 541–543 – Twin Thermostats.

- Combination for reduced space requirements.
- All applications in industry.
- Switching units in various temperature ranges.



FLZ 600–610 – Hygrostats.

- Humidity control, all applications in industry.
- Best for environments with high air humidity.
- Protection against condensate before it occurs.

The Pfannenberg Thermal Management Team.

Thermostats.



Thermostats are used as temperature controllers and, therefore, for the control of filterfans or electrical enclosure heaters. They are available with N.C. (normally closed) / N.O. (normally open) and changeover contacts. In combination with control cabinet heaters you can ensure (besides temperature control) that the control cabinet is 'artificially' dehumidified, particularly in outdoor applications. That means that the temperature is kept above the dew point so that no water condenses out of the air, which could lead to short circuits due to the formation of condensation.

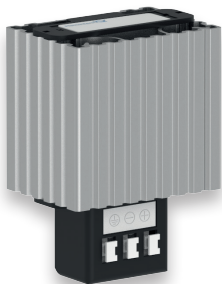
The combination with filterfans offers additional savings on energy, materials, time, as well as a better environmental balance and greater reliability of the production process due to reduced energy consumption and improvement of the efficiency of the filterfans. The twin thermostat series unites two thermostats in all combinations for multiple switching tasks!



Hygrostat/Hygrostat-Thermostat Combination.

Hygrostats switch on electrical enclosure heaters or filterfans when a preset relative humidity is exceeded. The relative humidity is kept above the dew point and the condensation of water on electrical components and the corrosion of unprotected sheet metal is prevented.

An electronic combination device unites thermostat and hygrostat in a single housing.



Radiant Heaters.

Radiant heaters are built very compactly and cover a wide operating range. They are used in combination with a thermostat or hygrostat, predominantly for the avoidance of low temperatures or high humidity in the control cabinet and help to avoid the formation of corrosion.

The mini-heaters and surface temperature-limited heaters by Pfannenberg are particularly suitable for use in small housings or for the heating of isolated spots in sensitive areas.



Fan Heaters.

This type of heating is ideal for use in larger electrical enclosures. They have an integrated fan that assists the natural convection and provides for fast and even distribution of the heat in the electrical enclosure. The fan heaters are used in combination with a thermostat or hygrostat, predominantly for the avoidance of low temperatures or high humidity in the electrical enclosure and also help to avoid the formation of corrosion. The heater line PFH-T with an integrated thermostat has been specifically developed for demanding environments, especially wind turbines and for use in the telecommunications sector.

Heaters, Thermostats and Hygrostats at a glance

TYPE	HEATING PERFORMANCE	RATED VOLTAGE	DIMENSIONS (HxWxD)	APPROVALS				PAGE
				cURus	EAC	CSA	CE	
FLH Radiant Heaters								
FLH 030	30 W	230 V AC ¹	100 x 70 x 50 mm	●	●		●	43
FLH 045	45 W			●	●		●	
FLH 060	60 W		175 x 70 x 50 mm	●	●		●	
FLH 075	75 W			●	●		●	
FLH 100	100 W			●	●		●	
FLH 150	150 W			●	●		●	
PRH Mini-Radiant Heaters								
PRH 010-M	10 W	230 V AC ¹	45 x 75 x 29.5 mm	●	●		●	45
PRH 020-M	20 W			●	●		●	
PRH 030-M	30 W			●	●		●	
PFH Compact Fan Heaters								
PFH 300M	300 W	230 V AC	66 x 90 x 78 mm	○	○	○	●	46
PFH 400M	400 W			○	○	○	●	
PFH-T Compact Fan Heaters with integrated thermostat								
PFH-T 200	200 W	230 V AC	142 x 88 x 126 (139) mm	●	●	○	●	47
PFH-T 300	300 W			●	●	○	●	
PFH-T 400	400 W			●	●	○	●	
PFH-T 500	500 W			●	●	○	●	
PFH-T 650	650 W			●	●	○	●	
PFH-T 800	800 W			●	●	○	●	
PFH-T 1000	1000 W			●	●	○	●	
PFH-T 1200	1200 W			●	●	○	●	
FLZ Thermostats and Hygrostats								
FLZ 510		AC/DC	59.5 x 37 x 47.5 mm	●	●		●	48
FLZ 520			72 x 40 x 36 mm	●	●	●	●	
FLZ 530		AC/DC	80.5 x 59 x 38 mm	●	●		●	
FLZ 541	●			●		●		
FLZ 543	AC/DC	80.5 x 59 x 38 mm	●	●		●	49	
FLZ 600			60 x 37 x 47 mm	●	●			●
FLZ 610			80.5 x 59 x 38 mm	●	●			●
For additional models, options and voltages visit www.pfannenberg.com or contact us directly.								

¹ voltage range 110–250 V AC

● available ○ pending