

## Halton reduces emissions and increases energy efficiency in Lahti and Kausala plants

At Halton energy efficiency is considered fundamental. It affects the entire business, from the produced indoor air solutions for the customers to the company's operations. Halton Group has set a target to become carbon neutral by 2023. As part of these efforts, Halton Finnish plants in Lahti and Kausala decided to adopt the HVAC systems, which reduce CO<sub>2</sub> emissions.

Halton Marine's plant in Lahti switched to geothermal heating

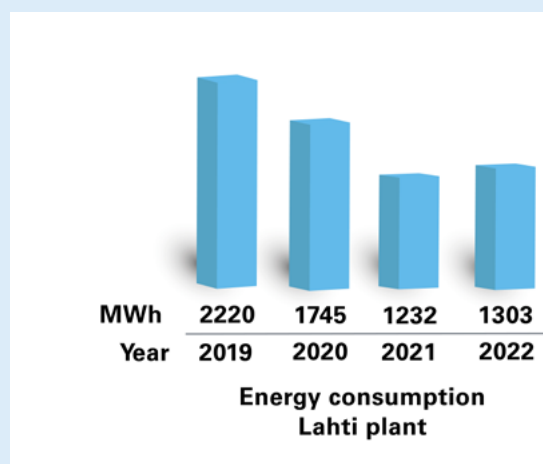
Halton Marine's Lahti plant has significantly reduced emissions. During 2020, Halton switched from natural gas to geothermal heating. The new solution reduced heating emissions by 90%. In addition, the plant changed to carbon-free electricity at the end of the year, decreasing CO<sub>2</sub> emissions considerably.

Adopting geothermal heating makes the plant one of the most environmentally friendly in the industry while generating significant cost-saving benefits. The change in the energy system was also important for the plant's indoor environment since cooling came as part of the deal. Also, conditions can be adjusted with greater precision in the whole plant. The temperature in the production premises can be lowered by few degrees during hot summer weather, and the air humidity drops.

In addition to adopting geothermal heating, the inlet and outlet air fans of the factory's ventilation machines were replaced with continuously adjustable direct-drive EC fans. This way, a considerable electricity saving was achieved compared to the old 2-speed fans. The ventilation control was also renewed by adding carbon dioxide and temperature sensors to the ventilation system. In this way, demand-based ventilation was achieved, allowing air volumes to be controlled according to the load of the spaces.

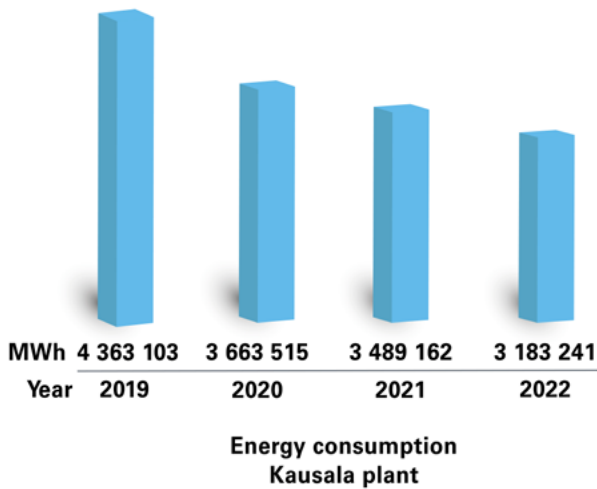
The year 2021 was the first year when the improvements were effective throughout the year. The attached diagram shows the development of the Lahti factory's total energy consumption from 2019 to 2022. The CO<sub>2</sub> emissions from Lahti factory's energy use in 2022 were 15.6 tons CO<sub>2</sub>e, entirely from using renewable electricity.

Halton Marine's Lahti plant specializes in high-quality customized indoor climate solutions and fire safety products for the marine, energy, and heavy industries. The factory was established in 1989 and expanded in 2016. It has an area of 7,000 square meters and around 140 employees.



Halton's Kausala plant renewed the HVAC systems, including heat recovery

The Kausala plant completed a significant energy efficiency project in April 2022. The project's first steps were taken two years earlier when it was decided that the site's energy consumption should be cut significantly. During the evaluation of different solutions, geothermal heating was excluded as an option because the land was situated in a groundwater zone. Instead, an extensive renewal of the HVAC systems aiming to reduce the use of natural gas in heating the premises was agreed upon. The project focused on improving the building systems' energy efficiency, controllability, and modernization. A significant improvement was achieved by adopting an efficient heat recovery system with heat pumps. The same improvements – replacing the inlet and outlet air fans of the factory's ventilation machines with continuously adjustable direct-drive EC fans – were also implemented in Kausala. The total renewal project decreased the Kausala plant's heat consumption by 29% compared to that in 2020, excluding the effects of outside temperature differences. Also, the electricity consumption dropped by 10% although part of the gas usage was replaced by the heat pump. The heat pump was also used for cooling spaces.



In April 2022, the Kausala plant started using biogas as an energy source. With this change, CO<sub>2</sub> emissions from heating dropped significantly. Since year 2023, electricity has been from renewable energy. With these actions, energy consumption has decreased. The Kausala plant's CO<sub>2</sub> emissions are estimated to be around 33 tons CO<sub>2</sub>e in 2023.

Kausala is home to Halton's first and biggest plant specializing in the Halton Buildings and Halton Health offerings. It also hosts the company's largest innovation hub and office space. The total area of the facilities is approximately 23,000 square meters, with nearly 200 employees. The facilities were constructed in stages between 1984 and 2013.

