# Energy efficiency

Neste Oil's goal is to reduce its overall energy consumption, particularly in refining and logistics. Enhancing cost efficiency and low-emission refining are key drivers for improving energy efficiency.

## Energy usage

| | 2013 | 2012 | 2011 |
|---|---|---|---|
| **Total energy use, TWh** | **14.11** | **14.24** | **14.98** |
| Fuels and natural gas (incl. self-produced fuels used in Neste Oil's own energy generation) | 91.4% | 90.5% | 94.3% |
| Purchased electricity | 6.4% | 6.9% | 3.9% |
| Purchased heat | 2.2% | 2.6% | 1.8% |

## Continued progress on improving energy efficiency

Neste Oil is committed to Finland's national action program covering the country's energy-intensive industry and designed to help combat climate change in line with Finland's national climate and energy strategy. Launched in 2009, Neste Oil's energy efficiency program covers the Porvoo and Naantali refineries and terminals in Finland. As part of the program, Neste Oil has set an energy-saving target of 660 GWh to be achieved by 2016, equivalent to the annual energy needed to heat 35,800 homes (120 $m^2$, four family members) electrically (source: Vattenfall). As of the end of 2013, 80% (60%) of the energy-saving target set for 2016 has been achieved.

## Energy efficiency at Neste Oil's fossil fuel refineries

A well-known international energy efficiency index is used as the yardstick for measuring energy efficiency at Neste Oil's fossil fuel refineries at Porvoo and Naantali. The Porvoo refinery was given an index value of 84.0 (87.4) in 2013, while the Naantali refinery received an index value of 96.3 (100.9).

A decision was taken in 2013 to replace the fired heaters at the crude distillation unit at the Porvoo refinery with new-generation units. The plan is to commission the new heaters, which will improve the refinery's energy efficiency and are expected to save approximately 50 GWh of energy annually, during the site's next major maintenance turnaround scheduled for 2015.

Energy efficiency at the Naantali refinery was enhanced during 2013 by optimizing the refinery's distillation columns and fired heaters. Unit optimization work was also carried out at Porvoo and work was also carried out to remove dust and soot from the refinery's heat recovery boiler. Development measures resulted in an annual energy saving of approx. 160 GWh.

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## Energy efficiency at the renewable diesel refineries in Singapore and Rotterdam

Neste Oil's NExBTL renewable diesel refineries in Rotterdam and Singapore feature modern technology throughout and are, by definition, energy-efficient. As the energy efficiency index applied at fossil refineries is not suitable for calculating the energy efficiency of renewable fuel refining processes, Neste Oil uses a different but similar indicator: KWt/ton of output. Use of this indicator started in 2013 and the results will be reported in 2014.

An energy efficiency plan was drawn up for the Singapore refinery in 2013 and an energy review of the site carried out. The results of

the review will be used to determine which areas need to be prioritized.

The hot oil furnace at the Rotterdam refinery was modified in 2013 to use gas generated during the refining process. This has reduced natural gas consumption significantly and resulted in an annual energy saving of approx. 15 GWh. The Rotterdam refinery also joined the local energy efficiency system in 2013.

## Energy efficiency in transportation and at service stations

The terminals used by Neste Oil's tanker trucks, together with the loads they carry, are designed to be as efficient as possible in terms of energy usage. Energy efficiency at sea has been improved by introducing a basic speed of 13.5 knots for tankers. The energy efficiency of vessels was further enhanced in 2013 by cleaning ships' hulls and propellers of algae and barnacles that have a significant effect on their fuel consumption.

Oil Retail launched an energy efficiency program in 2010 aimed at reducing the electricity consumption of stations in Finland by 25% compared to 2007 levels by 2020. New lighting technology will be introduced as part of this, and the plan is to begin a switchover to LED lighting at stations owned by Neste Oil in Finland in 2014. An energy efficiency program is also in place covering stations in the Baltic countries and Northwest Russia, aimed at reducing electricity consumption by 20% (6,800 MWh) compared to 2010 levels by 2020.