

NIMBUS[®]

ADVANCED PROCESS COOLING

CASE STUDY #1

ADVANCING THE PROCESS OF COOLING

The Challenge

With melting furnaces reaching several thousand degrees, foundries are some of the hottest manufacturing facilities in the world. Early on, the NIMBUS team was approached by a well-established, forward-thinking foundry to help cool its process. NIMBUS needed to provide the customer with a solution that would cool 135°F process fluid to 110°F at 592 GPM, which the foundry had been achieving with a whopping seven dry air coolers that used eight fans each. Additionally, the engineers at NIMBUS needed to consider the 90°F summer dry bulb and 73°F summer wet bulb temperatures. By utilizing hybrid adiabatic technology, the ambient air temperature would be reduced to 80°F on the hottest days of the year.

The Engineered Cooling Solution

Based on the customer requirements, the NIMBUS engineering team determined that two custom-manufactured VIRGA III hybrid adiabatic cooling systems with five fans each would deliver the required 110°F process fluid at 592 GPM, thus eliminating the need for seven dry air coolers. This solution would provide notable space savings and was projected to generate significant energy savings.



NIMBUS replaced these seven 8-fan dry air coolers with two 5-fan VIRGA III systems.

Case At A Glance

- ▲ Type of Facility: *Metal Foundry*
- ▲ Location: *Michigan, USA*
- ▲ Summer Wet Bulb Temperature: *73°F*
- ▲ Required Flow Rate: *592 GPM*
- ▲ Outbound Fluid Temperature Requirement: *110°F*
- ▲ Est. Annual Water Savings: *2,917,933 gal.*



The two 5-fan VIRGA III systems save the foundry an average of \$11,000 annually.

The Outcome

Not only did the VIRGA III systems help the foundry *BE BLUE* by greatly reducing its annual energy consumption, the switch to two VIRGA III systems saves the foundry on average over \$11,000 per year on overall operating costs compared to the seven dry air coolers it had previously relied on.

Additionally, had the customer opted to install an induced draft, counterflow closed circuit fluid cooler with equivalent cooling specs to the two VIRGA III systems, it would have consumed an estimated 3,351,974 gallons of water annually versus the 434,041 gallons of water the VIRGA III systems consume, and would have added over \$6,000 to the annual operating cost.

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