Lamb Weston Meijer – IVG20-C Pro CoolWater skid

Type of industry	Foods
Cooling type and cooling towers:	Evaporative condensers for ammonia cooling
Before IVG installation	
Evaporative capacity in MW	24 MW
Water evaporation	37.20 m3 / hr
Water consumption	68.20 m3 / hr
Cooling water thickening	Factor 2.2
Chemical consumption	28,644.00 kg
Discharge waste water on:	Sewage connection WWTP
After IVG installation	2015
Evaporative capacity in MW	24 MW
Water evaporation in m3 / hr	37.20 m3 / hr
Water consumption in m3 / hr	42.51 m3 / hr
Decrease water consumption in%	- / - 39.39%
Cooling water thickening (COC)	Factor 10.0
Chemical consumption	0.00 kg
Decrease chemical consumption in%	- / - 100%
Return on Investment	2.2 - year
IVG technology	3 x IVG20-C Coolwater PRO
Absorbed power	12 kW
Discharge waste water	Rainwater drainage without discharge costs

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Lamb Weston Meijer

Lamb Weston / Meijer is based in the Netherlands and supplies frozen potato products such as Twisters, Potato Dippers and Connoisseur Fries and dried potato flakes worldwide.

As market leader, Lamb Weston Meijer sees it as their responsibility to always think one step ahead. Challenging the established order, asking questions: what if ...? And never settle for less. They believe that you can help the world with inventiveness and ingenuity. Not only because they can feed the growing population with their products, but also because they care for the environment and invest in the further development of their industry. Sharing the same opinions, the connection with Pathema was realised quickly!

Phase I: Background and realization line 3

Luc Wuijts - Maintenance Engineer - approached us as a result of the publication of the Heineken report. This research report revealed, among other things, that after the IVG-C skid has been deployed, the evaporation condenser can run free of chemicals, while operation remains guaranteed without scale and corrosion and / or microbial risks.

In 2012, Lamb Weston Meijer Bergen op Zoom had the first plans to build a new production line, line 3. They had the objective of exploiting the cooling water free of chemicals. This production line was completed in 2015, with Pathema's IVG20-C CoolWater Pro integrated. The collaboration was started on a "no cure no pay" basis, with a trial period of 12 months. The newly installed evaporative condensers thus remained free of lime, corrosion and microbiological growth. All this without the use of any chemicals. In addition, the necessary savings were achieved, such as on discharge costs, water purchase and natural chemical costs.

Phase II: Realization line 1

Based on the success achieved on line 3, it was later decided to also start using the same installation on production line 1. This line was in use for 20 years at that time and the Pathema installation could also be connected to this line without any problems.

LWM was very motivated to start chemical-free cooling, not only because of the costs and the environmental benefits, but also because of the intensive work involved in conducting a chemical operation; all standard work to maintain the chemical installation required a lot of effort that they would rather use differently. Moreover, they wanted more safety. With the knowledge gained during the commissioning of line 3, LWM knew that all this could be achieved by installing a second IVG20-C CoolWater Pro. The decision to switch to a second installation for line 1 was therefore quickly taken (2017).

Phase III

Lamb Weston Meijer has decided to be globally circular as much as possible in 2025. From that moment on, the use of chemicals is no longer feasible as far as Lamb Weston is concerned. The target for 2020 is a 50 percent reduction in direct water consumption and a 30 percent reduction in direct energy consumption per tonne end product. That is why in 2019 a third IVG20-C CoolWater Pro was chosen for the last cooling towers. All cooling towers at Lamb Weston Meijer are now chemically free.

Based on the idea of producing as much circular as possible in 2025, further discussions were held between both partners. The result is that Pathema is continuing its innovative development for Lamb Weston Meijer. Water treatment will be installed in 2020 so that no more drinking water needs to be taken in for all cooling towers at LWM. There are 10 in total, together "good" for 24 Mega Watt, or 42.51 m3 / hr.

No more drinking water for the cooling towers, how is that possible? To realize this progressive plan, Pathema is developing a self-cleaning water treatment system for this project that purifies waste water from the food industry for reuse in the cooling towers. This doesn't only mean that polluted water can be used in industrial (cooling) systems, but also that cooling water can be reused much longer because it remains cleaner. In addition, a self-cleaning system is being developed based on intelligent software with which the quality of the process and cooling water is continuously monitored. This makes it possible to act in time on pollution of the system, in order to minimize nuisance caused by cleaning. In this way there is a reduction in the use of clean tap water for cooling of at least 95% per year and a waterfootprint saving of 39.39%.

In the words of the customer

"Fast food is booming," Luc Wuyts says. "That means that we, as a supplier, have to realize enormous capacity increases. Quality is more important than price for Lamb Weston. Because we work with a natural product, that is quite a challenge. The process can be different every day. "Washing, peeling and cutting into French fries costs 16 Olympic-sized swimming pools full of water per day", Wuyts says. "We are ambitious regarding sustainability and therefore, Lamb Weston / Meijer is very committed to reusing the water."

At a site in the United States, they had failed a chemical-free cooling water purification test and were not very keen to try it again. Luc continues: "In the US, the bundles were due for replacement within a year. Because that is the most important thing: how do you ensure that your limescale deposits on the pipe bundle occur when you cannot work with chemicals? And on top of that ofcourse the prevention of legionella. "Luc and his colleagues got in contact with Pathema and saw something in their IVG-C CoolWater PRO. "And although not everyone in the company was convinced immediately, the energy team persevered and agreed a pilot with Mark Boeren from Pathema that would be evaluated after a year on the basis of no cure no pay. He showed us that apart from having to work with chemicals, which is a lot safer for employees, there were also substantial energy savings. "

The future – Phase VI

The progressive objectives that Lamb Weston always has set, have already brought many beautiful things. The coming period will be dominated by the process water recovery project. After realizing this project in the coming year, the next step will undoubtedly be to find even more destinations for the recovered water. You can, for example, think of steam production for the steam potato peeler, a device in which potatoes are peeled at breakneck speed with the help of steam. And given the creativity and ambitions of both parties, many great ideas and solutions will follow.