



High thermal performance in a smaller footprint with Alfa Laval HYAC

Oil Refinery, Louisiana (LA), US

An oil refinery in Louisiana, USA was able to cool their wastewater from 150°F (65°C) to 95°F (35°C) and increase performance by approximately 30% thanks to an Alfa Laval HYAC hybrid air cooler. "We were able to create the perfect outlet temperature for breaking down waste and increase the thermal performance by about 3 MMBtu/hr compared to our old unit", says the plant manager. He continues "all without compromising on any of the requirements. We even found a product with a significantly longer lifetime, saving even more on future time, costs, and the amount of water we consume".

This Louisiana-based refinery uses bacteria in their wastewater system that need to be kept at optimal temperatures to stay alive and active. The existing cooling solution for this job had reached the end of its life and they needed a replacement that could improve heat transfer performance without re-engineering the entire process. With the support of a custom-built Alfa Laval HYAC, they were able to significantly increase thermal performance, reduce project costs, and improve their overall product lifetime.



To keep the bacteria alive and active in this customer's application, the wastewater needs to be cooled to 95°F (35°C) so the outlet temperature reaches 90-100°F (32-38°C) in the digesters. If the temperatures are higher than this limit, the bacteria will die, preventing them from breaking down the waste. However, if the temperatures fall below this range, the bacteria become less active. Therefore, installing the right cooling solution is essential to keep this application working efficiently.

As an existing customer of Alfa Laval with several Alfa Laval WSAC coolers already installed at other sites, this LA refinery approached us for a solution. Specifically, they needed to increase thermal performance with a new unit that could successfully treat their highly corrosive wastewater. The challenge was that they needed this upgrade to fit inside the same footprint as their old cooler. An Alfa Laval WSAC cooler would be an easy fit for this application, but due to the plot space limitation, we needed to come up with a custom cooler that avoided any additional engineering.

"As a result, we installed an Alfa Laval HYAC DZ (dual zone) that would help our customer gain additional thermal duty using the same foundation as their old cooler", says Chris Pawlak, Head of Sales at Alfa Laval Inc. "With this, we significantly helped the refinery to reduce their project cost and timeline. The dry section of this dual zone unit pre-cools the wastewater while the wet section completes the process without taking up any extra space. We also added proper tube sizing in high alloy metallurgy to make it the perfect solution for our customer's unique challenges."

Alfa Laval HYAC DZ Unique Features

How it works

Process fluids are pre-cooled in the dry zone, then finally cooled in the wet zone. This is where drenching water is sprayed over the coils to initiate the evaporative cooling effect and reach the final process outlet temperatures.

All Alfa Laval HYAC systems are engineered to order and fully customized to fit your performance requirements and operating conditions perfectly.

Alfa Laval HYAC is available in two different models: Single Zone (SZ) and Dual Zone (DZ).

Fast facts

The plant

Oil refinery, Louisiana, US

The challenge

- To keep their wastewater cool enough to operate at the optimum temperature range of 90-100°F (32-38°C)
- To replace their old unit and increase thermal performance without re-engineering the entire process
- To find a solution that will survive the corrosive nature of this specific wastewater

The solution

- Custom-built Alfa Laval HYAC DZ

The benefits

- Efficient wastewater cooling to reach the optimum temperature range
- Increased thermal performance by approximately 30% or 3 MMBtu/hr compared to the old unit
- Reduced total project costs thanks to re-using existing foundation
- Long product lifetime
- Reduced water consumption



WetSurface

Maximum cooling efficiency and lowest possible output temperature.



FlexWater

Can operate on recycled water of low quality such as blowdown water.



HybridCool

Combined wet and dry cooling for minimized water consumption



Learn more about Alfa Laval HYAC
www.alfalaval.com/hyac

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

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