Alfa Laval Hybrid Air Coolers (HYAC)

DZ - Dual zone wet/dry cooling system

Introduction

Alfa Laval Hybrid Air Coolers (HYAC) are wet/dry cooling systems which combine the functionality of a traditional dry finned tube air cooler with a Wet Surface Air Cooler (WSAC). HYAC systems provide adaptive cooling for maximum sustainability and water savings.

The HYAC (DZ) is a uniquely designed dual zone model with both dry and wet zone cooling. The dry zone pre-cools the incoming process fluid before flowing to the wet zone for final cooling. By combining the two technologies in one common footprint the overall efficiency of the system is high, system size is compact and both power and water consumption are optimized.

Applications

The HYAC (DZ) is well suited for high temperature process cooling with low outlet (return) temperature requirements. It is ideal for regions where plume abatement is required and plants with restricted plot space (combines air cooler and wet cooler into a single footprint).

Benefits

- Reduced water usage by removing a significant amount of the heat load in the dry cooling zone
- Plume abatement by heating the exhaust air
- Reduced plot space by combining air cooler and wet cooler into a single footprint

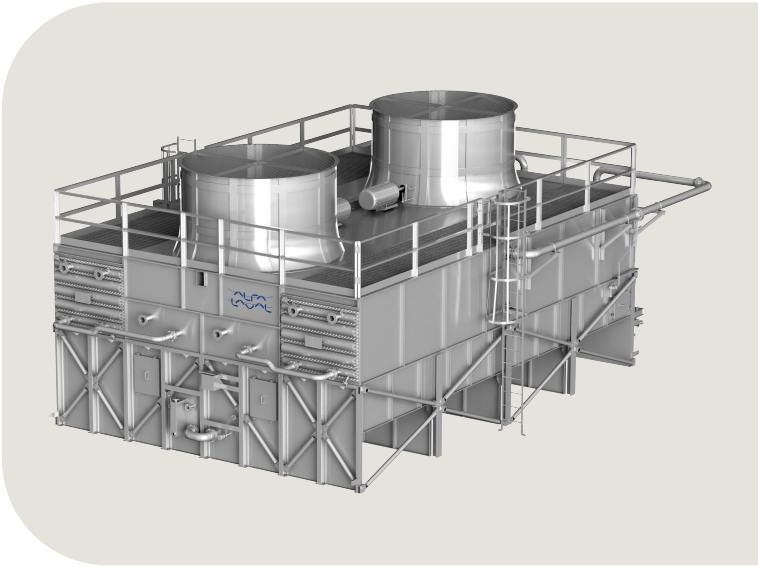
Working principle

The Alfa Laval HYAC (DZ), designed with dual zone technology pre-cools the incoming process liquid in the dry zone before flowing to the wet zone for the final cooling and achieving the lowest possible outlet temperatures. The balance between the dry and wet cooling duty can be modified to optimize efficiency and minimize water usage. The cooler always operates wet in the wet zone and dry in the dry zone.

Unique feature

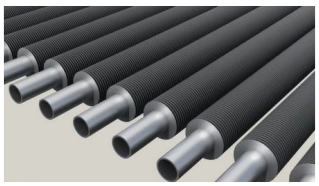
HybridCool
Combined wet and dry bulb cooling for minimized water consumption.

Learn more at **www.alfalaval.com/hyac**



Designs

The HYAC (DZ) is available with straight or serpentine tube coil designs in galvanized steel, stainless steel, or high alloy materials. Dry zone tube coils are finned, and wet zone tube coils are bare. The wet/dry dual zone design is available in a full range of sizes from modular to field erected.



Hot medium flows through enhanced surface tube coils in the dry cooling zone, while bare tube coils are used in the wet zone.

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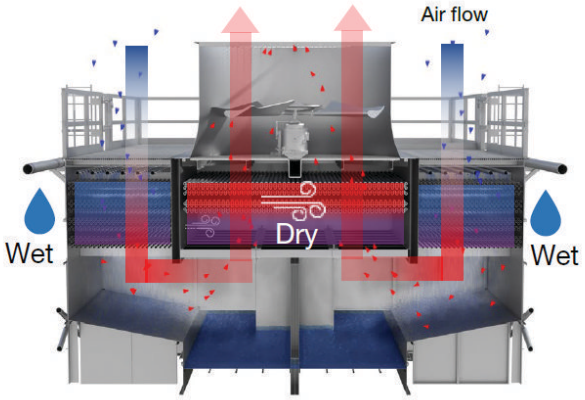

Process fluids are pre-cooled in the dry zone followed by final cooling in the wet zone where drenching water is sprayed over the coils initiating the evaporative cooling effect to achieve the final process outlet temperature.

Configurations

Alfa Laval HYAC systems are engineered-to-order to provide optimal performance for each unique application. The HYAC configuration could be a packaged, modular, field erected or elevated pipe rack mounted design depending on many factors, specifications, and performance requirements. The systems are designed for long service life of 20+ years.

Packaged HYAC systems

- Skidded, pre-piped and pre-wired for plug and play installation
- Control cabinet and water treatment package is available
- Full factory testing

Modular HYAC systems

- Shop fabricated modular design with final assembly on-site
- Direct or gear drive fan system
- Full factory testing

Field erected HYAC systems

- Poured in place reinforced concrete basin
- Pultruded FRP structure
- Interchangeable modules
- Reduced footprint for large systems
- Optimized for lowest installed cost
- Economized layout

Technical data

Max design pressure	Over 1000 psig (68.9 bars)
Max design temp	Over 500 F (260 C)
Water usage	Optimized, based on balance of wet and dry zone cooling
Fin spacing	Over 10 fins/inch on dry fin coils
Tube bundle options	
Tube bundles	Straight through/cleanable Serpentine
Code designs	ASME, PED, CRN
Material options	C.S., S.S., Exotics
Structure options	
Metal	Heavy duty 10–12-gauge carbon steel, hot dipped galvanized, stainless steel optional
Concrete	Poured in place reinforced concrete
FRP	Fiberglass reinforced plastic
Fan system options	
Fans	Direct drive 5 ft (1.524 m) diameter and smaller Gear drive 6 ft (1.8288 m) diameter and larger
Motors	Totally enclosed fan cooled (TEFC), (TEAO)
System	Redundancy available
Spray system	
Design	Low pressure/high flow design for drenching coverage
Coverage	8-10 GPM/ft^2 spray water coverage
Nozzles	Quarter turn, quick disconnect for easy install/clean out
Pumps	Centrifugal end suction Vertical turbine Redundancy available
Drain pan	Drain pan arrangement lowers operating weight
Ancillary components	
Electrical options	Complete in-house electrical design Custom control panels PLC/HMI programming
Skids	Pump skids with available redundancy Water treatment skids Complete pre-wired systems with controls
Access packages	Ladders, walkways, platforms
Freeze protection	For cold weather installs

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com