Improved efficiency for gas processing fractionation

Niagara Wet Surface Air Coolers (WSAC®) case study

Gas processor

Location: Texas

Application: Fractionation cooling

The challenge

A gas processor wanted to improve efficiency of the NGL fractionator process while reducing operating costs and increasing NGL production.

The solution

An Alfa Laval Niagara Wet Surface Air Cooler was used for the de-propanizer, de-butanizer, and de-isobutanizer reflux cooling streams. The WSAC produces a colder temperature than conventional cooling could offer. In addition the WSAC was used for the de-ethanizer refrigeration system condenser to reduce compressor horsepower by lowering the condensing temperature of the propylene refrigerant used to cool the distillate column(s).

Advantages

- Improved NGL production—ability to fractionate more gas on more days of the year, ~20% increase in capacity.
- Significant reduction in compressor horsepower, typically one full compression train.
- Improved refrigeration efficiency by lower condensing temperature and operating pressure (de-ethanizer multistage refrigeration).
- Colder condensate outlet temperature for reflux streams than fin fan air coolers
- Colder outlet temperature than surface exchanger/cooling tower combination
- Smaller footprint than conventional cooling systems
- Cools process stream directly inside an ASME code tube bundle.

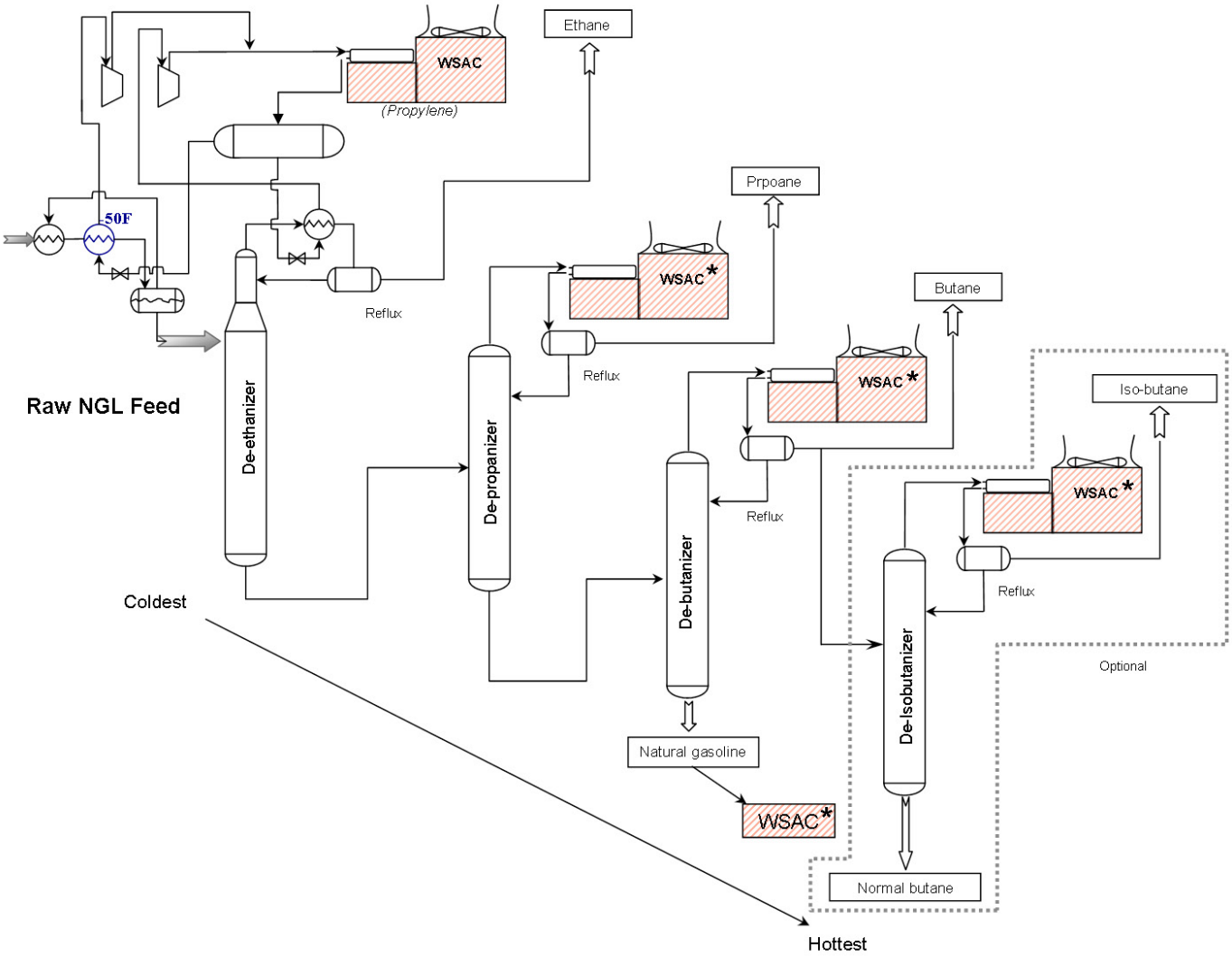
What is a WSAC?

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

WSAC applications for NGL fractionation flow diagram



*Note: These WSAC streams are combined into a common unit with separate bundles.

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