
Lounavoima
Waste-To-Energy Plant in Salo

Local energy from non-recyclable waste

Lounavoima Oy's Korvenmäki waste-to-energy plant in Salo converts non-recyclable waste into local energy safely and efficiently.
The plant, which started operations in spring 2021, combines heat and electricity production.
In addition, heat is stored in a geothermal heat storage facility completed in 2025 in connection with the plant.

18

The waste utilised at the plant is mainly collected from the area of LSJH's 18 owner municipalities. The area has approximately 440,000 inhabitants.

90

The plant produces up to 90% of the district heat distributed in Salo, which covers the heating needs of approximately 15,200 residents and many public and commercial buildings. In addition, electricity is produced for the national grid.

180-190

In one year, the plant produces 180-190 GWh of district heat and approximately 72 GWh of electricity. The electricity generated by the plant could continuously power one million LED lamps.

Circular economy innovations utilised in Salo

The first four years of operation of the waste-to-energy plant have shown that the construction of the plant was a profitable investment. The waste treatment fees of the residents of the area and the price of district heat remain under control when the waste can be utilised locally in the area's own plant. The utilisation of non-recyclable mixed waste removes harmful substances from circulation and ensures the development of recycling and source separation.

The savings of the waste-to-energy plant can be used to develop new recycling and energy utilisation solutions together with innovative companies. An internationally unique geothermal deep heat storage facility has been built on the site of the waste-to-energy plant, in which the excess heat generated during warm periods is stored and used during periods of high heat demand. The innovation has also sparked interest outside Finland.

By 2035, Lounapuisto, which surrounds the waste-to-energy plant, will be a gem of the circular economy. In addition to the production and storage of electricity and district heat, future opportunities in Lounapuisto include biogas, recycled fertilisers, solar and wind power as well as Power to X technologies and hydrogen economy.

The circular economy will continue to be developed systematically and determinedly together with the City of Salo, Lounais-Suomen Jätehuolto and companies in the sector.

Jukka Heikkilä
Chairperson of the Board of Directors
at Lounavoima

135 000 t

The plant's maximum annual capacity of 135,000 tonnes of waste fuel corresponds to approximately 56,000 tonnes of coal or approximately 37 million m^3 of natural gas.

Korvenmäki Waste-to-Energy Plant at a glance

1 **RECEPTION OF WASTE FUEL**
Up to 135,000 tonnes per year, approximately 20 vehicles every weekday.

2 **WASTE BUNKER**
The 6,000 m³ waste storage can hold approximately one week's worth of waste from the area.

3 **BOILER BUILDING**
A fuel power of 46 MW is achieved by incinerating 360-380 tonnes of waste per day at temperatures above 1,000 degrees.

4 **TURBINE BUILDING**
The steam is used to generate electricity and heat.

5 **FLUE GAS TREATMENT PLANT**
Multi-stage flue gas treatment ensures a good end result in all situations. The flue gas scrubber also recovers the heat contained in the flue gases and delivers it to the district heat network.

6 **CHIMNEY 70 m**
The plant's emissions are significantly lower than the limit values of the environmental permit.

7 **WATER PLANT**
The water generated in the process is purified and reused as additional water in the steam boiler or elsewhere in the process.

8 **CONTROL ROOM**
The operation of the plant is monitored around the clock.

9 **VISITOR CENTRE AND OFFICE**
Every year, 1,000–2,000 visitors come to see the waste-to-energy plant and visitor centre.

10 **GEOTHERMAL HEAT STORAGE FACILITY**
Storing heat replaces the need for air condensation and helps to both react quickly to fluctuations in heat demand and reduce environmental impact.

11 **INTERMEDIATE BOILER SLAG STORAGE**
The unburned material, that is, boiler slag, is directed along conveyors to the intermediate storage, from where it is delivered for processing.


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A two-kilogramme bag of waste used in the plant can heat a detached house for about half an hour.

Heat and electricity from waste

The waste utilised at the Korvenmäki waste-to-energy plant is collected from the area of the owner municipalities of Lounais-Suomen Jätehuolto and elsewhere in south-western Finland.
The plant uses non-recyclable mixed waste that cannot be taken to landfill sites, as well as other waste suitable for the plant in accordance with the environmental permit. Mixed waste includes, for example, dirty plastic and cardboard packaging, cleaning waste and hygiene products – waste that is left over after recyclable and hazardous waste have been sorted separately.

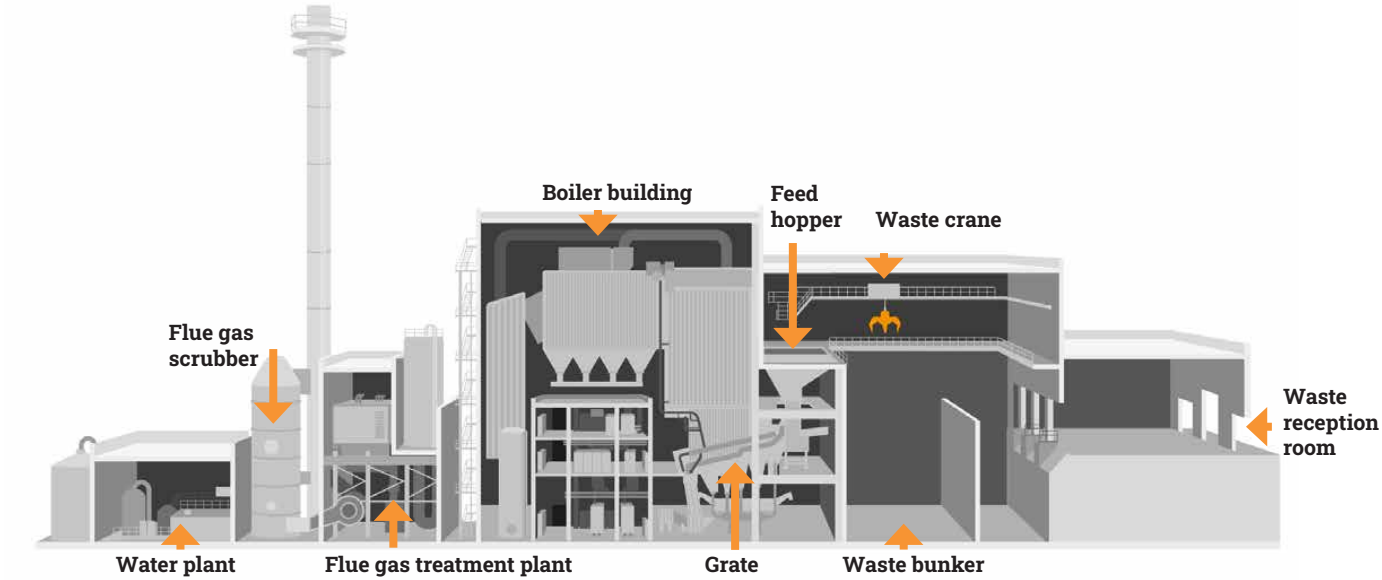
Previously, non-recyclable mixed waste was transported to different parts of Finland or even abroad to be utilised for energy production. Thanks to the waste-to-energy plant, waste transport distances have shortened, which in turn has reduced emissions from waste transport.
Replacing fossil fuels and peat with waste fuel has also reduced the carbon dioxide emissions from district heat production in the area by about half.

Information about the plant's environmental impacts

The operations of the waste-to-energy plant are guided by strict emission and efficiency requirements. The plant uses a multi-stage and efficient flue gas treatment system, and the pollutants in the flue gases discharged into the outdoor air annually are well below the limit values of the permit conditions. The plant's emissions are monitored through continuous measurements.

The plant does not cause any odour or noise in its environment. The waste is unloaded and stored indoors, and the exhaust air from the waste bunker is not released directly outside. The yard areas with traffic are paved, and the rainwater from the area is collected in an equalizing basin. Fuels, ashes and chemicals are processed, stored and transported in such a way that they do not harm the environment.

The ash generated in the plant is delivered as separate fractions for further treatment. The metals are separated from the boiler slag and delivered for recycling. Fly ash and the ash from flue gas treatment are processed into insoluble form and disposed of.

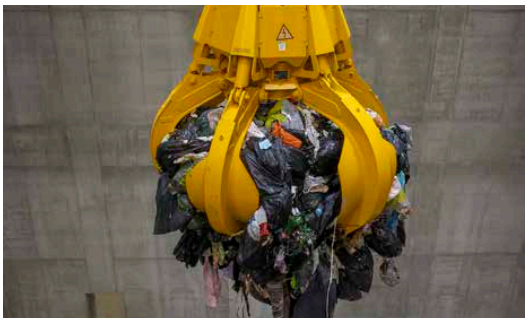


What happens in the waste incineration process?

The waste load is weighed on a vehicle scale, after which it is unloaded into the waste bunker. From the bunker, an automatic waste crane transfers the waste to the incinerator's feed hopper and at the same time mixes the waste in the storage so that it is as uniform as possible. From the feed hopper, the waste is directed to the combustion chamber, where it is burned. At the end of the grate, the unburned boiler slag falls into a water basin where it cools down quickly.

The boiler slag is temporarily stored and transported for screening for further use. The different types of metal are delivered to industry for reuse, and the remaining mineral fraction is used in earth construction, for example. It can also be used in the cement and concrete industry.

The hot flue gases generated during incineration are directed to the steam boiler, where they are cooled by water circulating in the boiler pipes. The cooled flue gases are directed to the flue gas treatment process. The water vapour is superheated. The superheated dry steam can be directed into the turbine for electricity production and further to district heat production. In district heat exchangers, the steam is condensed back into water and returned to the boiler.



The plant's chimney is 70 metres tall.

Heat from flue gases

In the treatment process, hydrated lime and activated carbon are added to the flue gas to bind harmful substances. The excess lime, activated carbon and reaction products are separated from the flue gas in a bag filter. The majority of the separated dusty material is fed back into the flue gas treatment process. A small proportion of the circulating dust is removed and directed to further processing.

After the bag filter, the flue gases are directed to the scrubber, which condenses the vapour in the flue gas into water. When condensed, the water releases heat, which is used in district heat production. The water condensed from the flue gas is efficiently purified and reused in the process.

After the scrubber, the flue gases are directed into the chimney. The flue gas leaving the chimney has been effectively cleaned and its emissions are significantly lower than the conditions of the environmental permit.

Purified water for utilisation

The water generated by the flue gas condensation is treated in a water purification process, in which the main equipment used are a sand filter and a reverse osmosis machine. The purified water is used as additional water for the boiler or can be directed to the waste water sewer if the demand for district heat is high and the amount of condensate produced exceeds the need. When additional water is produced, the salts that are naturally present in the water are removed so that they do not damage the boiler's pipes.

Houses in Salo are heated with heat stored at a depth of more than 2 kilometres

The geothermal heat storage facility drilled into the bedrock of the waste-to-energy plant can store the excess heat generated by production during warm periods. The stored heat is used for district heat during periods of increased heat demand.

Storing heat reduces the need for air condensation and is competitive as a backup and peak production plant. The heat storage makes reacting to fluctuations in heat demand faster and improves the efficiency of waste treatment. The heat storage reduces the need to use oil-fired heat plants, which reduces the carbon dioxide emissions of the district heat produced.

The six geothermal wells of the deep heat storage facility produce up to 14 GWh of heat per year, which corresponds to the annual heat demand of approximately 700 detached houses.

The Ministry of Economic Affairs and Employment has provided energy aid for the construction of the heat storage facility.

Watch the video about heat storage facility

The circular economy park of the future

The Lounapuisto circular economy park in Salo offers a platform and network for diverse circular economy activities and innovative cooperation.

In Lounapuisto, new circular economy solutions are developed in cooperation between companies, educational institutions, research institutes and other operators. Lounapuisto is part of Finland's extensive network of circular economy parks.

Lounapuisto is being developed into a nationally significant circular economy service and research centre. In addition to the production and storage of electricity and district heat, key areas of development include biogas, recycled fertilisers, solar and wind power as well as Power to X technologies and hydrogen economy. The circular economy ecosystem extensively involves local, regional, national and international stakeholders.

Lounapuisto is approximately 200 hectares in area. There are currently a dozen companies in the area with approximately 100 employees. The value of industrial investments in the area is approximately EUR 115 million.

Read more about Lounapuisto:
www.lounapuisto.fi/en

Lounapuisto's vision is to be a gem of the circular economy by 2035.

Lounavoima

Lounavoima Oy
Helsingintie 541
24100 Salo

www.lounavoima.fi/en

Lounavoima Oy is a local company whose task is to utilise non-recyclable waste collected by Lounais-Suomen Jätehuolto for energy. Lounavoima is owned by Lounais-Suomen Jätehuolto Oy and Salon Kaukolämpö Oy. The company produces the services for its owners at cost price.