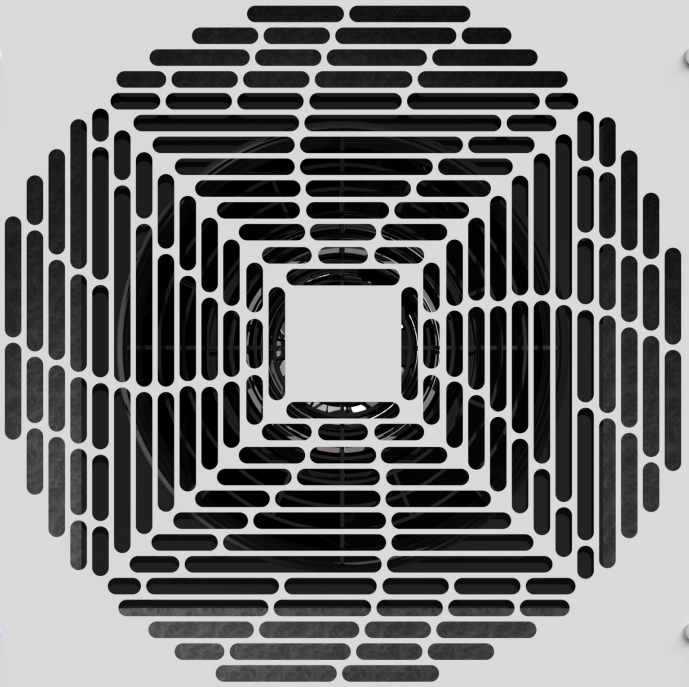
Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY

HYBRID-SERIES



FREE
COOLING

ACTIVE
COOLING



A DUAL THREAT TO ENCLOSURE HEAT

TWO TECHNOLOGIES TOGETHER

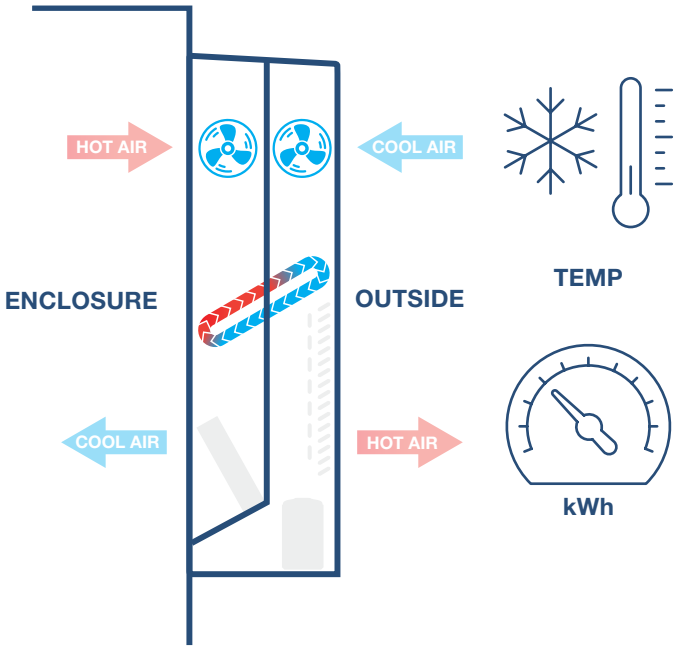
To Maximize Cooling and Minimize Energy Use

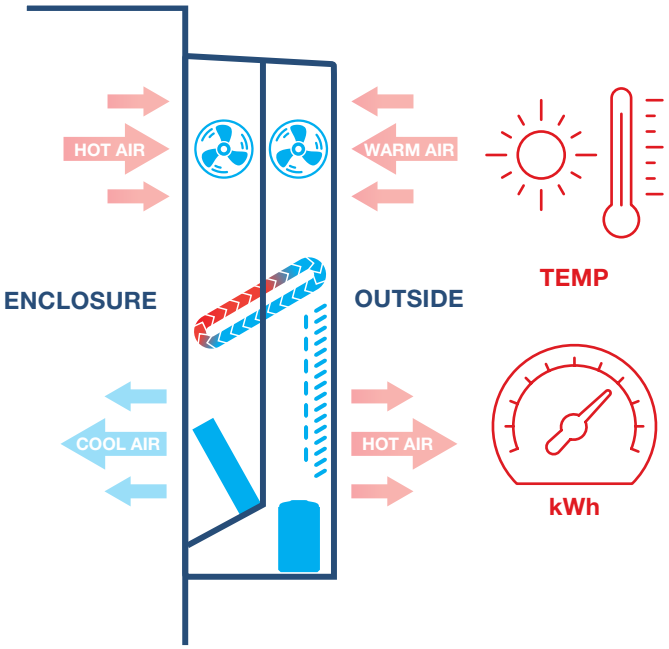
FREE COOLING

Air to air technology that cools using the cooler air outside the enclosure to remove heat from inside the enclosure with minimal energy use.

ACTIVE COOLING

Compressor driven cooling utilized only when the air around the enclosure exceeds the desired internal temperature of the enclosure.



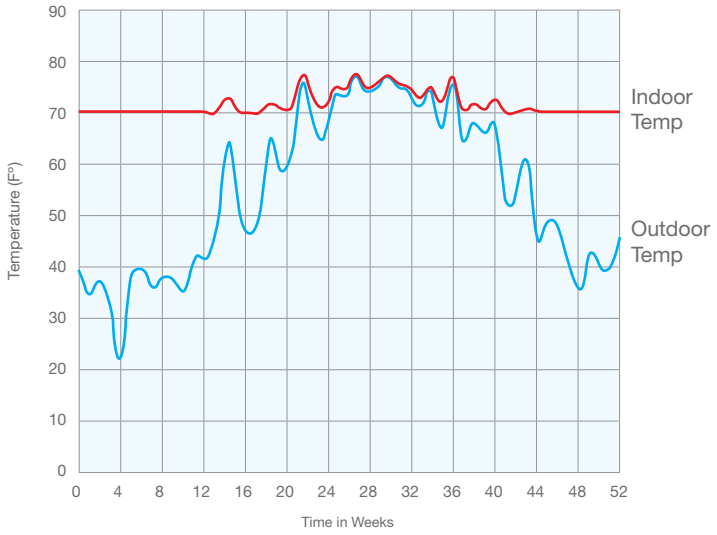


- **Comes standard with R513a refrigerant to meet more stringent Greenhouse gases regulations**
- **Dual system saves energy use and reduces cost**
- **And provides redundancy**
- **Meets UL 60335 standard**
- **Comes pre-gasketed**
- **Use Anywhere – available for indoor or outdoor use. Type 12, 3R, and Washdown 4/4X**
- **Closed-loop system protects critical electronics inside the enclosure**
- **Easy to Read Status Display**
- **Fits All Full Sized Enclosures**

USE CASE SCENARIO

- Non-climate controlled production facility in Detroit, MI.
- Production area is heated to keep facility at 70 °F during the cold months.
- In warmer months, fans are used to circulate fresh outside air for worker's comfort.
- The graph 1 shows the temperature inside and outside the facility over the course of a full year.
- The graph 2 captures the power consumption of a traditional single speed cooling unit, dark blue, and the new Hybrid Series cooling unit, light blue, used to cool the VFD cabinet inside the building based on the seasonal ambient temperature.

Graph 1



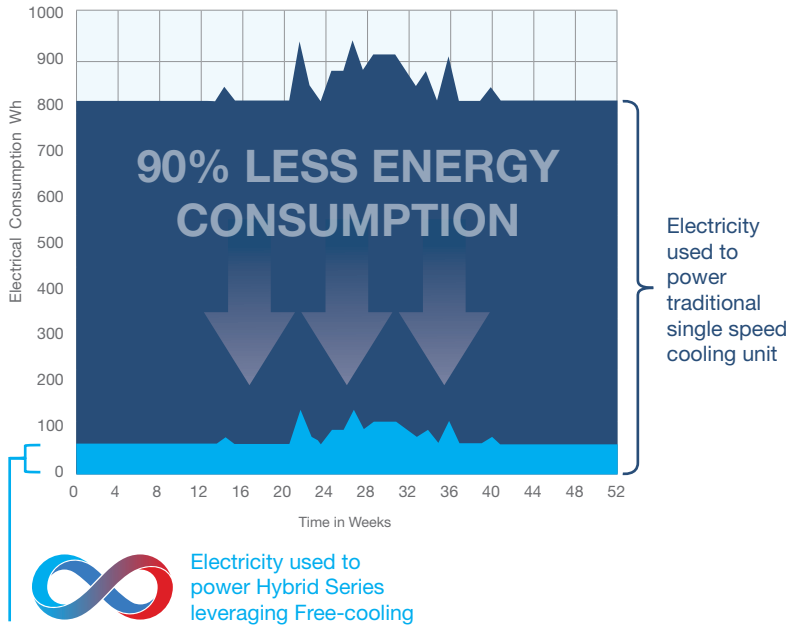
SAVINGS USING HYBRID-SERIES

- **90% less energy used.**
- **Estimated $13,000 annual savings in electricity cost.***
- **Calculated CO2 emission reduced by 1,680 lbs/unit.****

***Assumes 14 cents/kWh energy cost with a total of 50 operating cooling units.**

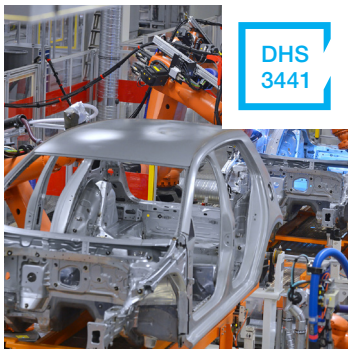
****0.86 lbs of CO_2 emissions per kWh. (eia.gov)**

Graph 2



IDEAL APPLICATIONS

Locations with lower ambient temperatures, climate controlled facilities, and operations that run at partial capacity for periods of the day.



AUTOMOTIVE



WAREHOUSE AUTOMATION



OUTDOOR



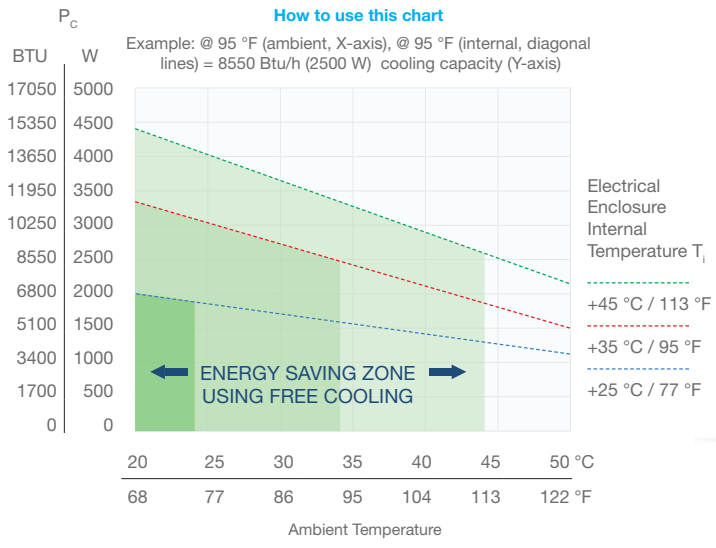
FOOD & BEVERAGE

HYBRID-SERIES - HYBRID COOLING UNIT

Model Number	Part Number	Voltage Single Phase (VAC)	Frequency (Hz)	Power Consumption @A50°C/A40°C	Nominal (Run) Current A35/A35°C	Time Delay Fuse Class CC	Noise Level (according to EN ISO 3741) dB(A)	Weight (without packaging) (lb)
DHS 3441 Indoor Rated (NEMA Type 12)	13482042105	115	60	1200	12A	17.5A	<80	150
	13482012105	230	50/60		6A	10A	<80	143
	13482022105	400/460	50/60		3A	4.5A	<80	152
Design	**Housing:** G90 galvanized steel **Cover:** powder coated. RAL 7035 (light grey); ANSI 61 grey use part no. ending in …01.							
DHS 3461 Outdoor Rated (NEMA Type 3R/4)	13482042205	115	60	1200	12A	17.5A	<80	150
	13482012205	230	50/60		6A	10A	<80	143
	13482022205	400/460	50/60		3A	4.5A	<80	152
Design	**Housing:** G90 galvanized steel **Cover:** powder coated. RAL 7035 (light grey); ANSI 61 grey use part no. ending in …01.							
DHS 3481 Washdown (NEMA Type 4/4x)	13482042308	115	60	1200	12A	17.5A	<80	150
	13482012308	230	50/60		6A	10A	<80	143
	13482022308	400/460	50/60		3A	4.5A	<80	152
Design	**Housing:** G90 galvanized steel **Cover:** Stainless steel 304.							

Additional Data		DHS 3441	DHS 3461	DHS 3481	
Ambient Temperature Range		- 13 … + 120 | - 25 … + 50			°F | °C
Control Range		+77 ... +113 | +25 ... +45; factory setting +95 | + 35			
Refrigerant	type	R513a			
	quantity	Active Cooling System 650 | Passive Cooling Coil 450			g
Condensate Management		active condensate evaporation system with safety overflow			
Internal Air Circulation Maximum		424 | 721			CFM | m²/h
External Air Circulation Maximum					
System of protection according to EN 60529 / UL 50e		IP 54 / NEMA Type 12	IP 56 / NEMA Type 3R/4	IP 56 / NEMA Type 4/4x	Against enclosure when properly installed
Height x Width		56.82 (1443) x 15.59 (396)			INCHES (mm)
Depth		13.75 (349)	16.29 (414)		

Performance Curve







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