



## Niagara Blower Heat Transfer Solutions

# **WSAC™ Liquid Cooling and Vapor Condensing**



*Closed-loop, evaporative cooling systems for the process, power, refining, and food & beverage industries.*

[www.niagarablower.com](http://www.niagarablower.com)

Thermal Products, Inc. / Phone: (518) 877-0231 / Email: [sales@thermalproducts.com](mailto:sales@thermalproducts.com) / Website: [www.thermalproducts.com](http://www.thermalproducts.com)



*Wet Surface Air Coolers are optimized for industrial applications where rugged design/fabrication and cost effective, efficient closed-loop cooling/condensing are required.*



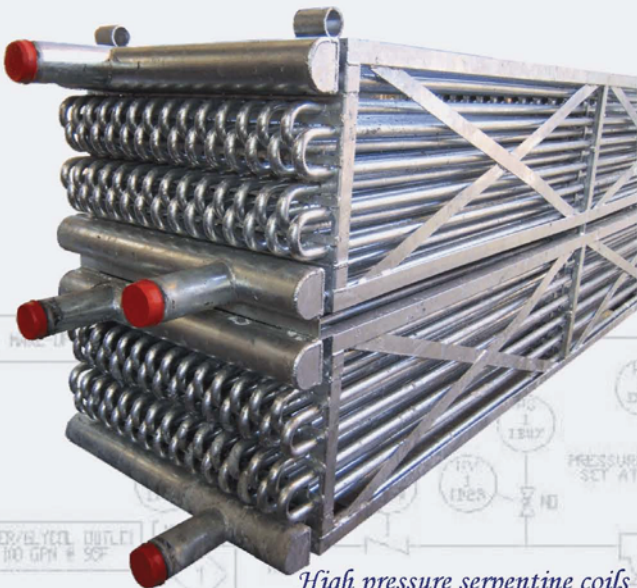
*Auxiliary water cooler*

# Industries Served

- Refining
- Power
- Wastewater
- Pulp & Paper
- Metals
- Mining
- Ethanol & Biodiesel
- Gas Transmission/Compression
- General Industrial
- Food & Beverage

# Applications

<u>Liquid Cooling</u>	<u>Gas Cooling</u>	<u>Vapor Condensing</u>
Water/Wastewater	CO <sub>2</sub>	Steam
Mold Water	Natural Gas	Ammonia
Glycols	Air	Propane
Food Products	Nitrogen	Ethane
Oils		Propylene



*High pressure serpentine coils*



*Heavy duty cleanable coils*



# General Specifications

Niagara utilizes design parameters based on heavy duty industrial standards. WSAC equipment can be tailored to customer specifications for inlet and outlet temperatures as well as weather conditions. WSAC coolers and condensers are engineered to meet the unique needs of the most demanding applications in the world.



*Packaged, skidded system*

## Packaged Equipment

- Skidded, pre-piped, and pre-wired for reduced installation costs
- Full redundancy of fans and pumps
- Includes control cabinet and water treatment
- Factory tested

## Modular Equipment

- Expand or contract based on process requirements
- Direct drive fan system
- Heavy duty 10-12 gauge steel
- High flow, low pressure industrial pump system
- No plastic fill
- Nut & bolt hardware (no “zip” screws)
- Easy installation



*Sectioned components*



*Field erected cells*

## Field Erected Equipment

- Poured in place reinforced concrete
- Pultruded FRP structure
- Interchangeable modules
- Reduced footprint for large systems
- Lowest optimized cost
- Economized layout
- Field supervision available for installation

# Advantages

- Coldest possible outlet temp
- Water conservation due to higher cycles of concentration
- Upstream & downstream installed process HP savings
- Minimal maintenance required
- Compact footprint
- Lower parasitic energy (HP)
- Competitive installed cost



*Wastewater cooler*



*Blast furnace cooler*

Superior construction on all units for extreme rigidity, extended service life, and durability

- Panels hot dip galvanized after fabrication (HDGAF)
- ASME, API, TEMA codes
- Designs to 2500 psi
- Fireproof construction
- Easily accessible spray system
- Fans designed to required sound limits
- Materials of construction to suit environmental and process requirements



*Modular equipment installation*



# What is a WSAC System?

- Closed-loop cooling system
- Lowest outlet temperatures
- Low quality water can be used as makeup
- Maintains thermal performance

## Outstanding Performance

The WSAC system is one of the most efficient and durable evaporative coolers available. It can cool a process fluid to within 5°F of the surrounding wet bulb temperature.

### Liquid Cooling

- Up to max inlet temp of 180°F

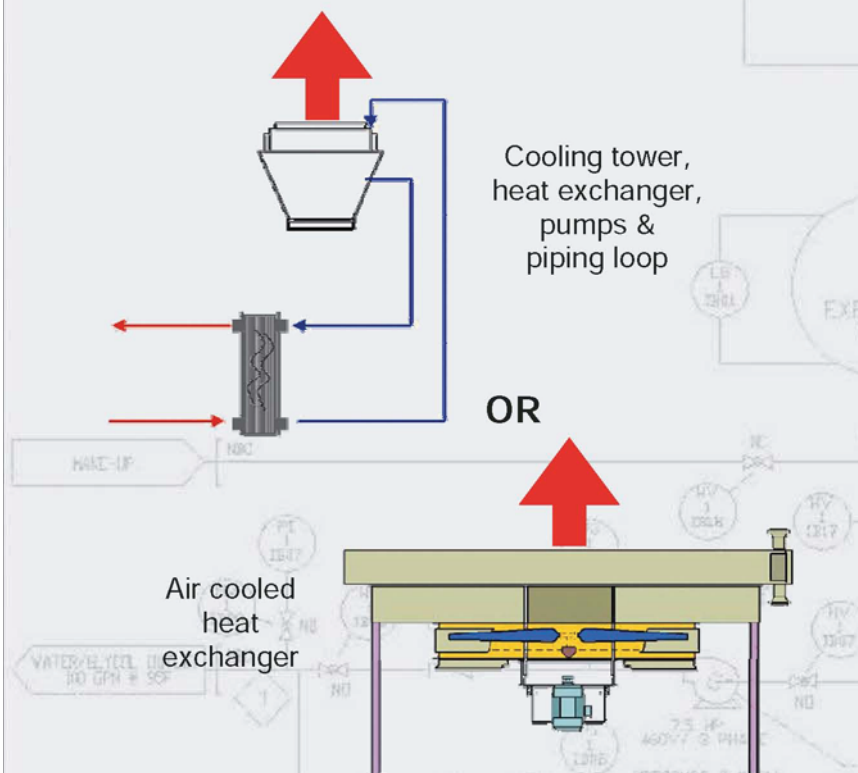
### Single phase gas cooling

- Up to max inlet temp of 450°F

### Turbine exhaust vacuum steam condensing

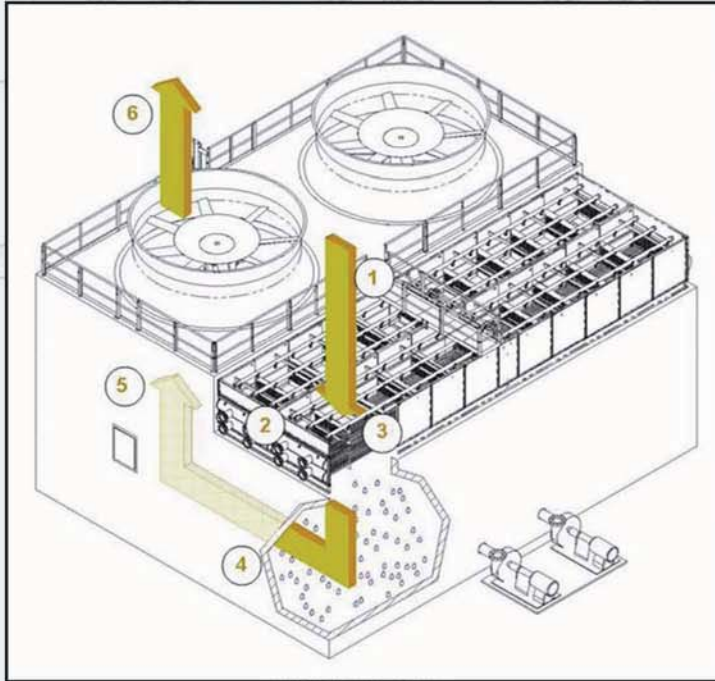
- As low as 1.8" HgA min

## WSAC Systems Replace



# How Does WSAC Equipment Work?

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

## About Niagara Blower Heat Transfer Solutions

Headquartered in Buffalo, NY, Niagara has proudly provided engineered solutions for heat transfer applications at process, power, refining, and food & beverage facilities worldwide since 1904. Niagara boasts a fully equipped laboratory; test facility; ASME code certified factory; custom manufacturing capabilities to ASME, API, and TEMA standards; and over 100 years of proven success.

Niagara product lines include Wet Surface Air Coolers, "No-Frost"® refrigeration/dehumidification systems, and Kathabar dehumidification/energy recovery systems. Resorcon Inc., a Niagara company, designs and builds the largest closed-loop process coolers and condensers in the world.



Member



Local Niagara Representative:



**THERMAL PRODUCTS, Inc.**

964A Route 146, Clifton Park, NY 12065  
 Office: 518-877-0231 Fax: 518-877-3329  
[sales@thermalproducts.com](mailto:sales@thermalproducts.com)  
[www.thermalproducts.com](http://www.thermalproducts.com)