Alfa Laval Hybrid Air Coolers (HYAC)

SZ – Single 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 (SZ) is a single zone model that allows operators to choose the operating mode based on ambient temperatures. During the cooler months of the year, the system can operate in dry mode to save water, and during the hot months wet operation can be engaged to ensure a low outlet temperature is still achieved. By combining the two technologies the overall efficiency of the system is high, flexibility of wet or dry operation is achieved, and both power and water consumption are optimized.

Applications

The HYAC (SZ) is well suited for geographic locations with wide ambient temperature swings and plants with limited water available. The system performs well in processes with a wide variety of temperature operating points.

Benefits

- Requires no water when operated in dry mode
- Provides flexibility of wet or dry operation in a single standalone unit.

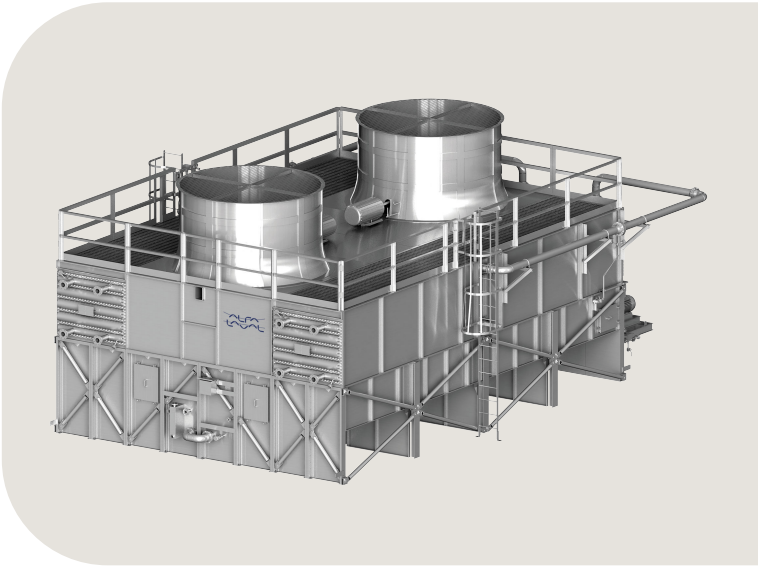
Working principle

The Alfa Laval HYAC (SZ) is designed with a single zone of enhanced surface heat transfer coils to cool the process stream through dry sensible cooling or wet evaporative cooling—all cooling is done in a single zone. Appropriately designed and spaced, enhanced surface tubes augment the available surface area for cooling. Water is used for increased evaporative cooling only when needed (when ambient or process conditions dictate).

Unique feature

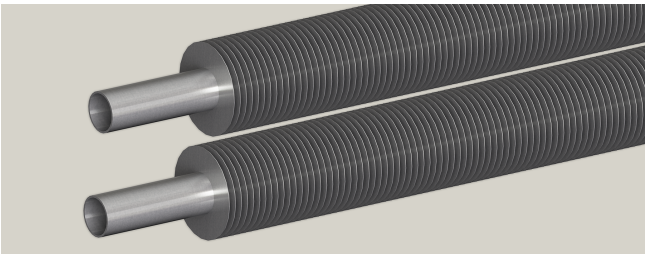
HybridCool
Combined wet and dry bulb cooling for minimized water consumption.

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



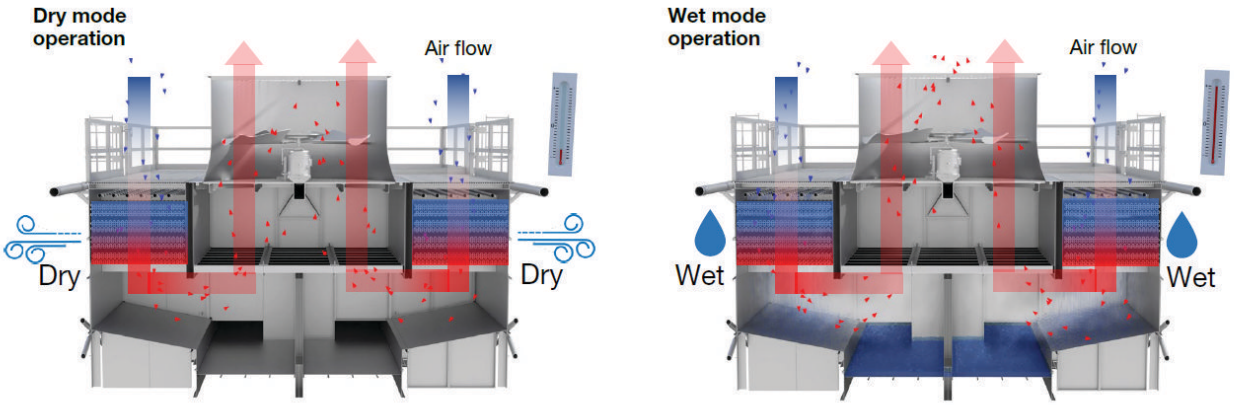
Designs

The HYAC (SZ) is available in straight tube coil designs in stainless steel or high alloy tubes. It is also available in a full range of sizes from modular to field erected.



Hot medium flows through the enhanced surface tube coils in both wet and dry cooling mode.

Alfa Laval HYAC (SZ)



In cooler months, use **dry mode** (left). Air is pulled down over enhanced surface coils for cooling. In hotter months, use **wet mode** (right). Drenching water is sprayed over appropriately designed enhanced surface coils for increased cooling utilizing evaporative effect.

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 300 psig (20.7 bars)
Max design temp	Over 500 F (260 C)
Water usage	None when operated dry, flexibility in water usage
Fin spacing	Variable

Tube bundle options	
Tube bundles	Straight through/cleanable enhanced surface
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 component	
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

100005034-1-EN-GB

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