QUICK REFERENCE GUIDE

Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY

3 COOLING METHODS

1. Natural Convection

The natural circulation of air generated by changes in heat energy and gravity.

Works best in: Situations where the amount of heat needing to be removed from an enclosure is minimal.

Solution: **PFA Exhaust Filters**

2. Forced Convection

A method of heat transfer generated by an external source allowing significant amounts of heat energy to be transported very efficiently.

Works best in: A clean, non-hazardous environment with an ambient temperature range that is always lower than the temperature required in the enclosure.

Solution: **Filterfans®**

3. Closed Loop Cooling

Designed to isolate the air within the enclosure from the ambient air. Removes heat inside the enclosure using two circulation systems. Ideal for protecting sensitive electronics from dust and precipitation.

Works best in: Harsh environments with high temperatures, wash-down requirements, heavy particulate matter or the presence of chemicals capable of damaging components.

Solution: **DTS, PKS, PWS**

50°F LOW AMBIENT 100°F HIGH AMBIENT 150°F +

CLEAN DIRTY

COOL, CLEAN CONDITIONS

FILTERFANS 4.0™, EXHAUST FILTERS

1. Closed frame design prevents unfiltered air from penetrating the cabinet.
2. German manufactured fans exceed industry standards for quality, performance and service life.
3. Larger surface on the fluted filter mat allows for a high filtration level and maximum airflow.
4. Louver design supports the highest possible airflow while further protecting against dust and dirt.

Type Ratings: NEMA Type 12

*Also available in Outdoor 3R and 4/4X with Rainhood.

COOL, DIRTY CONDITIONS

PKS AIR / AIR HEAT EXCHANGERS

1. Closed loop design seals out gaseous substances, humidity and airborne particulates.
2. Produces superior cooling capacity per density vs. conventional heat exchangers and/or heat pipe solutions.
3. High CFM fan eliminates hot spots within enclosure.
4. Utilizes lower temperature ambient air to cool warmer internal air without active components such as a compressor which consumes high amounts of energy.

Type Ratings: NEMA Type 12/3R/4/4X

HIGH AMBIENT & CLEAN *OR* HIGH AMBIENT & DIRTY CONDITIONS

DTS COOLING UNITS

1. Closed loop design seals out gaseous substances, humidity and airborne particulates.
2. Hermetically sealed compressor.
3. Outdoor and washdown units have a special coating on pipes and coils to protect from saltwater, sour gas and other corrosive substances.
4. Active condensate management.

Type Ratings: NEMA Type 12/3R/4/4X

HIGH AMBIENT AND/OR VERY HARSH, DIRTY CONDITIONS

PWS AIR / WATER HEAT EXCHANGERS

1. Closed loop design seals out gaseous substances, humidity and airborne particulates.
2. Adjustable electronic thermostat permits precise control of the electrical enclosure.
3. Condensation is collected and drained from the system with zero intrusion into the cabinet.
4. Heat exchangers draw hot air from the top of the enclosure and deliver cool air below the components.

Type Ratings: NEMA Type 12/3R/4/4X

PREFERRED THERMAL MANAGEMENT METHODS,
Based on Various Environmental Conditions

PRODUCTS		AMBIENT TEMPERATURE				DUST			WATER			SPECIFIC		
		Low <50 °F	Climate Controlled 65-80 °F	Medium 80-100 °F	High 100 + °F	Clean	Moderate	Heavy	Dry	Light (rain)	Washdown	Corrosive	Oily	Sea Air
FILTERFANS®	PF	✓	★	✓	–	★	✓	–	★	✓*	✓*	–	–	–
AIR / AIR HEAT EXCHANGERS	Air / Air ▶ PKS 3000	★	★	✓	–	★	★	–	★	★	★***	✓	✓	–
COOLING UNITS	Indoor ▶ DTS 3000	–	✓	★	✓	★	✓	–	★	–	–*	–*	–	–
	Outdoor ▶ DTS 3000	★	✓	★	★	★	✓	✓	✓	★	–	✓	✓	✓
	Washdown ▶ DTS 3000	★	✓	★	★	★	✓	✓	✓	✓	★	★	★	★
AIR / WATER HEAT EXCHANGERS	Air/Water ▶ PWS 3000	★	★	N/A	★	★	★	★	★	★	★	★	★	★
CHILLERS	CCE	–	★	★	–	★	✓	–	★	✓	–	–	–	–
	EB	✓**	★	★	✓	★	✓	–	★	✓	–	–	✓	–
	EB 250-450	★	★	★	★	★**	★	★	★	✓	–	–	✓	–
HEATERS	FLH / PFH	★	★	✓	–	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

★ Best Option – Consult Factory for Best Solution ✓ Good N/A Not Applicable

* W/Rainhood ** Requires Special Options *** Washdown Version

WHY 95°F?

The ideal temperature for electronics is between 85°-95° F. Keeping the temperature above 85°F avoids condensation buildup, one of the biggest dangers for electrical enclosures. Condensation is caused by hot, humid air coming into contact with a colder surface than the air dew point.

Pfannenberg's Hygrostats effectively control the humidity level inside an enclosure. These devices are used to start the heater or Filterfan if the predetermined humidity threshold is reached. Combining a Pfannenberg Thermostat with a Filterfan enables the fan to be turned on and off based on the temperature inside the cabinet.

The benefits to this combined system are:
Extended fan life / Reduced energy consumption / Reduced consumables and maintenance.

What Size Unit Do You Need?

Click Here
To learn a Simple Way to Calculate Your Cooling Requirements

If you have questions or need assistance:

Contact Us Here

www.pfannenbergusa.com

Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY