Natural gas cooling for compressor station

Niagara Wet Surface Air Coolers (WSAC®) case study

Exploration and production company

Location: Central U.S.

Application: Natural gas cooling

The challenge

An exploration and production company needed three systems to cool high pressure natural gas in a multistage compression system from 130 to 105°F.

The solution

Several customized closed-loop, evaporative Wet Surface Air Coolers were designed and manufactured. These units were modular factory assembled and tested with tube bundles designed and stamped per ASME code requirements for the design pressure at each stage of compression. They featured special screens for protection against hail and debris.

Advantages

- Reduces compressor horsepower
- Efficiently cools process
- Closed-loop design conserves water
- More cost effective than other technologies
- High pressure (371.5 psi) design
- Customized with hail/debris screens
- Heavy wall tube
- Rugged, industrial construction
- Hot dipped galvanized after fabrication (HDGAF)

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.

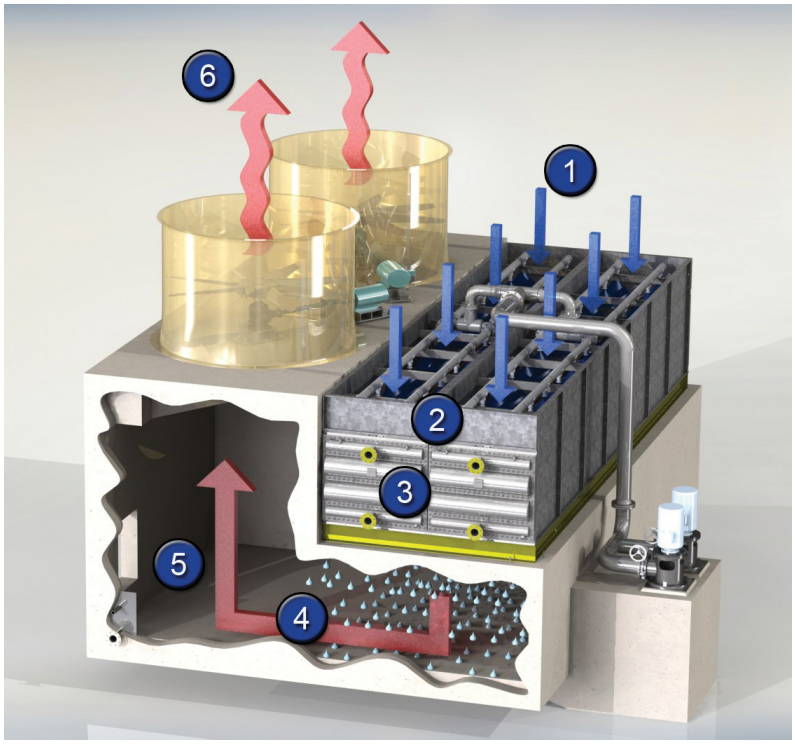
These fluid cooling and vapor condensing systems are optimized for industrial applications where rugged designs, and cost-effective, efficient closed-loop cooling and condensing duties are required.

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

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