

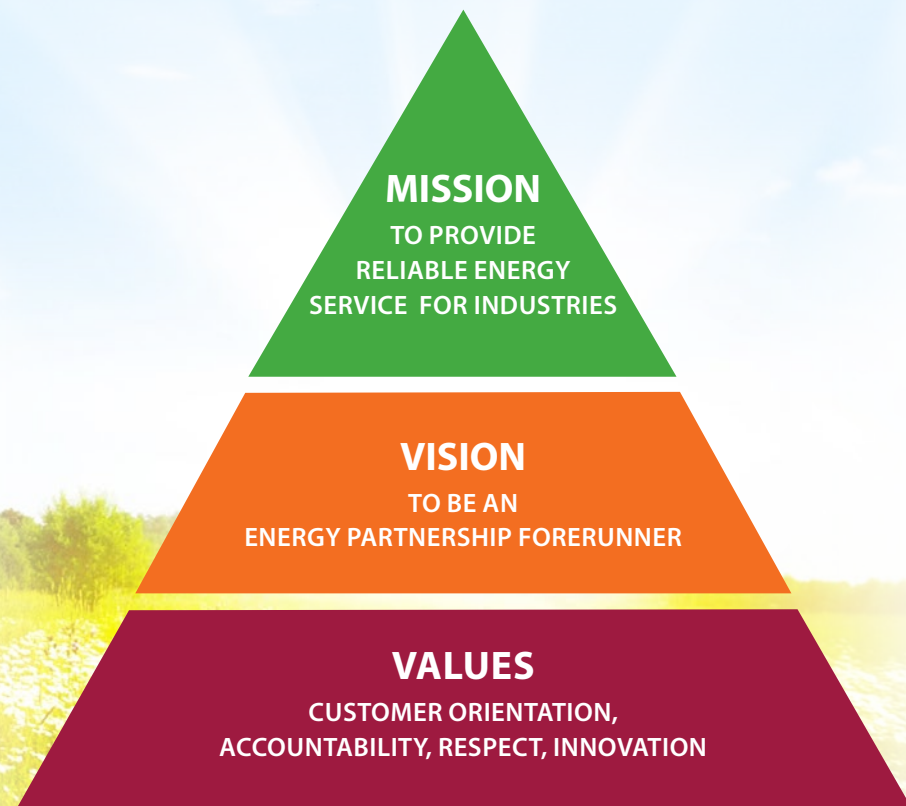
STEP

Sustainable Energy Solutions



Energy Expert

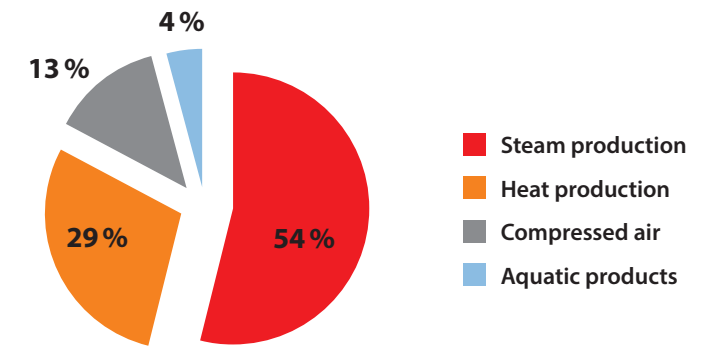
Suomen Teollisuuden Energiapalvelut – STEP Oy provides sustainable energy solutions for industrial customers operating in Finland, based on a partnership model. Each customer is offered a tailored energy solution that takes into account the customer's specific needs, the energy efficiency and material efficiency of the energy source, and the potential for exploiting by-products from the customer's processes. On the basis of suitable technical solutions and contract models chosen for the customer, STEP and the customer start designing the operation together.



In 2017, STEP's net sales were EUR 35.4 million, the operating profit was EUR 2.3 million, and the capital used for investments was EUR 2 million.

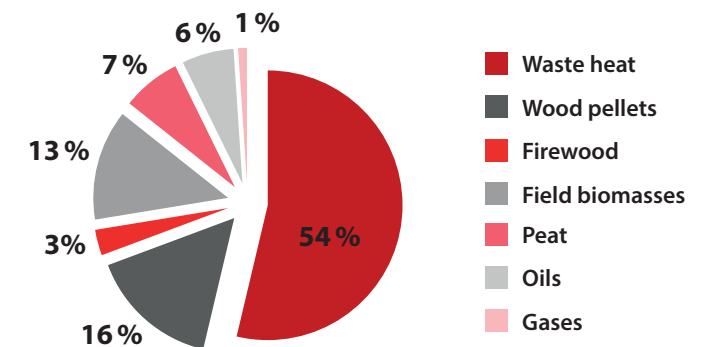
The volume of energy deliveries in 2017 was 628 GWh. Of this, the CO₂-free production accounted for 86 per cent.

Net sales breakdown



Resource efficiency and circular economy are in the core of STEP's business. Each day, we save non-renewable resources through measures such as recovery of waste heat and utilisation of industrial side streams.

Primary energy breakdown



Services and service models

Our services combine transparency, reliability and cost-effectiveness.

STEP's services:

- ✓ Energy service contracts
- ✓ Business transfers and acquisitions
- ✓ Production company models (AssetCo/OpCo)
- ✓ Operation and maintenance contracts
- ✓ Remote monitoring and reporting services



STEP's responsibilities in energy projects

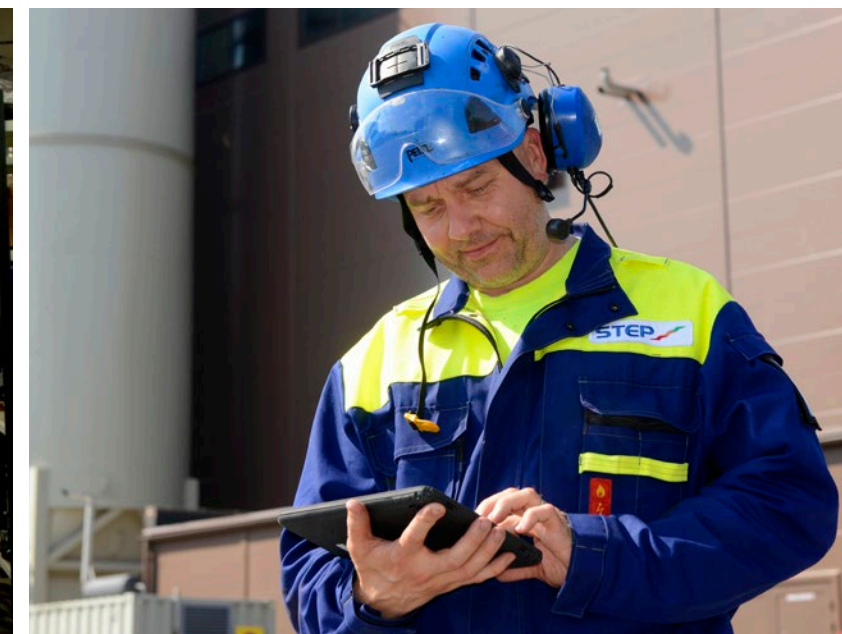
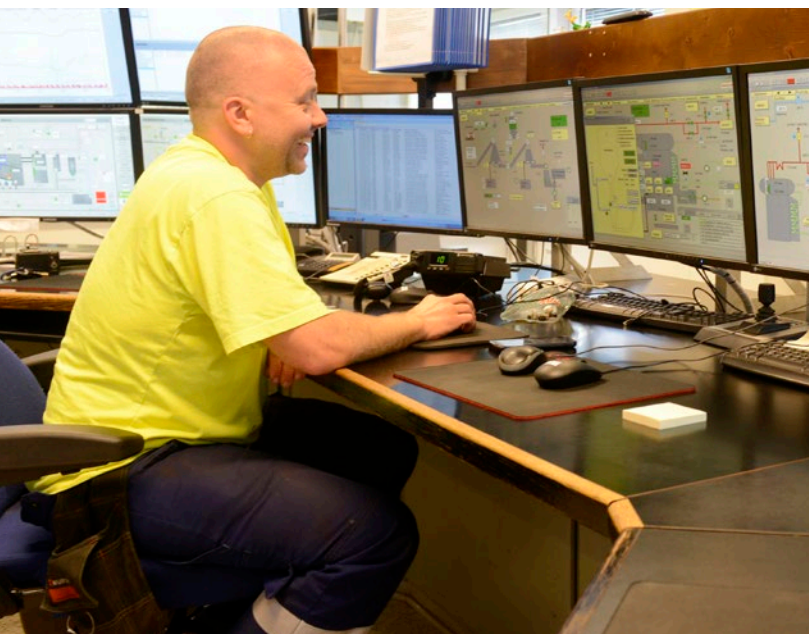


STEP creates added value for its customers

- » through turnkey services tailored to the customer
- » by improving the efficiency of energy production and energy consumption
- » by keeping the customer up-to-date on, and implementing, new technologies
- » by utilising the customer's by-products
- » by reducing the purchase prices of solid fuels
- » through reliability, predictability and flexibility

The added value is created

- » by expert project, operation and maintenance teams
- » through extensive experience in varied energy solutions and technologies for industry
- » through significant purchasing volumes of solid fuel
- » through regular operational reviews with the customer



Solid background

STEP is a joint venture owned by two major energy companies – Veolia and Pori Energia.



PORI ENERGIA – your local expert

Pori Energia produces energy and provides energy services to customers with the help of its 240+ highly-skilled employees and more than 110 years of experience. The company offers competitive and sustainable energy solutions based on renewable energy sources and stringent quality criteria. A certified quality management scheme covers all the services provided by the company.



VEOLIA – international expertise

Veolia is Europe's leading provider of energy and technical services to industry and the public sector. With nearly 169,000 employees worldwide, Veolia Group designs and provides water, waste and energy management solutions. In 2017, the Group produced 45 million megawatt-hours of energy.

Veolia is an international forerunner. Its competitive edge enables STEP to utilise methods and technologies that are still new in Finland.

"The world faces three major energy challenges: limiting energy use, reducing CO2 and other emissions, and developing renewable energy sources. We help our customers optimise their use of energy and reduce both energy consumption and environmental impacts. We optimise resources with sophisticated technology, efficient design and the use of renewable energy sources."



Energy partnership forerunner

In terms of outsourcing vs. in-house personnel, STEP's energy partnership combines the best of both worlds.

WE SPECIALISE IN ENERGY SOLUTIONS

– the customer can focus on its business.

WE CONTINUOUSLY DEVELOP OUR EXPERTISE

– we have the capability to be flexible and adapt to the circumstances.

WE ARE TRANSPARENT AND RELIABLE

– our pricing criteria are transparent and our prices competitive.

WE OPERATE IN TRUE PARTNERSHIP WITH THE CUSTOMER ORGANISATION

– a competitive customer means a competitive edge for us, too.

OUR SHAREHOLDER STRUCTURE MAKES US A STRONG PLAYER

– we have both local knowledge and extensive international technology expertise.



Harjavalta Industrial Park

Steam, process and district heat, compressed air and water for the industrial area, as well as district heat for the city of Harjavalta.

The Industrial Park Partnership Network consists of STEP together with Nor Nickel and Boliden. Other industrial operators in the area include Oy Aga Ab, Yara Oy and Valtasiirto Oy. In steam and heat distribution, the power plant utilises, in addition to the energy it produces itself, heat recovered from industrial processes. STEP both operates and maintains the boilers that it owns.

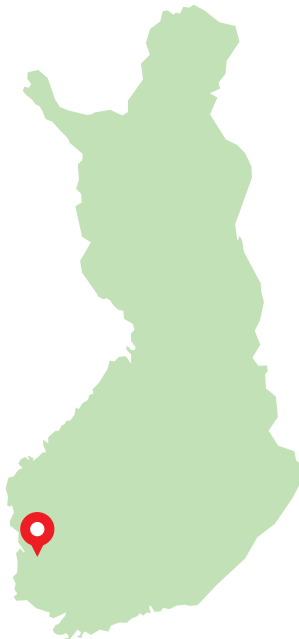
PRODUCTS

- Steam
- Process heat
- District heat
- Compressed air
- Process water

PRODUCTION

- » biosteam boiler 30 MW
» *wood pellets*
- » steam boilers 10+13+20+21 MW
» *biogas, natural gas, light fuel oil*
- » bioheat boiler 3 MW
» *wood pellets*
- » heat recovery boilers 12+20+24 MW
- » steam turbine 6,3 MWe

In addition to the carbon neutral wood pellets, liquefied biogas is used in energy production in Harjavalta.



Independent & cooperative

"In Harjavalta, STEP has the overall responsibility for the processing of the steam and heat generated by Boliden Harjavalta and, if necessary, production of steam and heat. In its area of responsibility, STEP operates independently but in close cooperation with us. We review the results of our operations and evaluate the progress of development projects quarterly. At the operational level, we have regular follow-ups.

STEP is a flexible and service-oriented operator in its core business area. In Harjavalta, it has the responsibility for the processing and supply of energy and certain other commodities. They are also experts at developing operations. The joint development work and STEP's ability to respond quickly to issues needing improvement are essential for our cooperation, which has been commendable.

When it comes to energy services, we know that STEP can be trusted to take care of the daily routines, which allows us to focus on our own core business."

Vesa Törölä
Business Development Director
Boliden Harjavalta



Active development

STEP provides our Harjavalta plant with thermal energy, that is to say steam, district heat and process heat, as well as compressed air and various aquatic products. STEP is one of our most important service providers and we wouldn't be able to run our production processes without the commodities they supply.

Our cooperation started in 1999 and has been very smooth from the beginning. STEP is a highly competent and flexible partner. Although the owners behind STEP are big, the company itself is extremely agile and very good at adapting to changing conditions. What makes us particularly happy is STEP's proactive attitude towards development of operations. The initiative doesn't need to come from us: STEP, which knows our operating environment well, is always actively trying to find ever better energy solutions for us. For instance, STEP continuously explores new raw materials for heat production. Heavy fuel oil, which was used a lot in the past, has been completely replaced by wood pellets, natural gas and the use of waste heat from the factories.

Together, we are seeking ways to be more and more cost-efficient and environmentally friendly.

Marko Mikkola
Director, EHSQ and development
Nornickel Harjavalta

Altia

Steam for production processes of Altia's Koskenkorva factory and A-Rehu.

Koskenkorva power plant provides steam for the production processes of A-Rehu and Altia's Koskenkorva factory. In addition, the power plant supplies the factory with compressed air and operates a water and sewage treatment plant. Steam production utilises barley and oat husks obtained as by-products from the factory processes. The husks are used as the main fuel for a biomass boiler plant built in 2014, and as a component in a fuel mixture for an older circulating fluidised bed boiler plant.

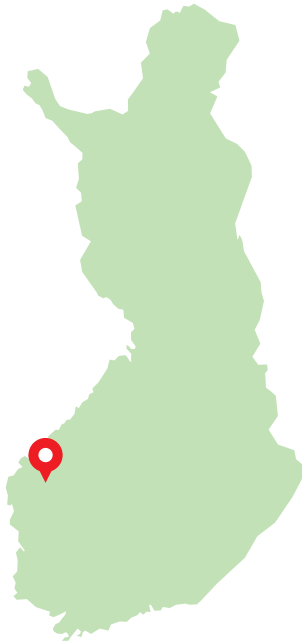
PRODUCTS

- Steam
- Compressed air
- Process water

PRODUCTION

- » 10 MW biosteam boiler
 - » *barley husks, woodchips*
- » 20 MW circulating fluidised bed boiler
 - » *milled peat, oat husks*
- » 15 MW backup boiler
 - » *heavy fuel oil, S=0,5%*

The Koskenkorva biomass boiler plant runs solely on agro biomass.



Expertise means savings

"At is Koskenkorva factory, Altia has two steam-generating plants, both operated by STEP. The energy production at a process plant should be as cost-effective as possible. The cost drivers include raw materials acquisition, operational models, maintenance practices and the use of technology in energy recovery, for example. With STEP we have developed cost-effective technologies such as the utilisation of ashes and efficient use of thermal energy at the factory.

STEP has a global vision and experience on the development and operation of power plants that we do not have. As a bonus, the operating contract with STEP enables us to profit from Veolia's extensive expertise as well."

Miika Jokinen
Business Unit Director
Altia Koskenkorva



Operational reliability is critical

For the production processes at the factory, reliable operation of the steam generating plant is critical. An interruption in the generation of steam will immediately shut down the production processes at the factory. What is more, the ramp-up of production after a break may last for several hours and, in extreme cases, even more than 24 hours. Therefore, even a short interruption in the delivery of steam may have a significant impact on the production volumes.

At the Koskenkorva factory, we can be confident of a reliable supply of steam. The highly-skilled personnel at STEP ensures that we always receive as much steam as our production processes require. No wonder, then, that the service reliability of our plant is excellent.

Toni Ylinen-Luopa
Technology Manager
Altia Koskenkorva

Hankkija

Steam and district heat for Hankkija feed mill in Seinäjoki.

STEP’s biosteam boiler plant provides steam and district heat for Hankkija’s feed mill in Seinäjoki. Oat husks – a by-product from another process – are used as a carbonneutral fuel in steam production. Energy production also uses waste heat generated by the production of compressed air forthe plant as well as heat recovered from the grate cooling process.

PRODUCTS

- Steam
- District heat

Production

- » 2.5 MW biosteam boiler
 - » oat husks, peat, woodchips
- » 3 MW backup boiler
 - » light fuel oil



Open and transparent

“STEP produces steam and heat for Hankkija’s Seinäjoki feed mill. Our contract includes the operation, maintenance and monitoring of the mill as a turnkey service. The word “transparency” describes our cooperation well. We have an open-book contract, which means the actual costs incurred are open to our scrutiny. We meet regularly and STEP reports to us monthly. In addition, the online reporting tool is useful for keeping tabs on energy and fuel consumption.

For us, a transparent open-book-based partnership contract with a trusted operator is the best way to manage all the activities related to the boiler plant.”

Jari Sivunen
Production Director
Animal Feed Division, Hankkija Oy

Findest Protein (Honkajoki)

Steam for the recycling of raw materials of animal origin in Kaustinen.

STEP's biosteam boiler plant provides steam for a Findest Protein factory. The factory makes processed animal protein from raw materials of animal origin for producing animal feed. The steam-generating biomass boiler plant, completed in 2015, is fuelled by local biomass fuels.

PRODUCTS

- Steam
- Burning of odorous gases

PRODUCTION

- » 4 MW biosteam boiler
» woodchips, sawdust, bark, peat
- » 8 MW backup boiler
» liquefied petroleum gas, light fuel oil



Kilpilahti

Operation and maintenance of power plants.

STEP's sister company Veolia Services Suomi Oy is responsible for the operation and maintenance of the existing and new power plant under construction in Kilpilahti.

CURRENT PRODUCTION

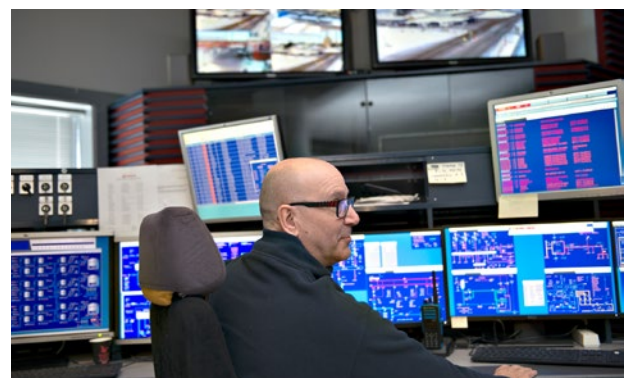
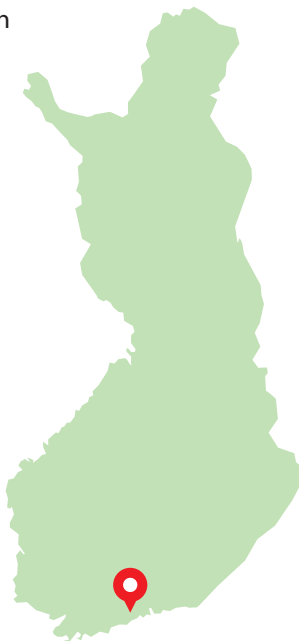
- Boilers K1 & K2 320 MWth, 46 MWe
- Gas turbine 3 140 MWth, 72.6 MWe
- Gas turbine 2 90 MWth, 41.9 MWe
- Boiler 5 88 MWth

Fuels: oil, natural gas, refinery gases, pyrolysis oil

NEW POWER PLANT

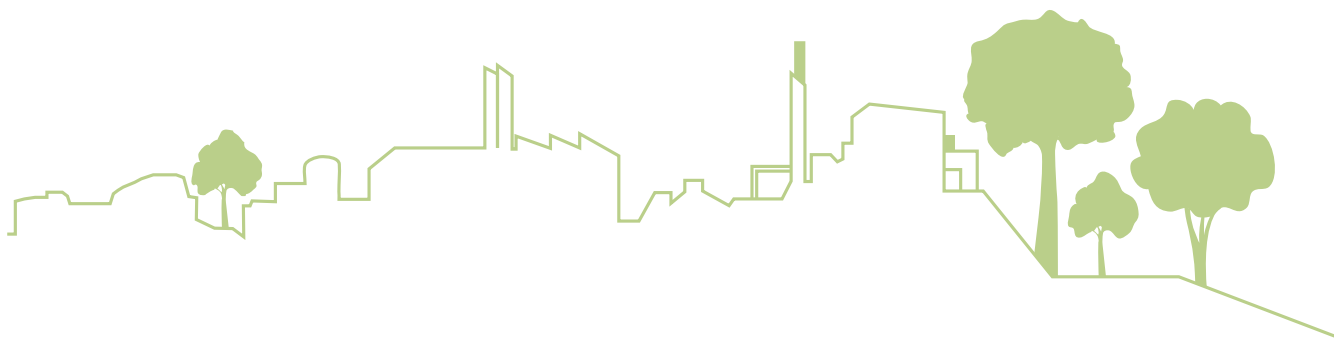
- Circulating fluidised bed boiler 150 MWth
- Backup boilers 2x150 MWth
- Turbine 35 MWe

Fuels: asphaltene, oil, natural gas, refinery gases



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Suomen Teollisuuden Energiapalvelut – STEP Oy

P.O. Box
FI-28101 Pori
Tel: +358 2 621 2233

Radanvarsi 2
FI-28100 PORI
Tel: +358 2 621 2233

Teollisuuskatu 1
FI-29200 HARJAVALTA
Tel: +358 2 535 8111

Tallberginkatu 2 A
FI-00180 HELSINKI
Tel: +358 44 701 2315

Santavuorentie 11
FI-61330 Koskenkorva
Tel: +358 40 670 2062

www.stepenergy.veolia.fi