Setting the course for circular economy

by Jaana Niemi

Alongside everyday operations taken with environmental care, the Port of HaminaKotka and its partners have many ongoing projects to make them more climate-friendly. In addition to legislation, such as the environmental permit, both Finland's and international emission targets and climate strategies govern environmental decisions at the ports.

As part of the European Green Deal, the European Union (EU) has, following the European Climate Law, set itself a binding goal of becoming climate-neutral by 2050. This move calls for a considerable reduction in greenhouse gas emissions over the following decades. The EU has also raised the 2030 climate bar, requiring emission reduction of at least 55% by that year vs the 1990 level. The EU is preparing to revise its climate, energy, and transport legislation within the Fit for 55 package to make current legislation conform to the 2030-2050 targets.

The provisions also govern seaport operations. As such, the Port of HaminaKotka will have an opportunity to bunker vessels with liquefied natural gas at both of its ports before this becomes mandatory under regulations. Moreover, the construction of onshore power supply facilities for container and cruise vessels is under consideration.

From waste to resource

The objective of the programme of the Finnish Government headed by Prime Minister Sanna Marin is that Finland ticks off carbon-neutrality by 2035, hence becoming the first fossil-free welfare society. One strategic component of the governmental scheme includes securing biodiversity, and another sub-target reinforces Finland's role as a pioneer in the circular economy.

The Port of HaminaKotka has also recognised the importance of making its economy more circular. Among other things, the port company applies the principles of sustainable development and circular economy to construction works. For instance, concrete and asphalt waste from various types of demolition work in the port area is recovered for subsequent use as applicable. When the Hietanen Car Terminal was built, significant amounts of tyres, surplus rubber granules, and other corresponding materials were used to fill the land areas. Similarly, new space at the D-area at the Mussalo Harbour was erected using concrete and brick debris, and materials from old, demolished schools and bridges. At the same time, the earth and rock materials hauled to the area were extracted from the immediate vicinity of the port. All of this contributed to minimising heavy-duty traffic emissions.

The circular economy is also a focal point when treating other refuse, e.g., sewage from vessels. HaminaKotka is the first seaport to be involved in the circular economy pilot project of the Baltic Sea Action Group. The wastewater is taken to a local treatment facility, after which the solid waste created in the process is converted into biogas and soil improvement material. Another objective of the project is to encourage ships to leave their sewage ashore instead of discharging them into the Gulf of Finland, thus avoiding aggravating the eutrophication process that negatively affects the Baltic marine life.

In February 2020, Fintoil announced constructing a tall oil distillation plant at the Hamina Harbour. The company distils raw materials for several products from crude tall oil, which is a byproduct of softwood pulp production categorised as waste – until now, that is. Fintoil's new production facility exemplifies how a modern circular economy can feed two birds with one scone, turning waste into a valuable product that, in turn, can help other industries decarbonise. Of Fintoil's products, crude grease acid, for example, enables the production of 100m biodiesel litres per year, an equivalent to the annual fuel consumption of approximately 110k cars. The processing plant is underway, with commissioning scheduled for summer 2022 and the first deliveries in autumn. Once operational, the facility will make Fintoil one of the biggest processors of crude tall oil.

Another significant investment project is the biorefinery of the wood processing company UPM, planned to be located at the Port of HaminaKotka in Kotka. The final decision on building the plant is expected in 2022. If realised, the biorefinery will be UPM's second-biggest investment ever, amounting to approximately €1.0b. The plant will produce 500kt of renewable fuels per year for the transport and petrochemical industries. The refinery will use raw materials which currently are of no use, like excess particles from wood processing. The company estimates that the products would significantly decrease the carbon footprint of road and air transports, plus replace fossil raw materials for chemicals and bioplastics with renewable alternatives.

"Both Fintoil's tall oil processing plant, which is under construction, and

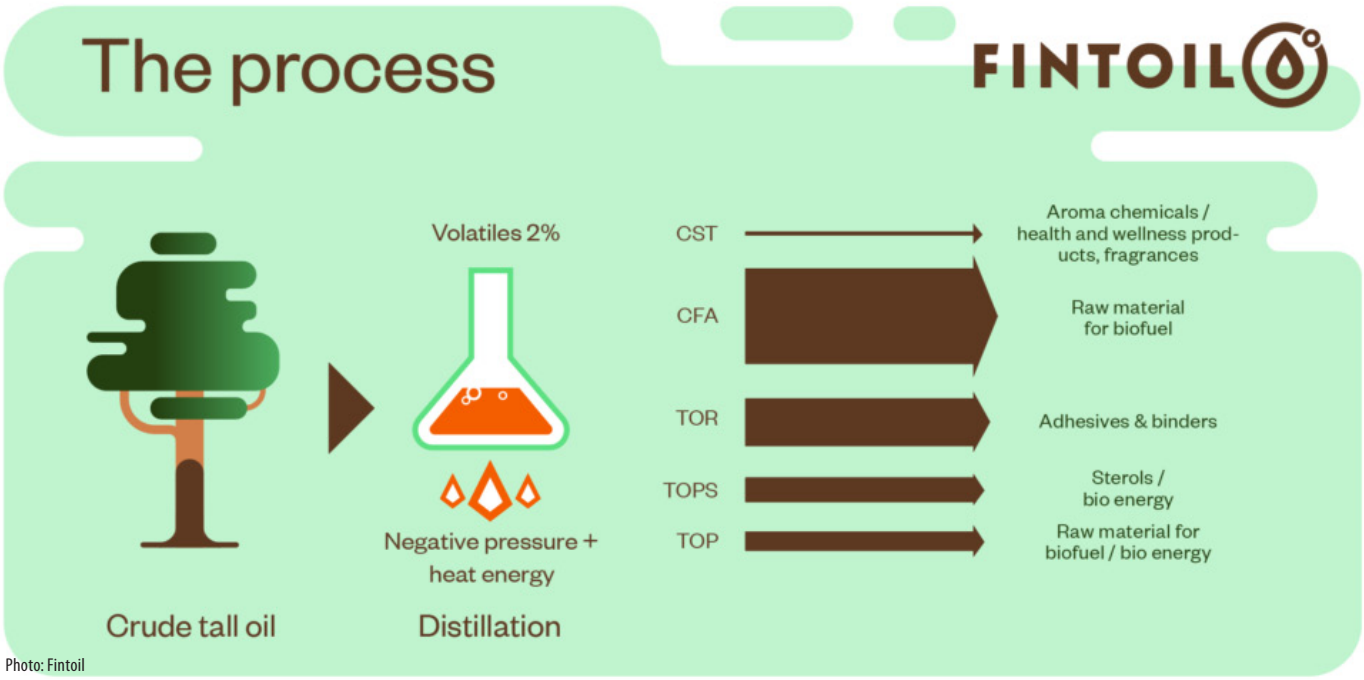


Photo: Fintoil

the biorefinery project planned by UPM in Kotka are excellent examples of how a port environment can create the operating conditions for projects aiming to promote circular economy," Dr. Kimmo Naski, the Port of HaminaKotka's CEO, underlines.


Photo: HaminaKotka

In a good light

The Port of HaminaKotka also strives after lowering its direct carbon footprint. For instance, 80 solar panels have been installed atop the Merituuli office building in Mussalo. The system generates an average of 26,300 kWh of energy, resulting in a yearly reduction of around 4.2t of CO_2 emissions. All the energy produced by the panels can be used irrespective of the year's season, and it is primarily spent on cooling, lighting, and ventilation of Merituuli.

Energy efficiency will be further enhanced by modernising the Port of HaminaKotka's lighting in 2021-2025. It is currently the most significant measure undertaken by the port company to decrease its impact on the environment. A new control system will be implemented, and LED lights will replace the old SpNa lighting fixtures. The projected energy savings will be about 360,000 kWh, and the five-year reduction in CO_2 emissions will sum up to about 58.7t compared to the present level.

Monitoring of water and sea areas also constitutes an integral part of HaminaKotka's eco-efforts. Per the provisions of the environmental permit, the port company participates in the joint monitoring of the sea area in Hamina and Kotka and conducts regular stormwater monitoring. Cargo or other debris spilt on the ports' paved areas is washed into the stormwater run-off by rainwater. The system contains sand and oil separation sumps intended to prevent the load from entering the sea.

Furthermore, the Port of HaminaKotka, alongside operators that handle fertilisers, is involved in a project led by the John Nurminen Foundation, which conducts intensified monitoring of stormwater fertiliser content at the Mussalo Harbour. Apart from that, means are sought to reduce the content, so cargo handling isn't disturbed.

"The operations of the port have been certified in accordance with the ISO 14001:2015 standard, which means that various environmental aspects have been recognised and considered in all our operations. We aim to continually enhance our operations so that the burden on the environment would be mitigated and that we could contribute to reaching the climate goals set by Finland and the EU," Kimmo Naski concludes. □