Finnish energy sector services

Introduction

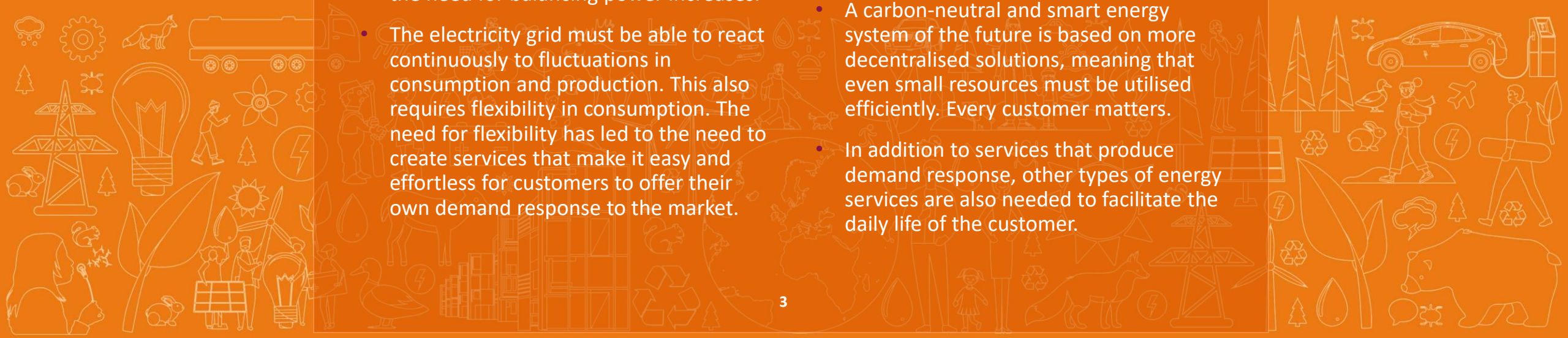
- This presentation includes some examples of new types of energy services in Finland for use in lobbying, training and communications.
- Service refers to all offering that goes beyond traditional energy sales (electricity, heat or gas).
- Services are offered to customers, end users or the customer's service providers.
- Examples are provided by energy companies. This is a sampling of services and the energy companies providing them. The examples illustrate the direction in which the sector is developing.

14 October 2020

Climate challenge guides the development of services

Energy services enable the transition to a carbon-neutral energy system. Sector integration emphasizes the customer's role in producing and storing energy.

- Combating climate change requires reducing carbon dioxide emissions and replacing fossil fuels with renewable energy. As the production of intermittent electricity increases also the need for balancing power increases.
- The electricity grid must be able to react continuously to fluctuations in consumption and production. This also requires flexibility in consumption. The need for flexibility has led to the need to create services that make it easy and effortless for customers to offer their own demand response to the market.
- The customer can participate in balancing the entire energy system with their own energy use, storage and production and earn money by providing services.
- A carbon-neutral and smart energy system of the future is based on more decentralised solutions, meaning that even small resources must be utilised efficiently. Every customer matters.
- In addition to services that produce demand response, other types of energy services are also needed to facilitate the daily life of the customer.

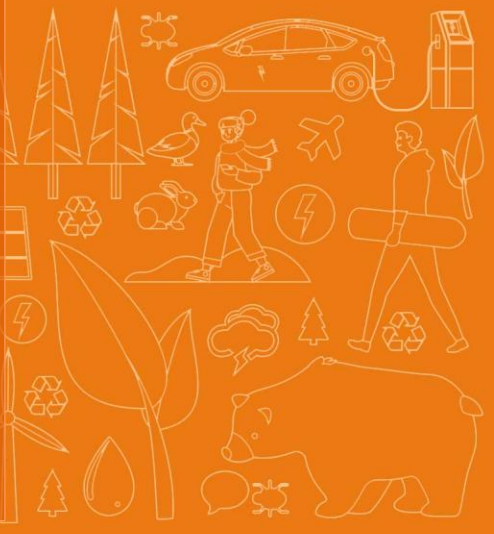


Servicification of the energy sector

puts the customer to the driver's seat

Combating climate change changes the energy market. Smart solutions puts energy policy to the customer's hands in the 2020s.

- Achieving a carbon-neutral society requires a smart energy system, with customer-driven energy services at its core.
- The future energy system will be reshaped by smart solutions where the development of production, storage, information and communications technologies will be utilised in a sensible way
- Smart energy services make people's everyday life easier. Servicification and digitisation of the energy sector become a reality making customer's options more diverse. Energy sector services enable customers to make value-based choices, their preferred forms of participation and the means to influence their costs.
- In addition to energy prices, customers' energy choices are influenced by, for example, climate and environmental factors, ease, risk level and optimisation of their own energy use and production.



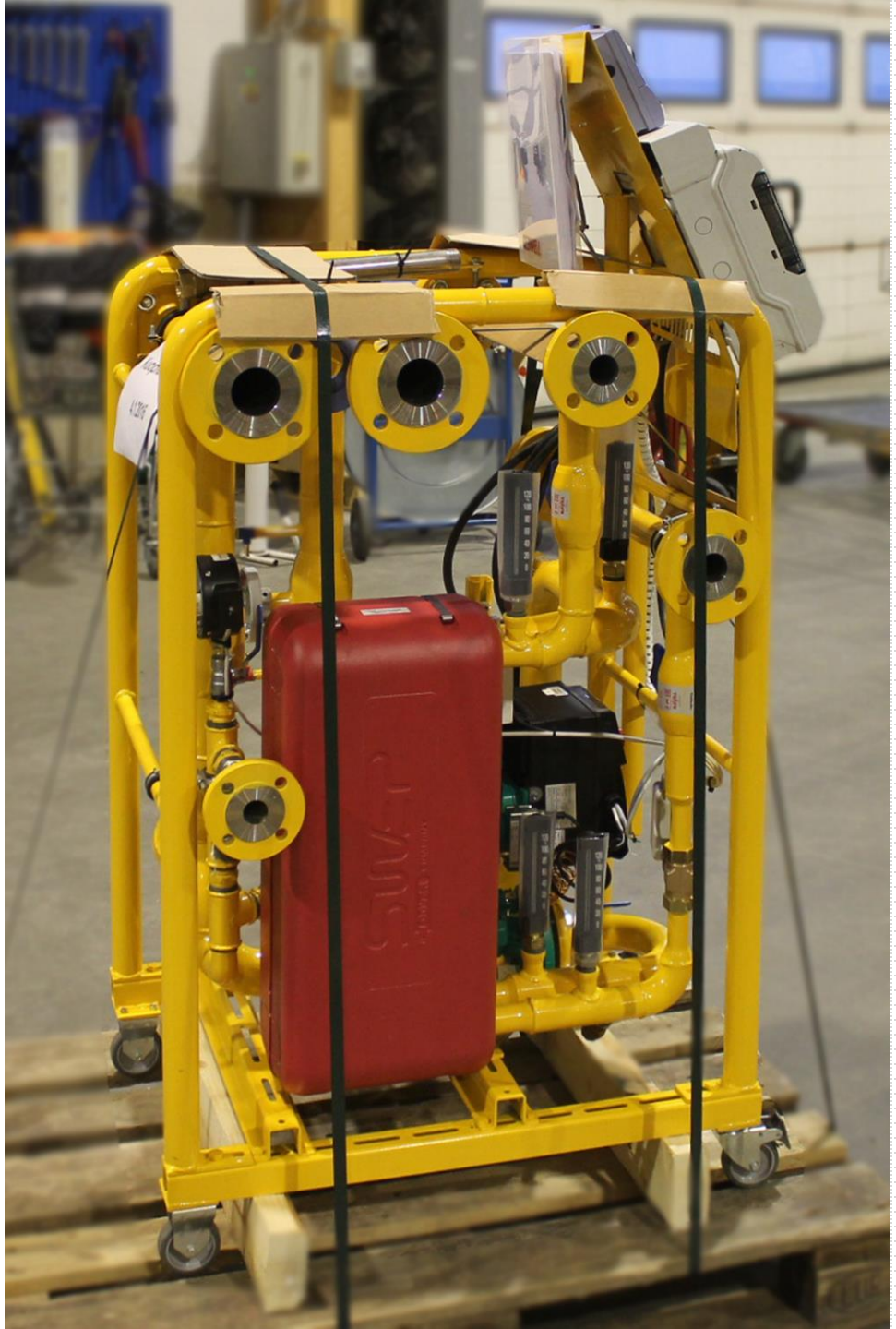
Kuopion Energia Oy

Hired heat distribution centre

Service description

We hire a heat distribution centre to construction companies for use during construction, so there is no need to rush the final heat distribution centre to the construction site and, on the other hand, the heating capacity is sufficient. During construction, the power demand is greater than during normal use of the building. The solution replaces fossil fuels and is safe and quickly deployable for the construction company.

✓ Continuous activity



KUOPION ENERGIA

Success:
The same customers use the service again and again at new sites.

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Kuopion Energia Oy

Condition assessment of district heating equipment

Service description

We check the operation of the customer's heat distribution centre and, at the same time, provide guidance in matters related to other energy use. We also assess the need for maintenance and repair and prepare an inspection report on our inspection.

✓ Continuous activity

Success:
Finding latent faults in the equipment that maintenance companies have previously missed. Feedback from customers is good, especially in such cases.

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Lännen Omavoima Oy

Sales of solar photovoltaic systems

Service description

Sales of solar photovoltaic systems as turnkey deliveries. The customer segment includes consumers, housing companies, businesses and communities.

- ✓ Continuous activity

LÄNNEN OMAVOIMA

Success:
Interest in the systems has increased year by year. Sales figures have risen every year.

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Lännen Omavoima Oy

Charging systems for electric cars

Service description

Electric car charging solutions for consumers, housing companies and companies as turnkey deliveries. We perform a review of the current state, the design and implementation of the electrical infrastructure modification and the delivery, installation and management of the charging equipment.

✓ Continuous activity

Success:
Especially the housing company sector has started to commission reviews of the current state of their electrical infrastructure. Public charging points have also increased in our area.

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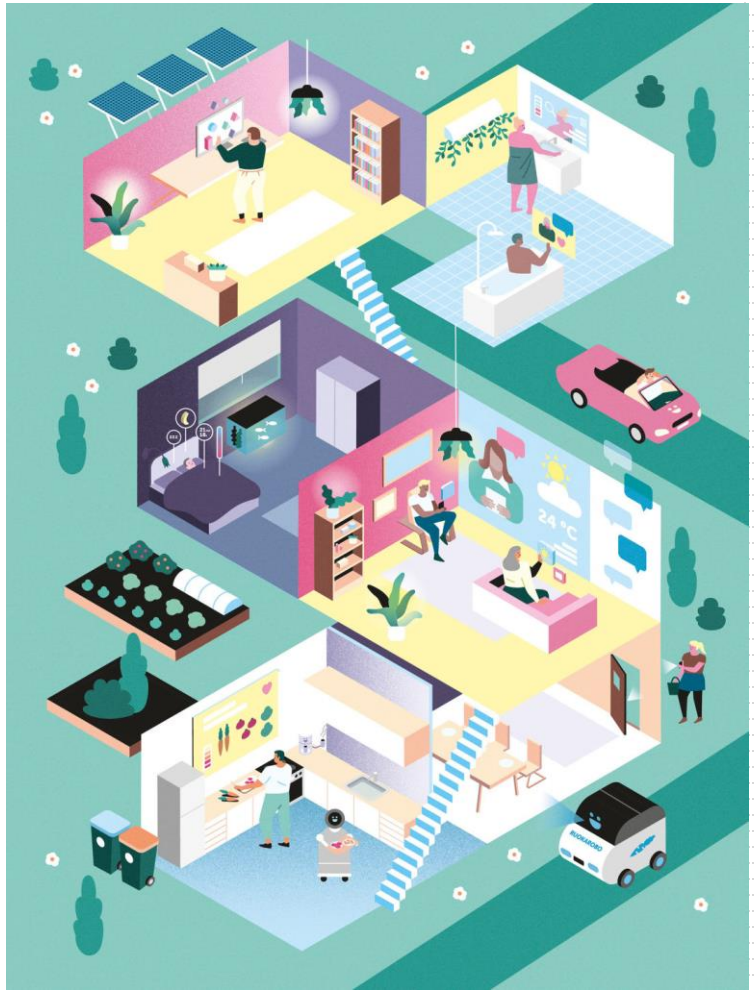
Lännen Omavoima Oy

Demand response service

Service description

We install different smart home solutions that control consumption in home electric switchboards and collect data and user experiences.

✓ Pilot project



Success:
We have obtained pilot customers and experience, as well as data about the functionality and use of the service.

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Smart district heating

Service description

TAMPEREEN sähkölaitos

Smart district heating is a digital service provided by Tampereen Sähkölaitos to housing companies around Finland. It equalises peak power of district heating, optimises the heat demand of the property and thus reduces heating costs. The pricing structure is clear and based on monthly instalments.

The service provides real-time information about the indoor air conditions of the property and helps to keep them stable during the heating season. Thus, there is no need to compromise on housing comfort. Smart district heating service means environmentally-friendly housing for the customer.

✓ Continuous activity

Success:
The service has produced good savings in energy consumption and better housing comfort for the customers.

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Tampereen Sähkölaitos Oy

Lähisähkö Lataus

Service description

Lähisähkö Lataus is a solution for charging electric cars in housing companies and commercial properties. Lähisähkö Lataus is a smart service entity that involves updating car heating poles and electric car charging points according to the turnkey principle. The company handles everything on behalf of the customer.

✓ Continuous activity

TAMPEREEN sähkölaitos

Success:
The service has been fairly well received by customers who have purchased the service.

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Tampereen Sähkölaitos Oy

OmaLämpö

Service description

Our district heating network is open to all producers of clean heat. If waste heat is generated in the production processes of a property or company or heat is produced from renewable energy sources, the company can become an OmaLämpö producer and sell its waste heat. As clean heat production becomes more efficient, the customer receives income from the energy sold and, above all, promotes a climate-friendly energy economy.

✓ Continuous activity

Success:
The service has aroused interest in a few potential customers.

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TAMPEREEN sähkölaitos

Energy management

Service description

"The energy management service gives the customer access to tools and a professional to improve the level of energy management. "

- ✓ Pilot project

TAMPEREEN sähkölaitos

Person in charge
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Tampereen Sähkölaitos Oy

Hired panel from the solar park

Service description

“By hiring one or several dedicated panels from the solar park, everyone can influence the production of environmentally-friendly energy in Finland.

The acquisition of a hired panel supports renewable and clean energy production. The customer can hire more than one panel, for example one for each family member, and this is possible even if the person is not currently a customer of our electricity sales. Agreements are also concluded with companies.”

✓ Continuous activity

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TAMPEREEN sähkölaitos

Solar panels for your home

Service description

“By investing in photovoltaic electricity, the customer can produce energy in an environmentally friendly way and save on the electricity invoice. Even in cloudy weather, there is plenty of sunlight.

We make it easy to purchase solar panels. The customer can get panels customised to their specific needs as a turnkey delivery and ready for use. The installation work of solar panels is eligible for claiming tax credit for household expenses. Long warranty periods and components withstanding the Finnish weather conditions ensure reliable operation.”

✓ Continuous activity

TAMPEREEN sähkölaitos

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Power from the sun for business operations

Service description

"Harnessing the roof, yard or a wall of a company or housing company to the production of solar energy produces much more than just electricity. Own energy production reduces dependence on purchased electricity and improves the building's energy efficiency rating. In addition, having your own solar power station increases the value of the property.

Our solar panel systems are suitable for all roof types and for wall and ground installations. We help with the system design and install the panels in the most appropriate way as floating, on pillars or poles or using other methods. We also provide the customer with comprehensive remote monitoring and maintenance services. When the nominal power of a small-scale power plant us below 100 kVA, production is also tax-free and no electricity transmission fee is paid for the electricity produced.

We tailor solar panels to suit the overall needs of housing companies and companies. We deliver the system either as an equipment delivery or on a turnkey basis to almost the whole of Finland."

✓ Pilot project

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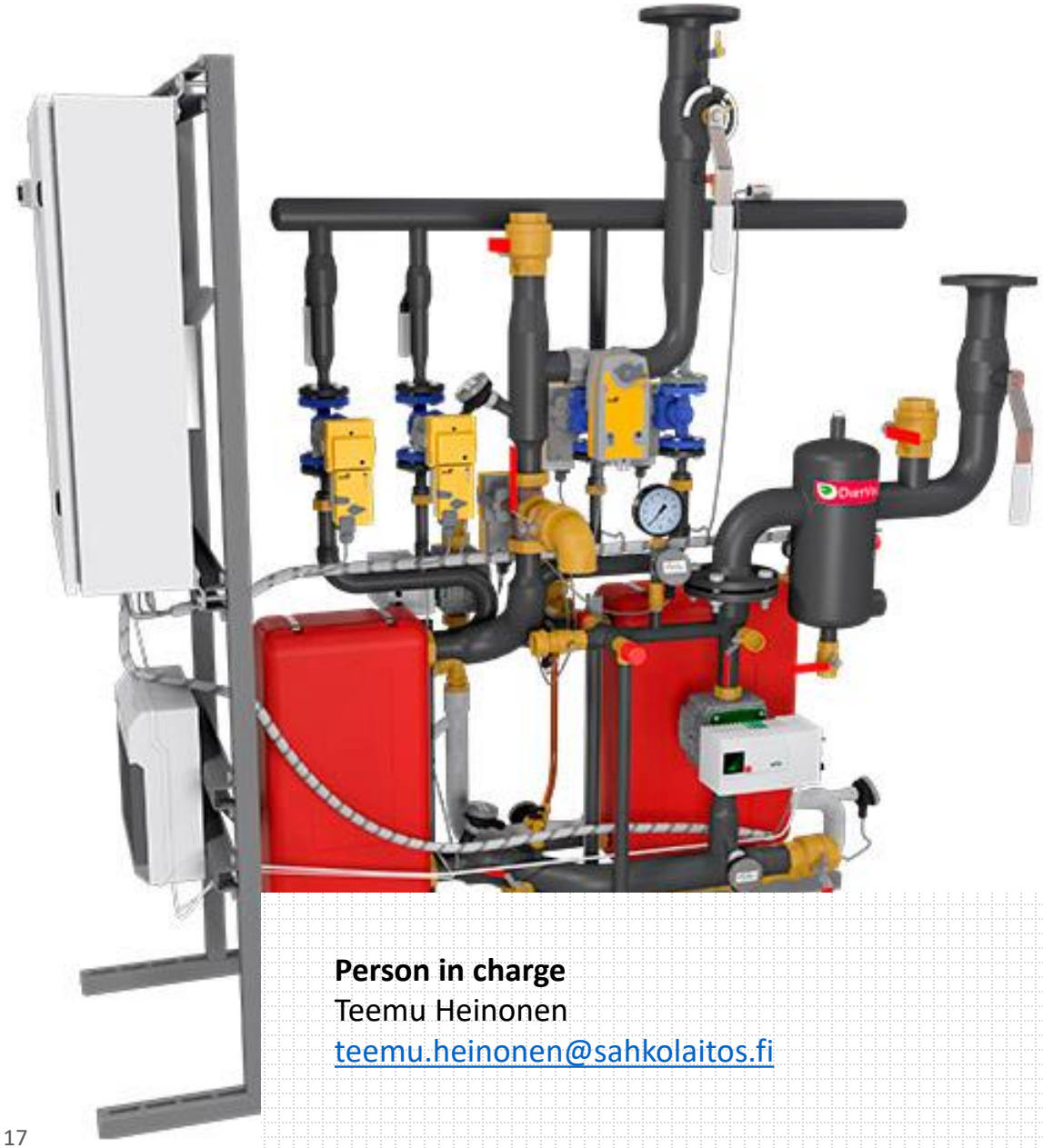
Local heat distribution service

Service description

Local heat distribution is a service provided by Tampereen Sähkölaitos to housing companies and business customers who need to have their district heating distribution centre replaced. We disassemble the old equipment and install the new one in the place of the old one on the same day and take control of the equipment remotely and carry out the necessary maintenance work. This does not require any additional measures on the part of the customer, but Tampereen Sähkölaitos takes care of everything on the turnkey principle.

✓ Pilot project



TAMPEREEN sähkölaitos

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Alva Sähköverkko Oy

Measurement arrangement pilot

Service description

The system operator enables the sales, measuring and tendering of electricity at the points of use behind the medium voltage interconnection by providing measurement arrangements and measuring service to the internal network of the connecting party.

✓ Pilot project

Success:

- The service enables tendering of electricity sales also for customers behind the medium voltage interconnection.
- Invoicing does not need to be done internally on the property.
- Produces equality in the electricity market.

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Demand response

Service description

We offer a service for residential properties and other types of properties, where at the customer's site flexibility is applied to heating for short periods of time to mitigate power peaks or to transfer them to another time.

Demand response of district heat cuts the power peaks of heat consumption and thus brings savings both to the customer and to energy production. Demand response allows the customer to reduce their heat invoice. The energy company, in turn, can minimise the use of fossil fuels and balance heat production. This is done by periodising consumption and storing heat.

We install sensors to the customer's property apartment-specifically/as need, so that we can monitor that the conditions do not change due to demand response.

✓ Pilot project

Success:
Customers are very interested in the service, as it can help to reduce the district heating demand charge and produce savings in heating costs. The ecological aspect of reducing fossil fuels in the production also creates a win-win situation.

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Alva-yhtiöt Oy

Mainio Parkkipaikka and Mainio Osakaspaikka

Service description

We offer a smart parking management service and electric car charging and charging equipment for housing companies, businesses and construction firms.

The service involves Alva acquiring and installing the necessary number of smart charging stations and/or electric car charging devices for the housing company/business and introduces to the users of the site a mobile app that allows remote control of electric car charging and motor heating. The electricity used to charge an electric car is also invoiced through the app.

Mainio Osakaspaikka is a version of Mainio Parkkipaikka, which is applicable to sites where the parking spaces are not owned by the housing company but by the shareholders. In the service, each shareholder acquires the ownership of a charging device of their choosing.

✓ Continuous activity

Success:
Our service is suitable for both electric car charging and engine heating control. A small change and investment brings about a lot of comfort when even heating with the engine heater can be adjusted remotely with your mobile phone or computer, and you do not have to go out in the cold to turn the clock on the heating pole when plans change.
The service also includes a comprehensive range of devices to ensure that different customers can have devices matching their specific needs.

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Alva-yhtiöt Oy

Mainio Parkkipaikka mapping

Service description

We map the needs and possibilities of the housing company in view of charging electric cars.

The mapping takes into consideration:

– The current status and future needs of the property, both in car heating and electric car charging.

– Sufficiency of electricity capacity. We also provide the necessary recommendations for action. The calculation of free capacity is based on the measurement results of the connection and property electricity.

– The current cabling of the parking area. We also calculate the parking space-specific load capacity.

The housing company receives a written report on the mapping, based on which we also propose further actions.

✓ Continuous activity

Success:
Customers especially thank us for establishing the capacity of the current electrical connection and how many electric cars can be charged with the current connection. At many sites, the connections are well dimensioned and charging can become a lot more common before capacity problems arise.

Person in charge
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Loiste Sähkönmyynti Oy

Parempi Arki

Service description

Parempi Arki is an umbrella under which we offering new products and services to our customers.

We combine the service offering of Loiste and its partners into entities that are relevant to our customers.

Target groups include consumers, property owners and housing companies.

Currently (August 2020), the service offers solar panels and air source heat pumps to customers. The service offering is constantly being developed and expanded.

✓ Continuous activity

loiste

Success:
We have succeeded in meeting customer needs. We have received a lot of interest and good feedback from our customers.

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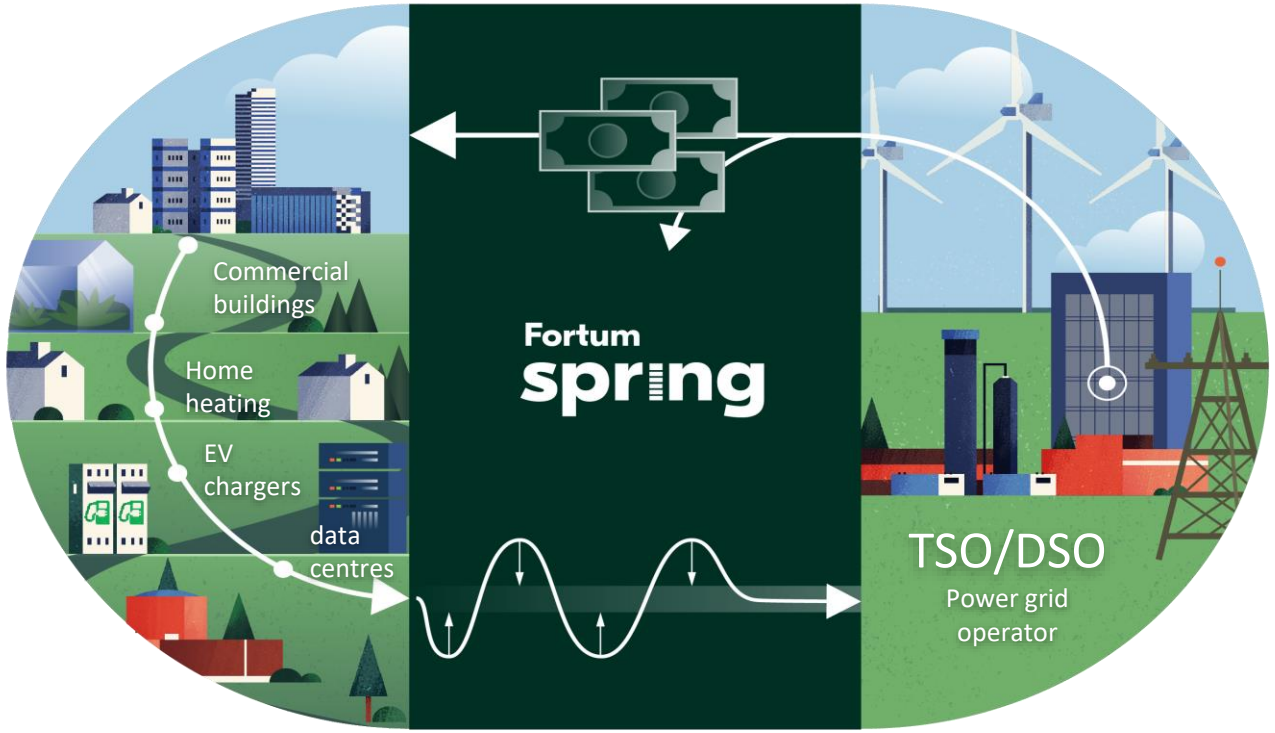
Fortum Spring

Service description

Spring is a virtual battery, i.e. a demand response platform for distributed use. Spring offers flexibility for the electricity grid to balance inflexible renewable electricity production.

✓ Continuous activity



Success:
Spring is the first commercial project in Europe to introduce household consumption to the demand response market, as the previous projects were EU-funded pilot projects. A significant factor in our success was that Finland's transmission system operator Fingrid has been flexible and willing to experiment. Strong faith and confidence that decentralised resources will be in demand in the future also contributed to this success. In the early stages of Spring, others implemented individual projects for large industrial operators. The service has shown that there is also demand on the market for households to have very rapid ability to react.

Platform at present:
After the successful construction of the distributed platform, it has been developed to offer services to other distributed products, such as electric cars, and to more centralised customers such as industry, batteries and server rooms.

The platform has also been introduced to provide demand response in the district heating network.

Person in charge

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Reiot

LAHTI ENERGIA

Service description

Reiot is a solution for monitoring the consumption and conditions of properties. It is a smart property data management system that measures the housing conditions of a property as well as water and energy consumption. It helps to optimise the conditions of the properties and save nature and money. The activities of the property can be monitored using a mobile phone or computer.

✓ Pilot project

Success:
The user interface is practical, easy to use and clear.

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Pori Energia

Porilainen Olo

Service description

A comprehensive heating option including condition monitoring and possibly different energy-efficiency investments. The aim is to be the cheapest heating option.

✓ Continuous activity

PORI ENERGIA

Success:
A new measurement data-based heating regulator together with remote and condition monitoring are installed to the property. A sufficient number of sensors are installed in the apartments to ensure reliable heating control.

Stable heating conditions and trouble-free use:

- The energy costs of the property will be fixed for the first 5 years before being linked to stable indices.
- We make sure that the heating of the property works in the best possible way.
- The housing company does not need to think about the functionality, supervision, adjustment or maintenance of the systems.
- The housing company does not need to think about the decision-making or financing of replacement investments.
- The housing company does not need to think about the decision-making, financing or repayment periods of efficiency investments.

Decision-making is therefore really easy.

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Challenges

Challenges have mostly been perceived as commercial ones

- Customers do not find investments (e.g. small-scale production or home automation) financially viable. At the current price level of electricity, the estimated repayment period of the systems has been considered rather long.
- Customers lack awareness and have wrong conceptions of new products and energy transition in general. Customers find it difficult to understand the big picture, which makes sales difficult. Customers do not necessarily understand the value of demand response and their possibilities in assuming an active role in the market as part of the solution to the climate challenge and may be even earning some money by being flexible.
- New forms of energy use, such as electric cars, have not yet become commonplace, so the demand for services supporting electric car use is only in the process of increasing.
- The decision-making process of customers, especially housing companies, is slow from an offer to placing an order.
- Many services are still in the experimental phase, so their provision still requires manual work. As of yet, the systems do not support an efficient operating model, such as automatic exchange of information between different parties and partners. This reduces cost-efficiency.

Challenges

Challenges related to competence, regulation and technology:

- Companies need new kinds of resources and competence.
  - Energy companies need new kinds of expertise, for example, in product development, sales and marketing and in procuring and developing a network of partners.
  - The adequacy of human resources has also been a challenge.
  - Development work can be slow and results are only achieved through long-term development work and experiments.
- As regards regulation, the challenge of exploiting small-scale production in housing companies among all shareholders was identified. Internationalisation has been slowed down by differences in the Nordic countries' market models and in the attitude of transmission system operators towards, for example, allowing demand responses to access the market. In addition, uncertainties surrounding the interpretation of data protection regulation have slowed down development.
- Different requirements regarding different types of charging stations (slow charging vs fast charging) were seen mainly as a technical challenge but also as a regulatory challenge. In some cases, the capacity of the customer's own electric system may also pose limits, and the customer cannot increase their electricity consumption without increasing their connection.

Solution proposals

The challenges identified are mainly of a business nature and do not require regulatory changes. Necessary actions include:

- Investments in marketing with a clearer emphasis on the benefits for the customer.
- Improving sales skills. New kinds of competence and efficient operating models are needed for the preparation of tenders and agreements.
- Improving the development and implementation of services by developing information systems, increasing automation and thereby cost-effectiveness. Clear, reliable and efficient operating models and processes, as well as systems to support them, must be put in place.
- Building and maintaining a good network of partners.
- Collecting customer feedback actively to support development.
- Increasing of information packs to increase customer awareness on the matter. Clear, comprehensible and active counselling and guidance is needed.
- Both will and courage are needed to change one's own business model.
- As regards housing companies, the recent changes in electricity market legislation (enabling an energy community within a property) will improve economic feasibility in coming years. Regulation regarding energy communities should be quickly implemented.
- Innovation must be allowed, i.e. legislation must be market-based and create a level playing field . Long-term and market-based regulation is needed.

Cooperation with customers becomes stronger and more diversified

The development work on a smart energy system is already in full swing. The great reform in the energy sector is guided by customers' wishes, needs and safety. The energy services make it possible for customers to make value judgements and to choose their preferred ways of participation and means of having an impact on their expenses. Through their own energy use, storage and production, customers can take part in the balancing of the the entire system and earn by providing these services – usually in a fully automated way.

- Markets make the best options available to customers.
- The long-term perspective of regulation must be ensured to safeguard cost-effectiveness when companies invest in the development of products and services.
- Society's investment must be directed to product development and piloting and to advising customers on new opportunities.
- E-business must be promoted through deregulation of the energy sector where regulation is more restrictive than in other industries.
- Smart energy networks provide a platform for new services and solutions.