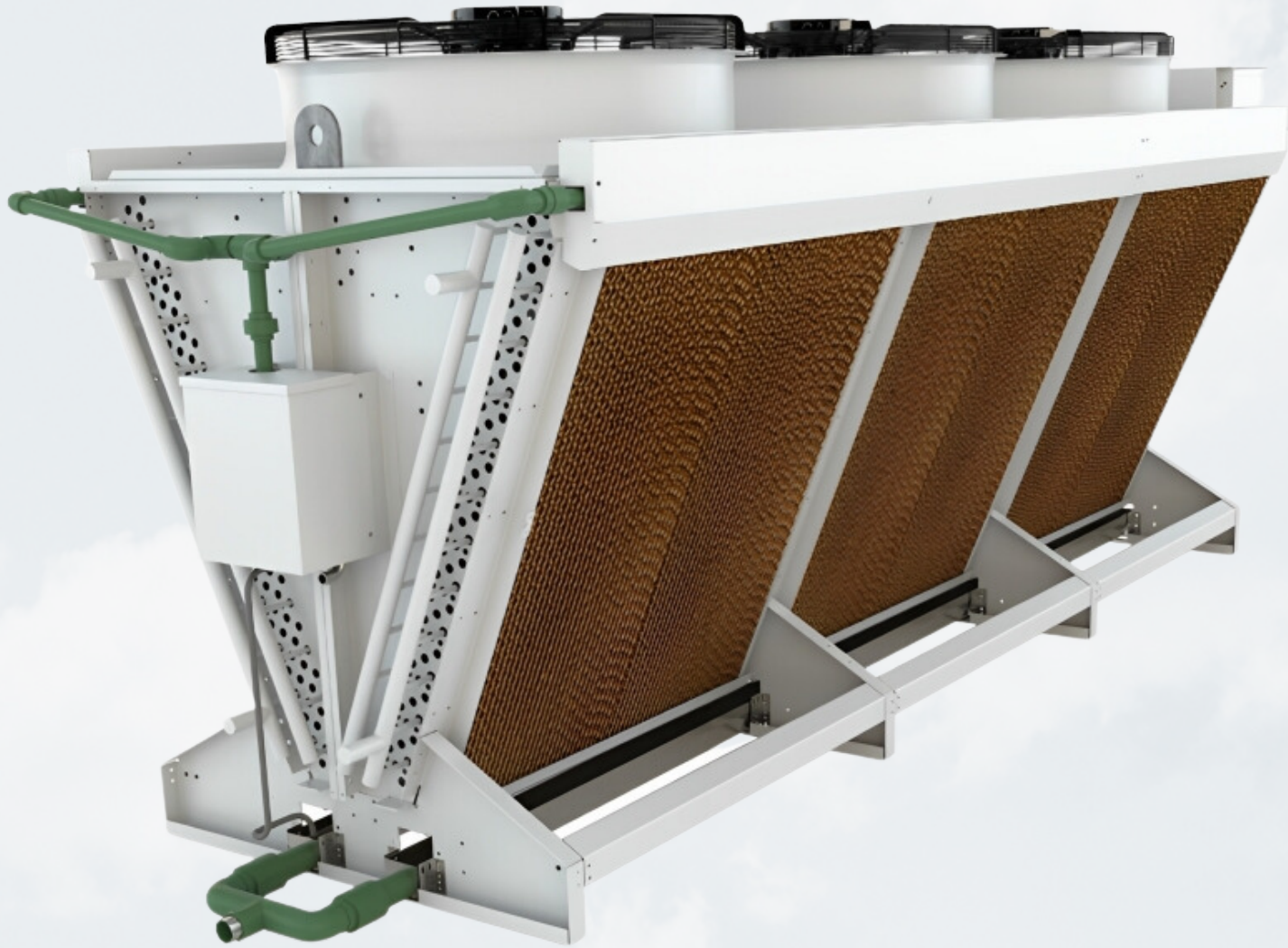




COST SAVINGS METHODS FREE COOLING



BENEFITS In both new applications and existing systems, incorporating a free cooling arrangement can be a wise and cost-effective component.

Less Wear and Tear. Free cooling extends the life expectancy of the chiller because it reduces the operational hours of the compressor and other internal components. This reduces maintenance and increases overall life cycle cost

During periods when outdoor temperatures are cool enough, the chiller can be turned off entirely, and the cooling load is met by blowing cold outside air across an air-cooled heat exchanger. By doing so, the energy consumption of the chiller, which can be substantial during peak load times, is eliminated. Energy savings can be as much as 70%, meaning payback for a new system can be in as little as 12 months.

Protects against Low Suction Pressure Shutdown. Having an air-cooled heat exchanger to take over your cooling needs in colder temperatures also protects against nuisance chiller shutdowns caused by low temperatures. When designing free cooling into a system the customer does not have to purchase any additional "low ambient controls", which also provides cost savings.

FREE-COOLING is an economical method of using low external air temperatures and an air-cooled heat exchanger to satisfy a cooling load. It is a smart method of providing effective and efficient cooling to a chilled water system.

HOW IT WORKS An air-cooled heat exchanger is installed either in series or parallel with a chiller system's evaporator. Electrical controls open a diverting valve to divert water from the chiller to the air-cooled heat exchanger when the ambient temperature reaches the programmed set point. The diverting valve will divert water back to the chiller when temperatures are 1-2 degrees above the set point. The chiller and air-cooled heat exchanger will turn on and automatically start cooling based on the chilled water supply's temperature set point. The free cooling system can run automatically when required, saving energy at full and partial loads

Winter Operation. In winter or any time the ambient air temperature is 5°-10°F below the process supply water temperature design, the water is chilled solely by the air-cooled heat exchanger. This allows the chillers' compressors to stop operating, saving significant amounts of energy. The only electrical power used in winter operation is for the air-cooled heat exchanger fans.

Mid-Season Operation. Any time the ambient air temperature is 1°-2°F below the process return water temperature, the water is partially cooled through the air-cooled heat exchanger and then flows through the chillers to achieve the required set point temperature. The percentage of free cooling achieved mid-season is dependent on seasonal temperatures and cooling load.

High Ambient Temperature. When the ambient air temperature is equal to or greater than the process return water temperature, free cooling is not available. Whenever this occurs, the system's three-way valve will bypass the air-cooled heat exchanger and direct the fluid flow through the chiller to be cooled to the required temperature



sales@fluidcoolingsystems.com / 2441 E. Bristol Rd, Burton, MI 48529

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