White paper

How to ensure your productivity remains high even in heat waves

Alfa Laval Niagara wet surface air coolers (WSAC®) enhance cooling capabilities and protect productivity

October 2019

Contents

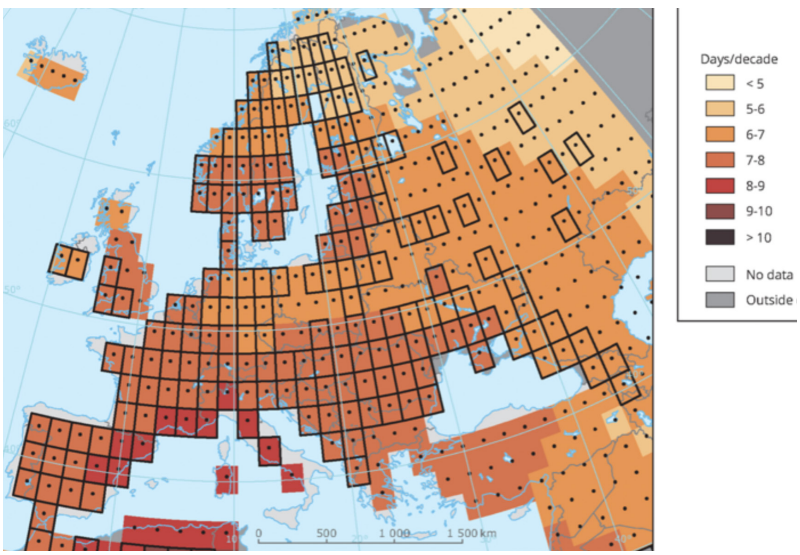
1. Introduction

Every year we see a continuation of the trend for warmer and warmer summers. This is, of course, a real concern for everyone on the planet, and it's something that we all need to address. In addition to the long-term impacts, it is having a more immediate effect on businesses which rely on industrial processes operating within a certain temperature range.

Many heavy industrial processing plants make use of cooling towers to help regulate the temperatures inside to ensure all equipment can operate in optimal conditions. The issue is, as the summer months get hotter, the cooling towers struggle to operate as effectively. Once external temperature reaches 35°C, the cooling capabilities of the towers drops significantly. Often, this means production capacity must be reduced.

This lost production can potentially cost millions, which can be the difference between a profit and a loss in the operation. With Alfa Laval Niagara WSAC, you can help secure your margins and maintain operation, even on the hotter summer days.

Alfa Laval Niagara WSAC is a wet surface air cooler, which uses innovative technology to help increase your cooling capability. It can operate at full capacity even when external temperatures rise to 46°C, and can work alongside your existing system.



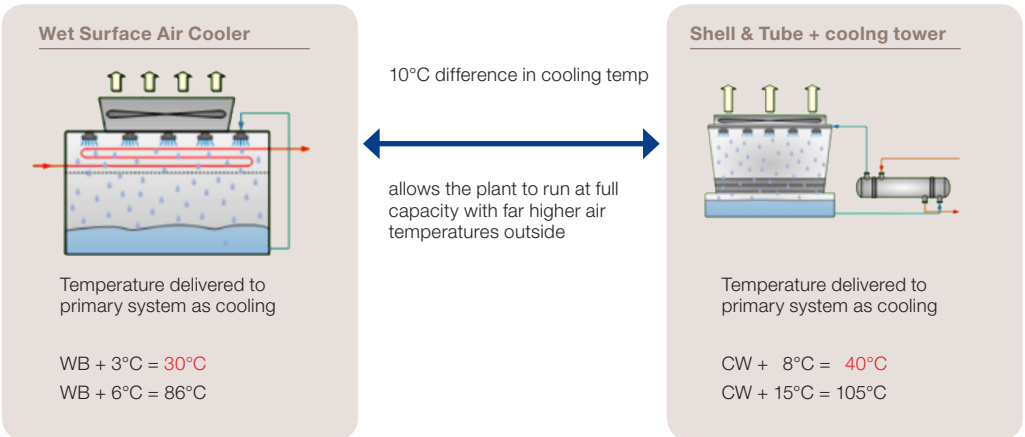
Observed trends in warm days across Europe between 1960 and 2018

2. Why choose a cooling tower and heat exchanger combo?

The most common method for cooling larger industrial premises is through cooling towers, usually combined with a shell and tube heat exchanger. They remain effective within milder temperature ranges, and are made from well established technologies.

However, there are a few drawbacks to relying solely on this combination. First and foremost, it's more susceptible to reduced efficiency in higher temperatures, but these systems also take more energy to operate at normal levels too. Then there are higher demands on the quality of water that needs to be fed into the system, and there's an inherent risk of fouling with the heat exchanger, and with the cooling tower fill.

These systems still work well most of the time, but there is the possibility to further improve on it, and to mitigate the associated risks.



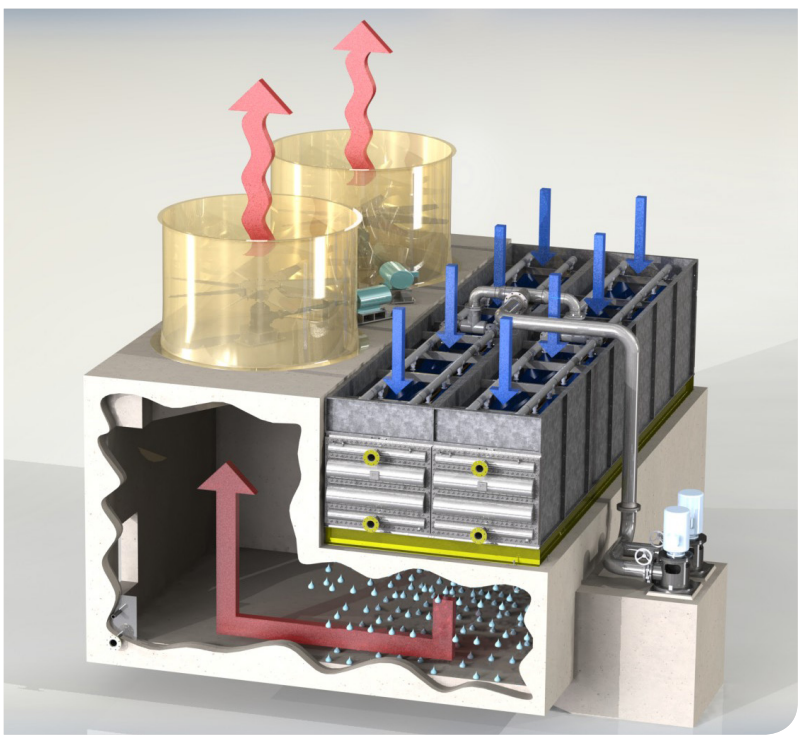
3. Why choose Alfa Laval Niagara WSAC?

An Alfa Laval Niagara WSAC heat exchanger compliments your existing system, so rather than replacing cooling towers or making your heat exchangers redundant, this Alfa Laval system ensures that you have alternative cooling options for when the need arises.

As the Alfa Laval Niagara WSAC has a different operating principle, it's not affected in the same way as cooling tower/heat exchangers by external temperatures, so it can still work efficiently when temperatures become too high for the alternative system. There are a number of other benefits with this system, when compared with a traditional set up.

This system, for example, uses less energy, and doesn't need as high-quality water to operate effectively, further reducing expense. Also, thanks to the fact that there's no cooling tower fill, there's a significantly lower risk when it comes to developing legionella.

The equipment does have a slightly larger footprint, but the benefits far outweigh this drawback, and the fact that it can help maintain your profit margins should not be underestimated.



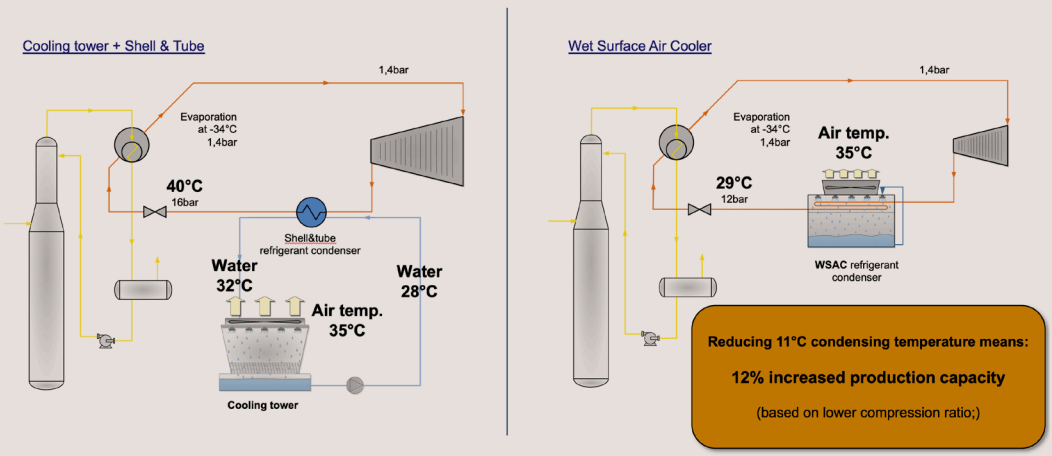
4. A safe investment

As summers are getting hotter, production losses are becoming increasingly likely due to the limitations of existing cooling systems, and this applicable for businesses all over the world. Investing in an Alfa Laval Niagara WSAC system is, of course, a significant decision, but you can quickly benefit from a positive return on your investment.

De-ethanizer overhead condenser

Reduced compressor load: Increased capacity during the hot summer months

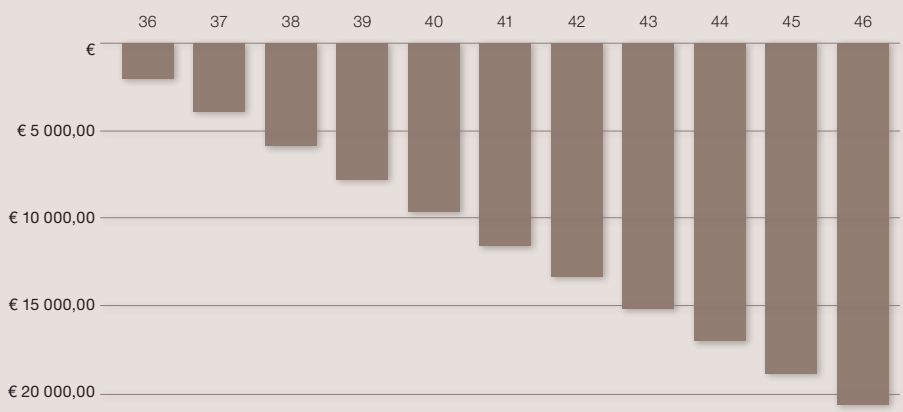
Here you can see the operating principle of the Niagara WSAC, and how it achieves the increased production capacity due to the reduction in condensing temperatures.



Production loss (EURO) vs Air temperature °C

(figures based on a 206 ton/h De-ethanizer system)

As you can see in the calculations in this graph, as soon as temperatures rise above 36°C some production capacity is lost. The higher the temperature rises; the more production slows down. Even at an external temperature of 38°C, a normal cooling system will actually cause losses of over €5,000 every hour, and these temperatures are quickly becoming normal.



5. The robust, efficient and resilient cooling solution

If your production suffered in the summer heat, the best way to prevent it from happening next summer is to invest in Alfa Laval Niagara WSAC. It's energy efficient, can operate at higher temperatures, and is less prone to providing a home to harmful bacteria. It's the perfect complement to your cooling tower combo.

About Alfa Laval

Alfa Laval is a leading global provider of specialized products and engineering solutions.

Our equipment, systems and services are dedicated to helping customers to optimize the performance of their processes. Time and time again. We help our customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuff, starch and pharmaceuticals.

Our worldwide organization works closely with customers in almost 100 countries to help them stay ahead.

How to contact Alfa Laval
Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com

100001658-1-EN 1910

How to contact Alfa Laval
Contact details for all countries are continually updated on our web site.
Please visit **www.alfalaval.com** to access the information directly.