

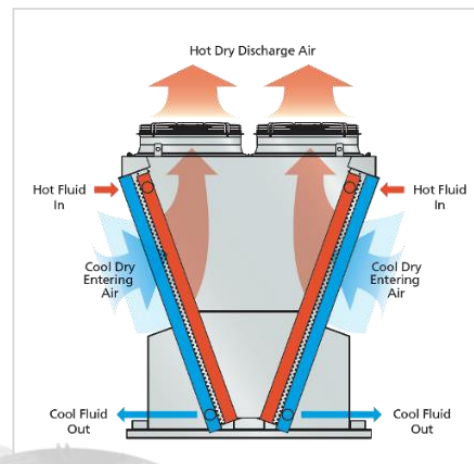
Water Conservation through Dry Coolers: The sustainable solution for a water-smart future.

Four billion people — almost two thirds of the world's population — experience severe water scarcity for at least one month each year. Over two billion people live in countries where the water supply is inadequate. Half of the world's population could be living in areas facing water scarcity by as early as 2025. ¹ Water scarcity has become a global problem and is intensifying further in the wake of climate change.

Water conservation through the use of dry coolers is a significant and impactful strategy, particularly in industries where large-scale cooling is essential. Dry coolers offer an alternative to traditional cooling methods that rely on water-intensive processes, such as cooling towers.

Dry Cooler

A dry cooler is a type of heat exchanger that is designed to cool fluids (usually water or a process fluid) using ambient air without the need for evaporative cooling or water consumption. Unlike traditional cooling towers, which rely on water evaporation to remove heat, dry coolers use the principle of sensible heat exchange, transferring heat directly from the fluid to the air.



Wet To Dry Conversion

Cooling systems are the thirstiest users of water in many industries like power generation. To defy water dependence and secure sustainable power generation, the acceptance of dry cooling systems in newly built power plants is getting traction. In existing plants built with wet cooling, conversion to hybrid or to dry cooling is also a feasible solution.

Here are key points illustrating how dry coolers contribute to water conservation:

- **Zero Water Consumption:** One of the primary advantages of dry coolers is that they operate without water consumption. Unlike cooling towers, which evaporate water to remove heat, dry coolers use ambient air to directly cool the process fluid, eliminating the need for constant water replenishment.

¹ UNICEF. (n.d.). www.unicef.org. Retrieved from www.unicef.org

- **Elimination of Makeup Water Requirements:** Traditional cooling towers continuously require makeup water to compensate for water loss through evaporation, drift, and blowdown. Dry coolers, being waterless, eliminate the need for makeup water, resulting in substantial water savings.
- **Reduced Wastewater Discharge:** Cooling towers generate wastewater through the blowdown process, where a portion of the water is intentionally discharged to control the concentration of dissolved minerals. Dry coolers, being a closed-loop system, significantly reduce or eliminate the generation of wastewater.
- **Sustainable Industrial Practices:** Industries adopting dry coolers demonstrate a commitment to sustainable and responsible water management practices. This aligns with global efforts to reduce water usage and promotes environmentally friendly solutions.
- **Compliance with Water Regulations:** In regions facing stringent water regulations and restrictions, the use of dry coolers helps industries comply with water conservation requirements. This can contribute to a positive corporate image and regulatory compliance.
- **Adaptability to Arid Regions:** Dry coolers are particularly beneficial in arid or water-scarce regions where water availability is limited. Industries operating in such areas can achieve efficient cooling without putting additional stress on local water resources.
- **Energy-Efficient Cooling:** While not directly related to water conservation, it's worth noting that dry coolers can also contribute to energy efficiency. By using ambient air for cooling, they can reduce energy consumption compared to some traditional water-based cooling systems.
- **Long-term Sustainability:** Dry coolers are designed for durability and minimal maintenance, contributing to long-term sustainability. Their robust construction and reduced need for water treatment make them a reliable choice for industries looking to enhance their sustainability profile.
- **Cost Savings:** In addition to the environmental benefits, dry coolers can result in cost savings for industries. Eliminating water consumption and associated treatment costs, as well as reducing the need for makeup water, contributes to overall operational efficiency.

In conclusion, the adoption of dry coolers as a water conservation strategy is a practical and impactful approach for industries aiming to reduce their environmental footprint. Beyond the immediate water savings, it aligns with broader sustainability goals and positions organizations as responsible stewards of water resources.

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