



Lounavoima

Waste-to-Energy Plant in Salo



District heating from a Waste-to- Energy plant

The Waste-to-Energy (WtE) plant built by Lounavoima Oy in Korvenmäki, Salo, converts non-recyclable municipal waste into local energy in an environmentally friendly and cost-effective manner.

The area's circular economy is developing and at the same time residents are saving on waste management fees and the price of competitive district heating can be secured well into the future.

17

The waste to be utilized in the plant is collected from the 17 owner municipalities of LSJH. The combined population in the area is about 417,000.

2021

The WtE plant will begin operations in early 2021. Planning for the project began in 2018. The main contractor of the project was Fira Oy.

90

The plant will produce about 90% of the district heat distributed in Salo, the heat demand of about 15,000 residents and many public and commercial buildings. Electricity is also generated for the national power grid.

180-190

The plant will produce 180–190 GWh of district heating energy each year and approximately 72 GWh of electricity. The electricity generated by the WtE plant would provide continuous burning of one million LED lamps.



Eltel lyhyesti

Eltel on johtava pohjoiseurooppalainen teknisten palveluiden toimittaja sähkö- ja tietoliikenneverkkoimialalla. Tarjoamme laajan valikoiman palveluita ulottuen suunnittelu-, rakentamis- ja ylläpitopalveluista aina kokonaisvaltaisiin projektitoimituksiin saakka. Haluamme osallistua kestävämmän ja toimivamman huomisen rakentamiseen nykyisille ja tuleville sukupolville. Eltelissä työskentelee noin 6 700 työntekijää, joista Suomessa 1 500. Liikevaihtomme oli 1,1 miljardia euroa vuonna 2019 ja osakkeemme on listattu Nasdaq Tukholmassa.

www.eltelnetworks.com



The Plant at a Glance

- 1** **RECEPTION OF WASTE FUEL**
120,000 tons per year, i.e. 40 truckloads per weekday.
- 2** **WASTE BUNKER**
The storage capacity of the 6,000 m³ waste bunker equals the volume of approximately one week's waste from the region.
- 3** **BOILER BUILDING**
A heat input of 44 MW is achieved when 360 tons of waste per day is incinerated at temperatures above 1,000 °C.
- 4** **TURBINE BUILDING**
Steam is processed into electricity and heat.
- 5** **FLUE GAS TREATMENT PLANT**
The multi-staged flue gas cleaning ensures a good end result in all situations. Efficient heat recovery raises the plant's heat utilization rate in winter weather to nearly one hundred percent.
- 6** **CHIMNEY**
The plant's emissions are clearly below the limit values of the environmental permit.
- 7** **WATER PLANT**
The water generated in the process is purified and reused as make-up water to the steam boiler or elsewhere in the process.
- 8** **CONTROL ROOM**
The operation of the plant is monitored 24/7.
- 9** **VISITOR CENTRE AND OFFICE**



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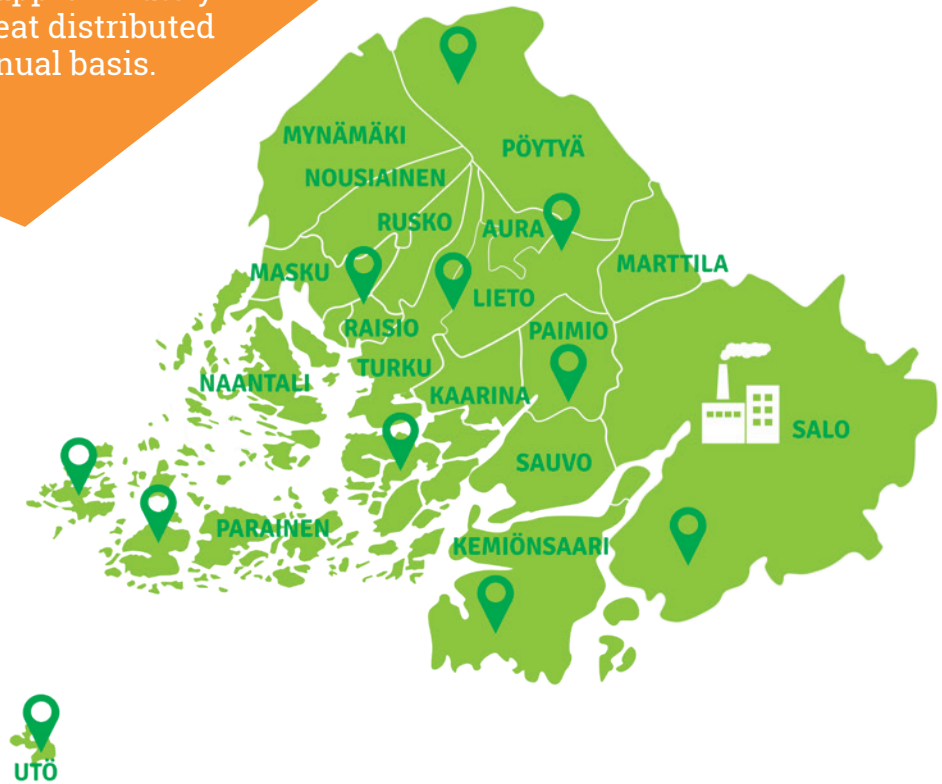
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We provide project, expert and environmental services for the energy industry and other industries. We ensure that your project is completed with high quality and with sustainable solutions.

We operate as the provider of project services for the construction of Lounavoima's plant.

The plant produces approximately 90% of the district heat distributed in Salo on an annual basis.

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Heat and electricity from waste

The waste to be utilized in the Korvenmäki plant is collected from the owner municipalities of Lounais-Suomen Jätehuolto and from other regions in Southwestern Finland. The plant utilizes non-recyclable combustible waste that cannot be disposed of in landfills. Combustible waste includes, for example, dirty plastics and cardboard packaging, cleaning waste and hygiene products, i.e. waste that remains when recyclable and hazardous waste is sorted separately.

Previously, non-recyclable combustible waste was transported to different parts of Finland or even abroad for energy recovery. With the WtE plant, the transport distances of waste will be shortened, which will reduce the carbon dioxide emissions of waste transport.

Commissioning of the WtE plant will halve the carbon dioxide emissions of district heating production in Salo when waste fuel is used to replace fossil fuels and peat.

WASTE to ENERGY PLANS to PLANTS IDEAS to SUCCESS

Steinmüller Babcock
are proud to deliver
the heart of the new
Waste to Energy plant
for Lounavoima Oy.
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and good cooperation.



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**MEILLÄ ON VAHVA OSAAMINEN TEOLLISTEN TUOTANTOTILOJEN,
LOGISTIIKKAKESKUSTEN, PYSÄKÖINTILAITOSTEN SEKÄ TOIMISTO- JA
LIIKETILOJEN RAKENTAMISESTA. PALVELUIHIMME KUULUVAT MYÖS
ASUNTORAKENTAMINEN, VAATIVATKIN KORJAUSRAKENTAMISEN
HANKKEET SEKÄ LINJASANEERAUKSET.**

KATSO LISÄÄ
FIRA.FI

Fira

Waste incineration process

After weighing, the waste is unloaded into the waste bunker. From there, an automatic waste crane transfers the waste to the hopper of the incineration process whenever the surface of the hopper falls. The grab also mixes the waste in storage to make it as homogeneous as possible.

From the hopper, the waste is guided by hydraulic pushers to the grate where the waste is incinerated. The movement of the grate causes the waste to move slowly forward. On the grate, the waste dries and is combusted. At the end of the grate, incombustible slag falls into the slag extractor for cooling.

The slag is stored and transported for screening for further use. Different types of metal are delivered to industry for reuse, and the remaining min-

The size of the grate is 64.3 m²: length 10.2 m and width 6.3 m.

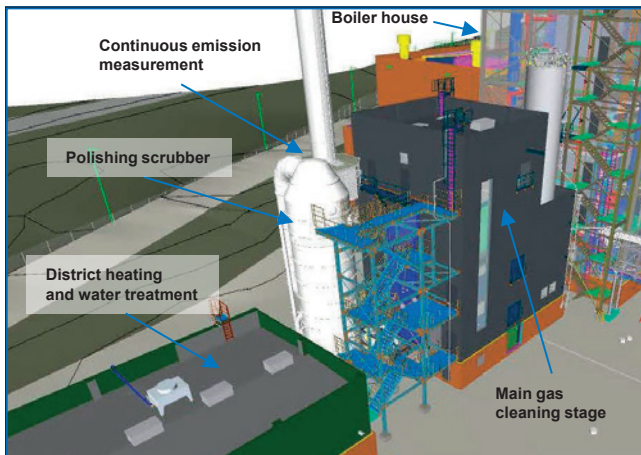
eral fraction is utilized in, for example, civil engineering and the cement and concrete industries.

The hot flue gases generated during combustion are directed to a steam boiler, where they are cooled by water circulating in the boiler piping. The cooled flue gases are directed to the flue gas cleaning process.

The evaporated water is superheated. The superheated dry steam can be directed to a turbine for electricity generation and further for district heating production. With district heating heat exchangers, the steam is condensed back into water and returned to the boiler.

The boiler and turbine for the plant were supplied by Steinmüller Babcock Environment GmbH.





State-of-the-art Flue Gas Treatment for WtE plant Lounavoima Oy

Your partner for Waste-to-Energy

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LUEHR FILTER GmbH

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The chimney is
70 meters high.

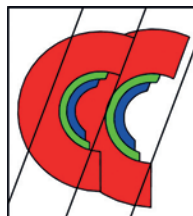
Flue gas treatment

In the cleaning process, hydrated lime and activated carbon are added to the flue gas to capture contaminants in the flue gas. In the fabric filter, excess lime, activated carbon, and reaction products are separated from the flue gas. The majority of the separated dusty material is fed back to the flue gas cleaning process. A small part of the circulating dust is removed and directed for further treatment.

After the fabric filter, the flue gases are conveyed to a scrubber, which condenses the water in the flue gas. Upon condensing, the water releases heat, which is utilized in the production of district heating, thus improving the efficiency of the plant. The water condensed from the flue gas is efficiently purified and reused in the process.

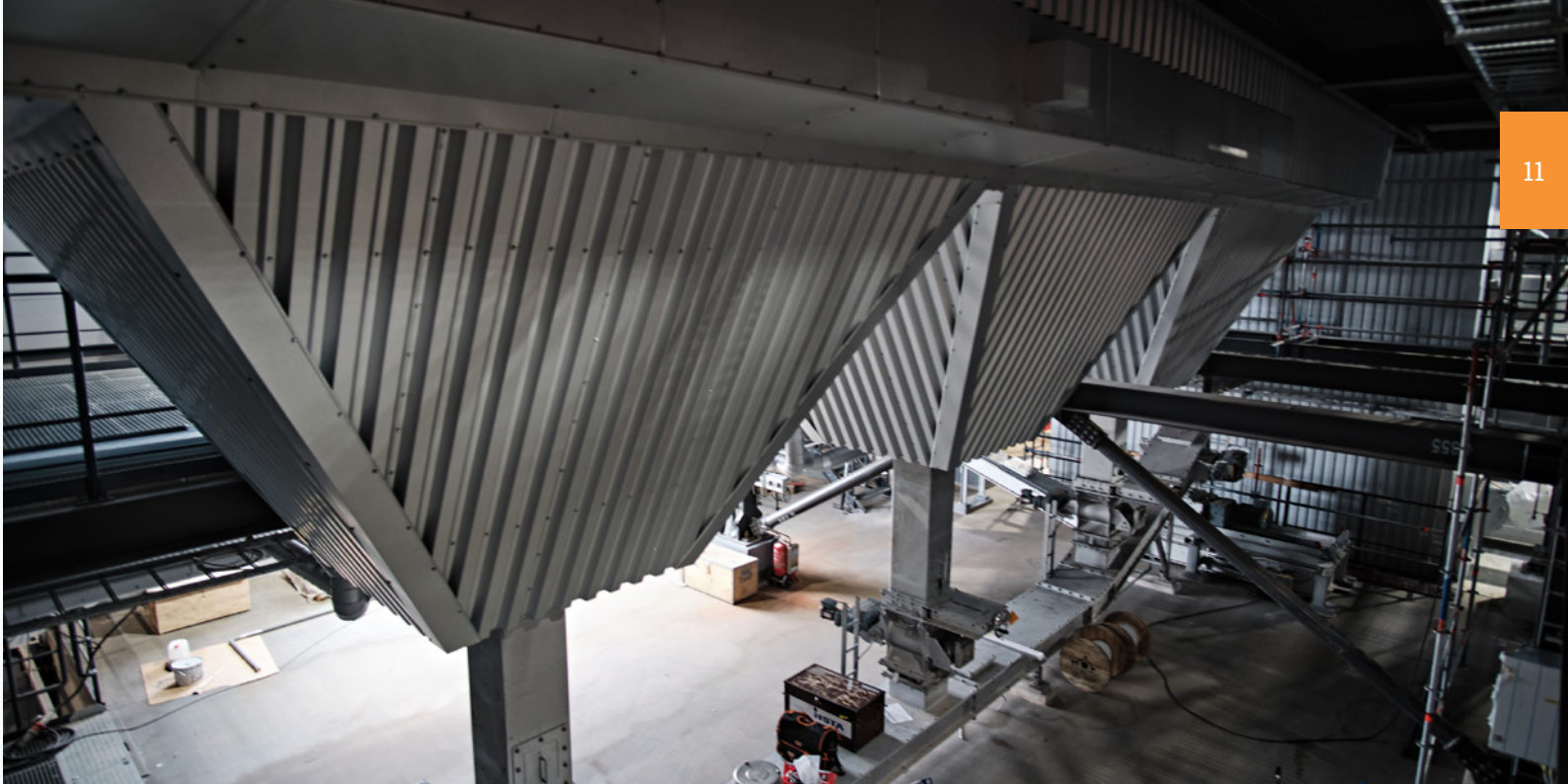
After the scrubber, the flue gases are conveyed to a chimney. Nine different components are continuously measured in the flue gases. The flue gas leaving the chimney has been effectively cleaned and the emissions are well below the limits specified in the environmental permit.

The flue gas treatment system was supplied by Luehr Filter GmbH.



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Mäkitalolla on poikkeuksellisen laaja kokemus energia-alan toimeksiannoista. Tämä näkyy tehokkaana projektinhallintana ja asiantuntevana neuvonantona monimutkaisissakin projekteissa

” Mäkitalon tiimin asiantuntemus on taannut tehokkaan ja luotettavan tuen ekovoimalaitoshankkeen kaikissa vaiheissa. ”

Petri Onikki, Toimitusjohtaja Lounavoima Oy

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Co-operation and expertise

"A large construction project involves a lot of procurement, planning and delivery control. Our own organization is small, so for the design and supervision of the plant, the organization was supplemented with experienced experts in power plant projects.

The project was divided into six main procurement packages, the preliminary planning and procurement of which was carried out in co-operation with ÅF-Consult Oy and, for district heating, Planora Oy. Lounavoima focused on leading the construction project.

The so-called owners engineering service was mainly acquired from CTS Engtec Oy and MAB Powertec Oy. Planora Oy was responsible for the supervision and planning of the district heating contract, and Prepon Oy was responsible for construction supervision. In matters of contract



Petri Onikki, CEO

and legal advice, co-operation was established with Mäkitalo Attorneys Ltd.

We have had an excellent team designing and overseeing the construction. A successful project of this magnitude requires diverse knowledge and expertise."

Petri Onikki, CEO of Lounavoima

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Prepon Oy:n asiantuntijapalvelut ja projektinhallinta mahdollistavat hankkeellenne onnistuneen lopputuloksen.



Prepon Oy toimii rakennustyön valvojana ja turvallisuuskoordinaattorina Lounavoiman voimalaitoshankkeessa.

The Korvenmäki WtE plant is
the result of efficient
co-operation.



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Watch a video about
our co-operation.

 Lounavoima

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New methods. Best solutions.

The Waste-to-Energy plant increases regional circular economy

"The Waste-to-Energy plant is a crucial factor and a unifying link in the development of circular economy in Southwestern Finland and in the fight against climate change. Residents' waste treatment fees and the price of district heating will decrease when waste can be utilized locally in their own plant. The savings can be used to develop new recycling and energy recovery solutions together with innovative companies.

One of the world's first geothermal deep heat storage facilities is being planned on the site of the WtE plant, where extra heat generated during the summer will be stored and used during high heat demand in winter. Landfill gas has been successfully utilized in the production of clean biomethane at the waste center next to the WtE plant. Recovery and utilization of the



Jukka Heikkilä, Chairman of the Board

power plant's carbon dioxide emissions in the production of synthetic transport fuel are also underway."

Jukka Heikkilä,
Chairman of the Board of Lounavoima

2 kg

Upon being treated in the plant, a 2-kg sack of waste can light an 8-watt energy-saver bulb for 158 hours or heat a single-family home for approximately 30 minutes.

120,000 t

The annual reception capacity of the plant, 120,000 tons of waste, is equivalent to 50,000 tons of coal or 33 million m³ of natural gas.

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Kaislan / levän / roskan leikkaaja sekä kerääjä

Valmistus / myynti www.rsplanering.fi



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www.lounavoima.fi



Lounavoima Oy is a local company whose task is to convert the unrecyclable municipal solid waste collected by Lounais-Suomen Jätehuolto Oy (LSJH) into energy and produce district heating to Salon Kaukolämpö Oy. Salo's Korvenmäki Waste-to-Energy plant starts its operations in 2021.

Lounavoima is owned by Lounais-Suomen Jätehuolto Oy and Salon Kaukolämpö Oy. The company provides services to its owners at cost price.