



## Hydrocarbon coolers and condensers for large gas field

### Niagara Wet Surface Air Coolers (WSAC®) case study



#### Multinational oil company

**Location:** Middle East

**Application:** Cooling high pressure hydrocarbon liquid and gas/condensing propane

#### The challenge

This crude oil facility was looking for a way to capture valuable hydrocarbon streams which were being treated as a by-product and sent to flare.

#### The solution

An Alfa Laval Niagara Wet Surface Air Cooler (WSAC®) was custom designed to cool and condense these streams allowing them to be sent to a pipeline.

#### Specifications

- 1,350 PSIG tube bundle design pressure with bolted and removable headers for interior tube access.

- Alloy 2205 stainless steel tube bundles
- The basin was designed for periodic clean out of sand due to sand storms

#### Advantages

- Ability to achieve desired outlet temperature during hottest desert conditions.
- Used brackish river water as makeup.

#### What is a WSAC?

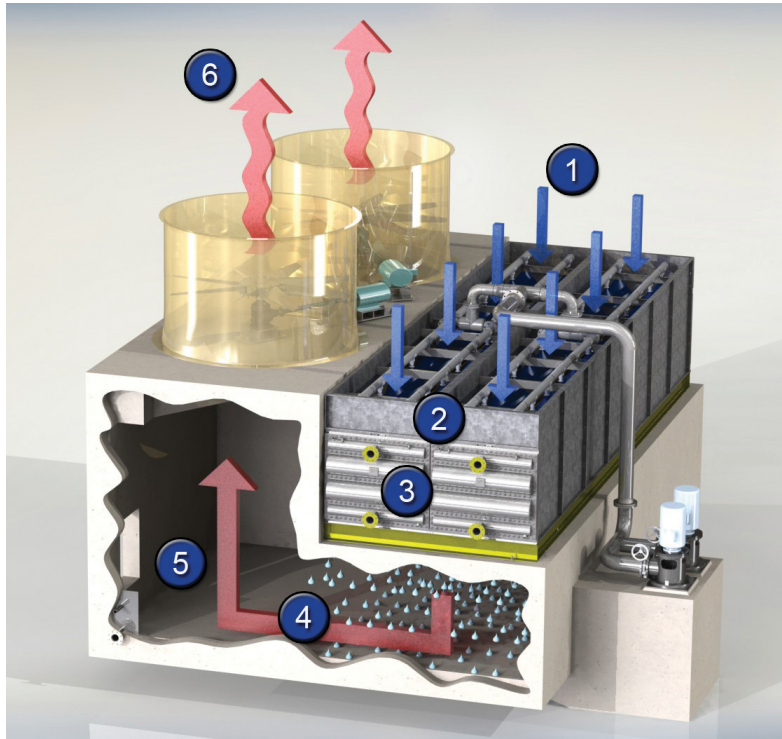
Alfa Laval Niagara Wet Surface Air Coolers (WSAC®) are efficient closed-loop, evaporative cooling systems designed for the power, process, wastewater, natural gas and petrochemical industries.

These fluid cooling and vapor condensing systems are optimized for industrial applications where rugged designs, and cost-effective, efficient closed-loop cooling and condensing duties are required.

## Niagara WSAC® - How it works

The closed-loop design ensures that the process liquid, vapor or gas flows through the inside of the heat exchanger tubes, with the cooling air and the spray water flow in the same direction on the outside of the tubes.

1. Air is induced downward over tube bundles
2. Water flows downward along with the air
3. Heat from the process stream is released to the cascading water
4. Vaporization transfers heat from cascading water to the air stream
5. The air stream is forced to turn 180° providing maximum free water removal
6. Fans discharge air vertically at a high velocity to minimize recirculation



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### How to contact Alfa Laval

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