Propylene condenser for U.S. gas plant

Niagara Wet Surface Air Coolers (WSAC®) case study

International petrochemical company

Location: Southwestern U.S.

Application: Propylene condensing

The challenge

Customer needed to condense propylene refrigerant to a temperature within 15° of ambient wet bulb.

The solution

A Wet Surface Air Cooler was determined to be the most cost-effective system when compared to cooling towers and fin fan air coolers, since the propylene is condensed directly in the tube bundles, and required less horsepower. Also, this allowed the customer to downsize compressor equipment.

Advantages

- Increases production by 25-30% with payback period less than one year
- Significantly lowers compressor HP requirement by lower operating/condensing pressure
- Increases fractionator efficiency and output by running at cooler temperatures during hot months
- Condensing based on single approach to ambient wet bulb
- Ability to use existing cooling tower blowdown as makeup to the WSAC, adding another benefit of not having to find a new water source

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.

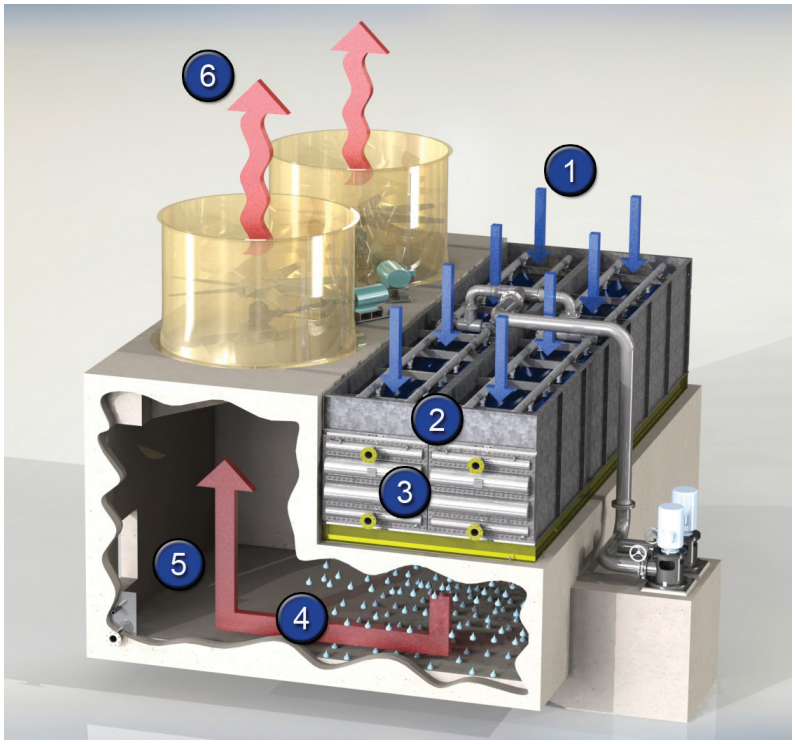
These fluid cooling and vapor condensing systems are optimized for industrial applications where rugged designs, and cost-effective, efficient closed-loop cooling and condensing duties are required.

NIAGARA
Wet Surface Air Coolers

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



Alfa Laval Niagara
Phone +1 716-875-2000
Email: sales.niagara@alfalaval.com
Web: www.niagarablower.com
www.alfalaval.com/air

PEP00184 1604