

Metro transport and the environment

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Metro transport is environmentally friendly: one metro train is able to carry the same amount of passengers as 700 cars.

Metro transport in Helsinki

The metro system is a popular mode of transportation for passengers: it regularly receives top marks in passenger satisfaction surveys. In the future, the metro will receive additional users and admirers, when the railway track section of the Western Metro Extension opens in around 2015.

The metro is one of the most reliable forms of travel. In 2009, the number of metro passengers was 57.3 million. As much as 99.96 percent of all departures leave according to schedule.

Helsinki has the northernmost metro track in the world and Mellunmäki is the northernmost station of the system. The length of the Metro track is 21.1 km.

HKL Metro Transport has 54 carriage pairs, of which the M100-series trains have 42 and the M200-series trains have 12. 45 metro trains operate daily. In 2009, the M100-series trains travelled 5 380 000 carriage pair kilometres, and the M200-series trains travelled 1 380 000 carriage pair kilometres. Acquisitions of new subway trains are ongoing and new four carriage train units will be introduced once the Western Metro Extension section begins operations.

The duties of HKL Metro Transport include the management of the metro transport commissioned by Helsinki Region Transport and

the maintenance of the equipment. In addition, the Metro Transport Unit looks after the maintenance and service procedures of the track and electrical equipment infrastructure. The metro trains are housed, serviced and repaired at the depot, whilst the track workshop is also located at the property.

Metro transport protects the environment

Metro transport is the most environmentally friendly form of transportation. The electricity consumption of the metro transport per passenger-kilometre is only about 0.10 kWh. The use of the space in a metro train is also superior; **a metro train is able to carry the same amount of passengers as 700 cars.** The metro vehicles have a long life: the carriages are able to remain in working order for approximately 40 years.

The transport controller system of the metro will become automatic in about 2014. The automation will further reduce energy consumption: the use of energy will increase



in efficiency and the efficiency of the transportation will come to increase as the amount of passengers increase.

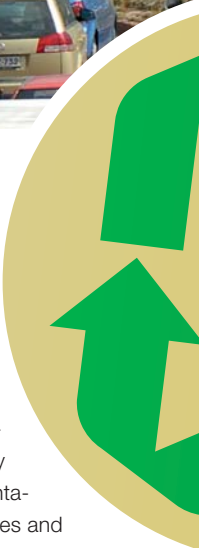
The vehicles of HKL Metro Transport are both environmentally friendly and energy efficient. In the implementation of waste management procedures and acquisitions, the principles and life cycle considerations of sustainable development are taken into account. HKL Metro Transport operates in accordance with the ISO 14001 environmental standard.

The total electricity consumption of the depot in 2009 was 45.78 GWh, for which the driving energy was 41.96 GWh. The driving energy consumption can be influenced through the training of drivers in energy-efficient driving styles.

In 2009, the depot used 2.96 MWh of district heating, produced by Helsingin Energia.

In 2009, 3691 cubic meters of water was used, for which 742 m³ was used by the train cleaning machine.

The consumption of energy, water and chemicals at the depot is continuously monitored and corrective measures are taken when necessary. Equipment and water fittings are maintained in good condition, whereupon there is no unnecessary energy or water waste.



Environmental cleaning at the depot

The water recycling system

for the train cleaning machine recycles about 85 per cent of the water for re-use. This results in significant savings in the use of clean water. The rinsing process always uses clean water. After the cleaning process, the water is discharged into the sewerage system. The cleaning rate of the water of the train cleaning machine is over 99 percent.

The duration for the train cleaning machine operation per one carriage pair is about 10 minutes and about 16 minutes per two carriage pairs.

The cleaning detergents used at the depot have Swan labels (the Nordic Eco-label). The track grease is biodegradable. The grease complies with the CEL-L-33-94 biodegradable standard. The products are ordered and delivered in bulk; thus, the amount of packaging waste is minimized.

Waste is sorted, whereupon it can be recycled in the best possible way. Mixed waste ends up at the Ammänsuo waste treatment centre landfill, however, in the future, the

The metro depot is energy and water efficient: about 85 percent of the water used by a train cleaning machine is recycled.

mixed waste will be able to be utilised for energy at an incineration plant in Vantaa.

All reusable material and recyclable material is collected. Metals are resold as raw material.

Hazardous wastes are delivered to Ekokem Ltd, who further deal with them properly.

Waste water is discharged into the municipal sewer, after oil and sediment separation.

The level of noise which is created can be minimised by keeping wheels, rails and springs in good condition and through the construction of noise barriers. New bridges have noise barriers installed instead of railings.

Energy is saved at work stations by using power saving features, devices which consume less power and by timing the workstations to run centrally on hibernation at the end of the day. The staff is also instructed in, among others, the switching off of lights, two-sided printing and the sorting of wastes.

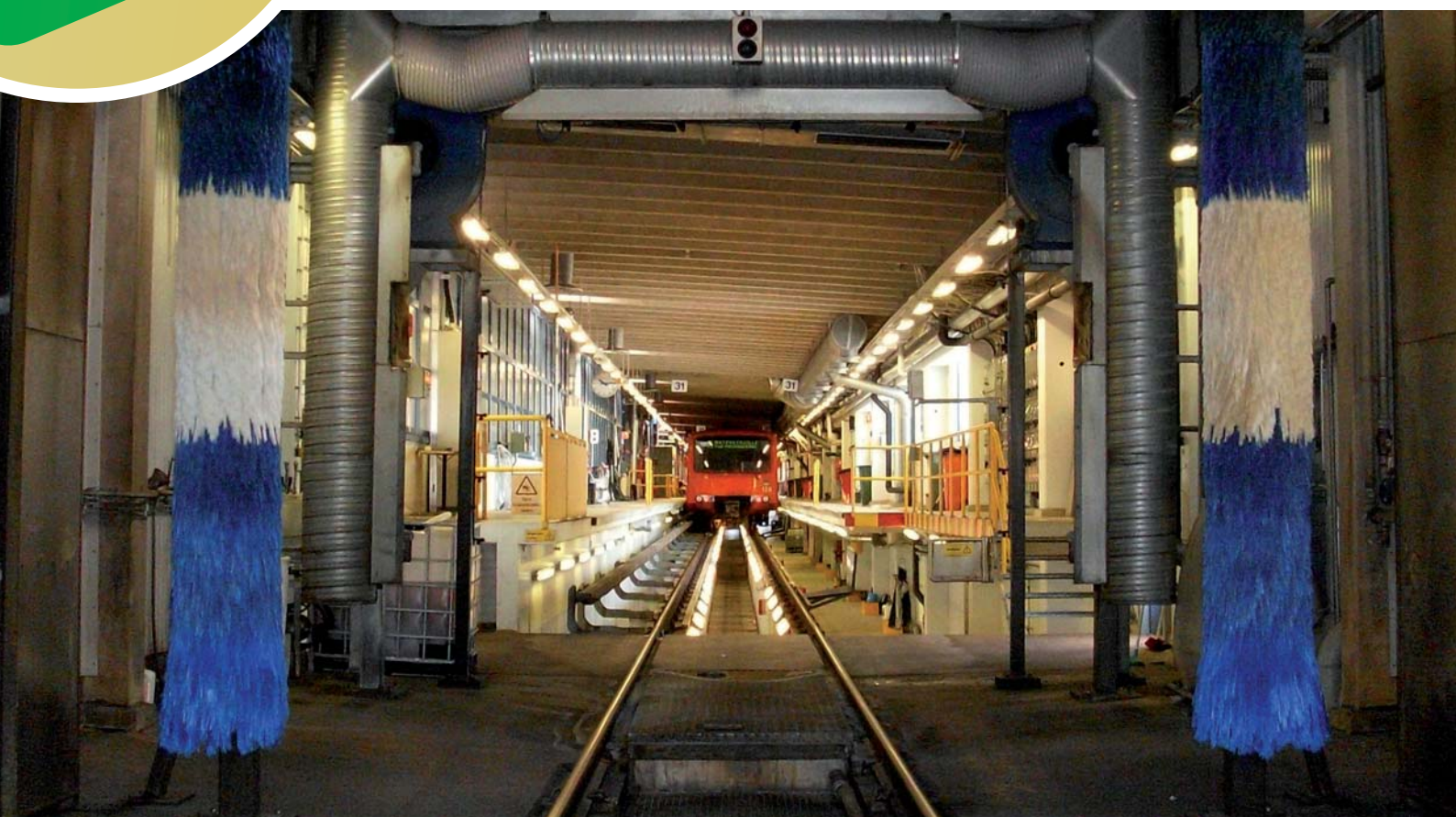
Performed by the carriage pairs (2009) **7 266 mill. km.**

The metro depot's energy and water consumption (2009)

Electricity, altogether	45.78 GWh
Driving energy	41.96 GWh
Depot's electricity	2.72 GWh
Gear heating	1.10 GWh
District heating	2.96 MWh
Water	3 691 m ³
Recycled water	6 613 m ³
Fuels	47 078 litres

The quantities of waste and other consumption at the metro depot (2009)

Mixed waste	19 960 kg
Energy waste	11 729 kg
Construction waste	24 128 kg
Hazardous waste	3 469 kg
Batteries	1 257 kg
Scrap metal	203 582 kg
Paper (inc. free daily newspapers)	134 498 kg
Carton	2 730 kg
Glass	1 440 kg
WEEE-waste (inc. all HKL)	3 949 kg
Oils and grease	3 766 kg
Detergents	14 612 litres
Waste oil, clear	900 litres



Environmentally friendly actions by HKL Metro Transport

- 2009..... The use of Swan labelled detergents in the inner and outer cleaning of the trains
- 2007..... The recycling/ restoration of the shock absorbers of trains begins
- 2006-2007... The modernisation of wheel lathes
- 2006..... The environmental training of personnel
- 2005..... The sorting of waste to reduce landfill waste amounts
- 2004..... The development of the sorting of scrap metal
- 2004..... The development of the sorting of construction waste
- 2003..... The collection of non-depositable aluminium cans
- 2003..... The collection of non-depositable glass bottles

In addition

- Some of the gears have been fitted with rollers, whereupon the amount of grease has been reduced.
- Noise barriers have been installed during renovation work, in place of railings.
- Rail lubrication equipment has been renewed.



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