

**BUSINESS
FINLAND**

SMART ENERGY **Finland**

Low carbon solutions

Mika Finska

CONTENT

- District heating and cooling
- Smart flexible energy
- Bioenergy and Waste2value
- Industrial energy efficiency

An aerial night view of a city skyline, likely New York City, featuring numerous illuminated skyscrapers and a dense urban landscape. The text "DISTRICT HEATING AND COOLING" is overlaid in the center.

DISTRICT HEATING AND COOLING



Building an award winning technology

Finnish District Heating and Cooling has been awarded as best practice in the world by

- International Energy Agency (IEA)
 - International District Energy Association (IDEA)
 - Euroheat & Power
 - United Nations (UN)
-
- International Energy Agency:
“Finland is the model of the world”

WORLD #1 DISTRICT HEATING AND COOLING

CONNECTIVITY

Optimal design of the networks reduces heat losses and optimizes investments.

IOT and AI

Finnish companies have introduced smart applications using artificial intelligence (AI) to reduce heat losses of buildings.

DISTRICT HEATING AND COOLING EQUIPMENTS

BUILDING LEVEL SUBSTATIONS

comprises heat exchangers, pumps and various valves and control systems.

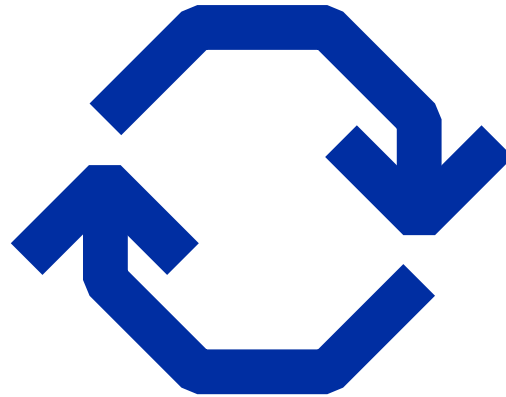
THE BEST DHC SYSTEM IN THE WORLD

EFFICIENT NETWORK

- MINIMAL HEAT LOSS
- MINIMAL NEED FOR WATER REPLENISHMENT
- MAXIMAL RELIABILITY

ENVIRONMENTAL SUSTAINABILITY

- HIGH USAGE OF RENEWABLES IN HEAT PRODUCTION
- LOW EMISSIONS
- HIGH SHARE OF CHP



EFFICIENT PRODUCTION

- THREE QUARTERS OF HEAT IS PRODUCED BY CHP
- HIGH GENERATION EFFICIENCY

FINANCIAL SUSTAINABILITY

- LOW HEAT TARIFFS
- HIGH PROFITS
- NO SUBSIDIES

FOURDEG

fourdeg.com



YOUR OFFERING

Fourdeg Smart Heating® for buildings with water radiator based heating

Right heating, Right time to Every room

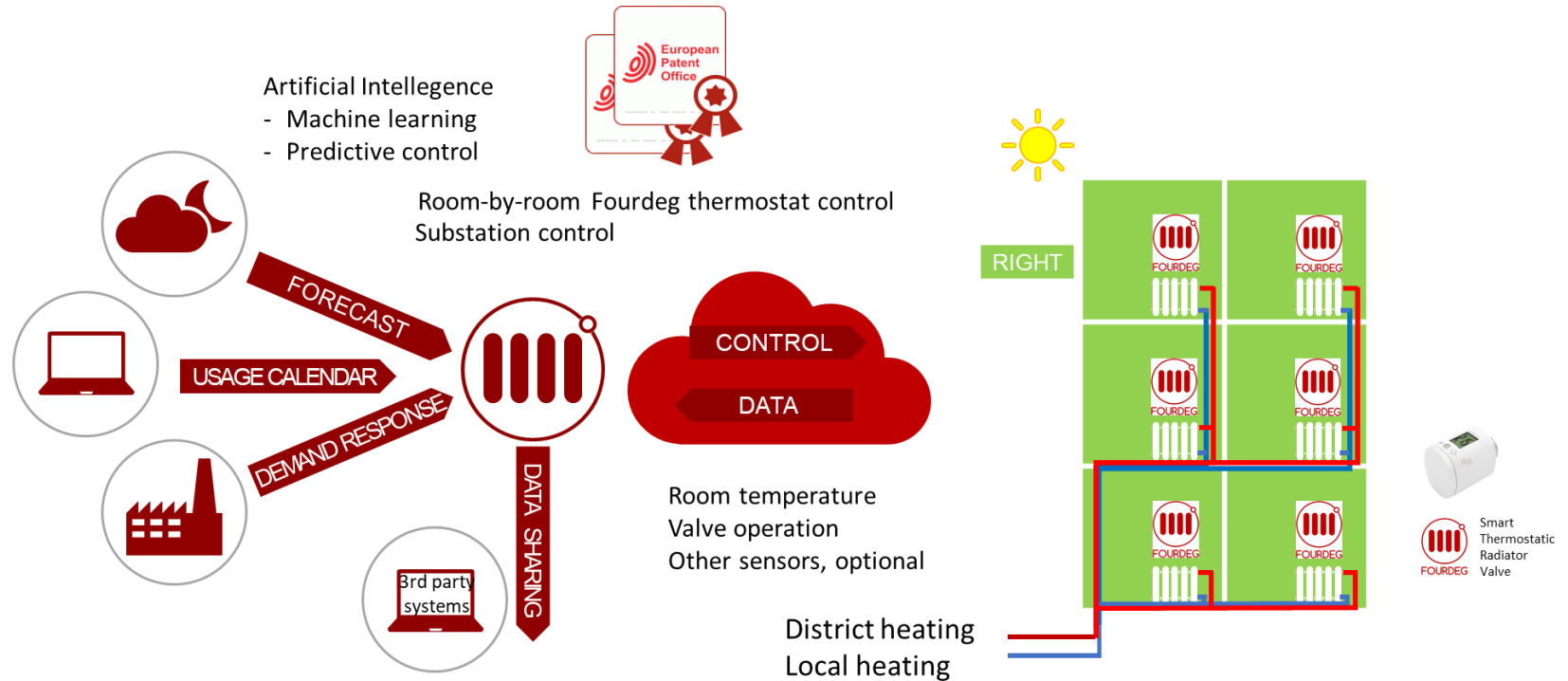
BENEFITS FOR THE CUSTOMER

- Upto 35% less energy consumption
- Better indoor conditions
- Remote facility management

REFERENCES

Established supplier in Finnish markets, customers e.g.

- Finnish Government owned buildings (Senaatti)
- City of Helsinki
- City of Vantaa



GEBWELL

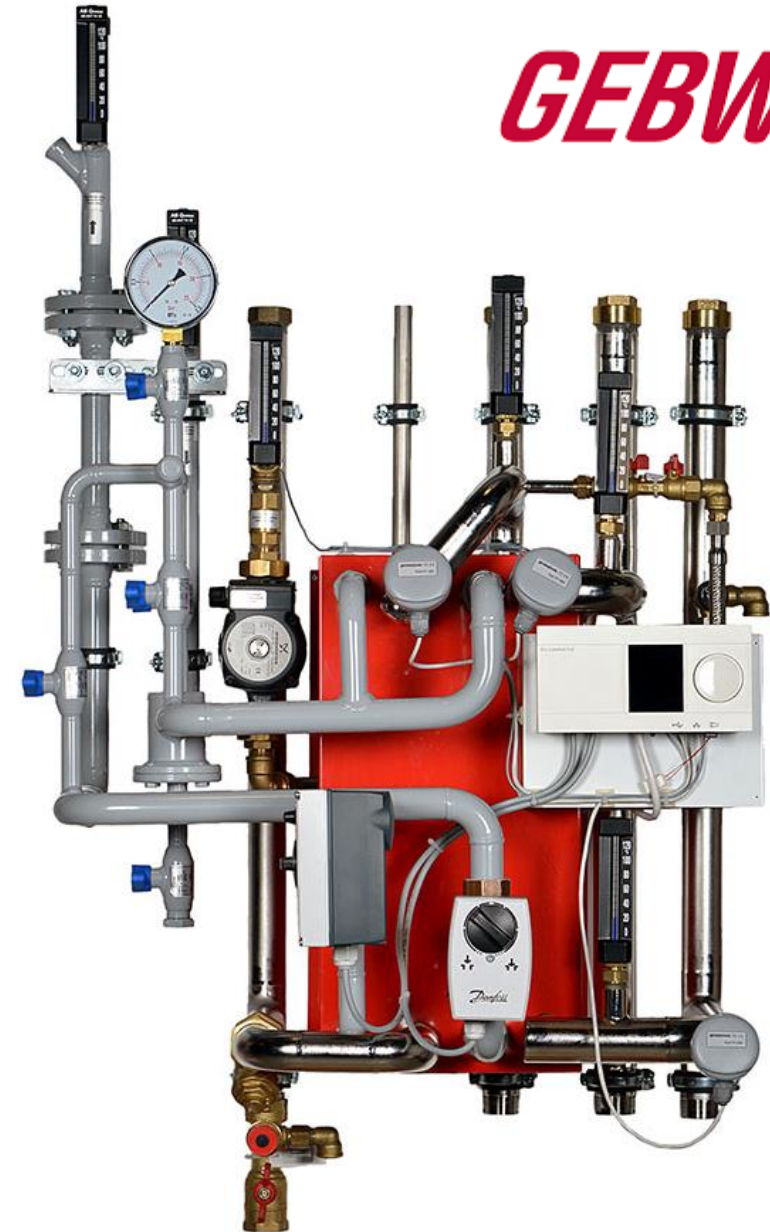
WWW.GEBWELL.FI

COMPANY BACKGROUND

Gebwell is specialised in environmentally friendly heating and cooling systems. The wide product selection includes heat pumps, district heating and cooling substations, energy accumulators, exhaust air heat recovery systems and hot water heaters. All products are designed and produced in Leppävirta, Finland.

Gebwell is biggest building level substation producer in Nordic Europe

GEBWELL



PUMPO SOLUTIONS for heating and air-conditioning systems.

- Kolmeks is to provide the best pump solutions with state-of-the-art products and services. Specialized in centrifugal pumps used in heating and air-conditioning systems.
- Kolmeks pumps are typically used in district heating, industrial, heating- and cooling systems, as well as other clean water and other clean liquids circulating, pressure-boosting and similar applications.
- Due to the use of many different materials and sealing solutions the pumps are increasingly used in different processes in the industry in general.

BENEFITS FOR THE CUSTOMER

- The pumps are well designed and simple to use, carefree in maintenance, silent, durable and best of all, very energy friendly. Our driving philosophy to provide efficient reliability is manifested especially around our pumps.

REFERENCES

- We have over 75 years of pump production experiences in Finland.
- 70% of buildings in Finland are installed with Kolmeks pumps as well as paper and pulp industry and marine industries are widely using Kolmeks solutions.
- In China, we have more than 200,000 pcs of pumps running in district heating systems in different cities.
- In public buildings, we also have great references such as Suzhou center project and Zhengzhou Olympic project in China.



FOR DISTRICT HEATING COMPANIES AND BUILDING OWNERS – LEANHEAT PROVIDES AI-BASED IOT SOLUTIONS FOR

- improving the energy efficiency of buildings
- increasing the operational efficiency of heating systems
- creating a healthier indoor climate for residents
- cutting the peak load heat consumption

BENEFITS FOR THE CUSTOMER

- Leanheat AI saves heat consumption up to 30%.
- Leanheat AI cuts peak power by up to 30%.
- Leanheat AI improves resident comfort.
- Leanheat AI enhances operational efficiency.

REFERENCES

- Top Finnish building owners are our customers (e.g. Sato, Espoon Asunnot, Kojamo)
- Main Finnish district heating companies are our customers (e.g. Fortum, Helen, Elenia)
- Globally, over 2300 substations are under Leanheat AI control
- Customers outside Finland, e.g. HOFOR, Tianjin Energy Group, Tianjin Ecocity Binlv DHC, Beijing District Heating Group



COMBUSTION AND HEAT PUMP TECHNOLOGY

- Beijing has the lowest emission requirements for gas combustion in the world. Below 30mg/Nm³
- Oilon is specialized in low emission gas combustion and can reach the lowest emission requirements in the world. Only few companies in the world can do the same at this moment.
- Oilon has over 20 years experience in China and more than 10 000 burners delivered to China only.
- Oilon industrial heatpumps can reach very high temperatures up to +120 C equipped with very refined automation system
- Oilon has also solution and references for District cooling with heat pump technology.
- Oilon heat pump can also be used in various applications, combining heating and cooling, e.g. food industry, process industry, data centers..



OFFERING

Planora has extensive knowledge, expertise and experience in municipal engineering design as well as industry and automation planning, with special knowledge in district heating and cooling.

With the creation of an identical **Digital Twin** of your heating and cooling networks with all their components, we create the base for all design, proper sizing of components, interconnection of ICT and IoT-points, use of the information received from IoT-points in daily operative actions, maintenance, development plans, hydraulic calculations, on-line calculations, etc.

All available information can be incorporated into the Iisi-Netti platform.

BENEFITS FOR THE CUSTOMER

With the identical **Digital Twin and Iisi-Netti service** you have one base that can be used in all systems. With one base, your network data is always up to date.

With our comprehensive and sound project management, we offer an all-inclusive solution to energy planning.

REFERENCES

Over 35 years of experience working in the energy sector. Different types of energy projects performed for eg. in Finland, Russia, China, Ukraine, Rwanda, Indonesia



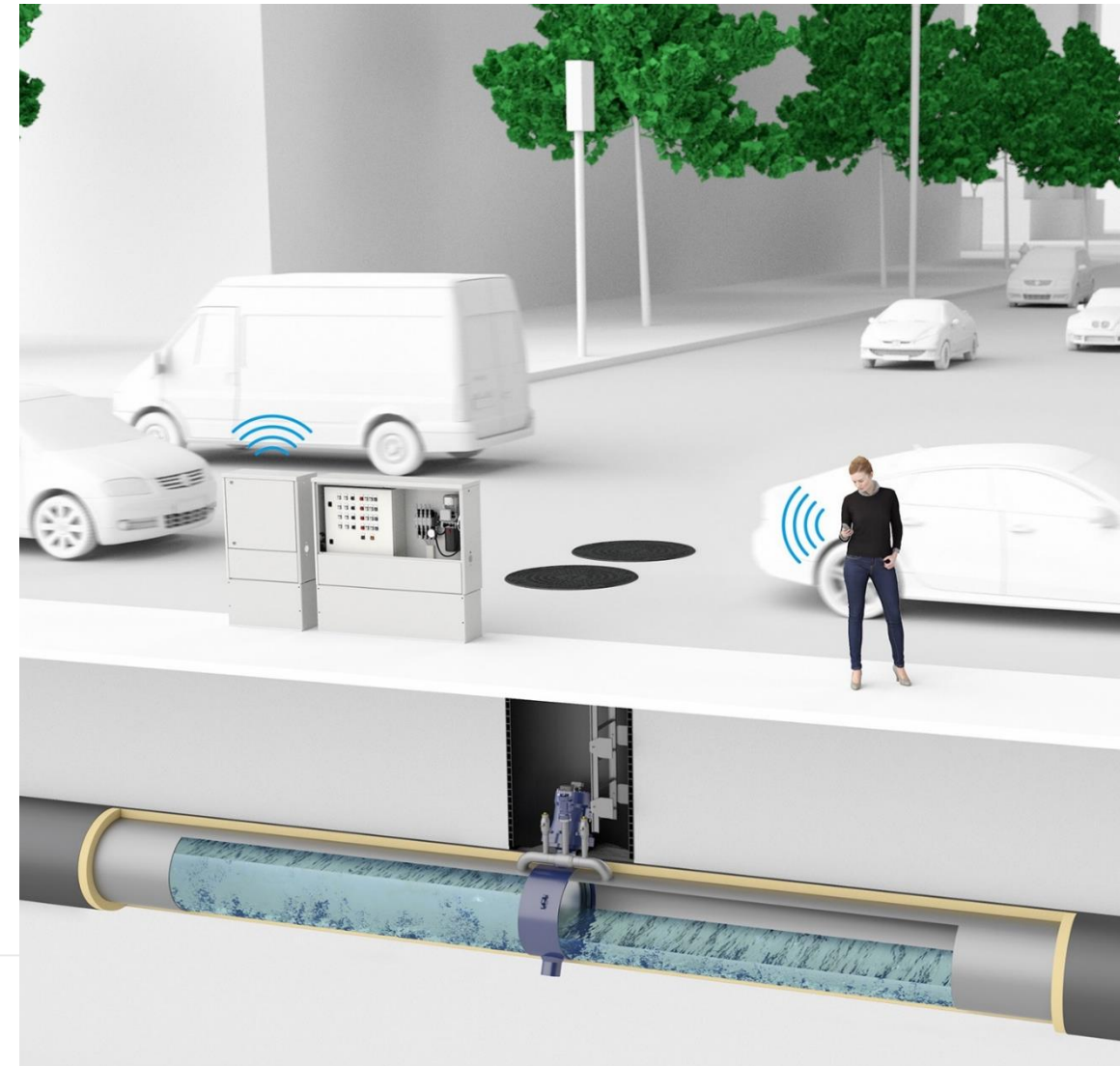
COMPANY BACKGROUND

Vexve is the globally leading provider of valve solutions for the heating and cooling needs of cities and industry.

PRODUCTS & SERVICES

Developed for demanding applications, Vexve valve and control products and hydraulic control solutions are used in:

- district energy networks
- power plants
- internal heating and cooling systems of buildings





SMART FLEXIBLE ENERGY

BEST PRACTICES FROM FINLAND

100%

of Finnish households have
real time energy metering

4%

Grid losses totally in
transmission and
distribution networks

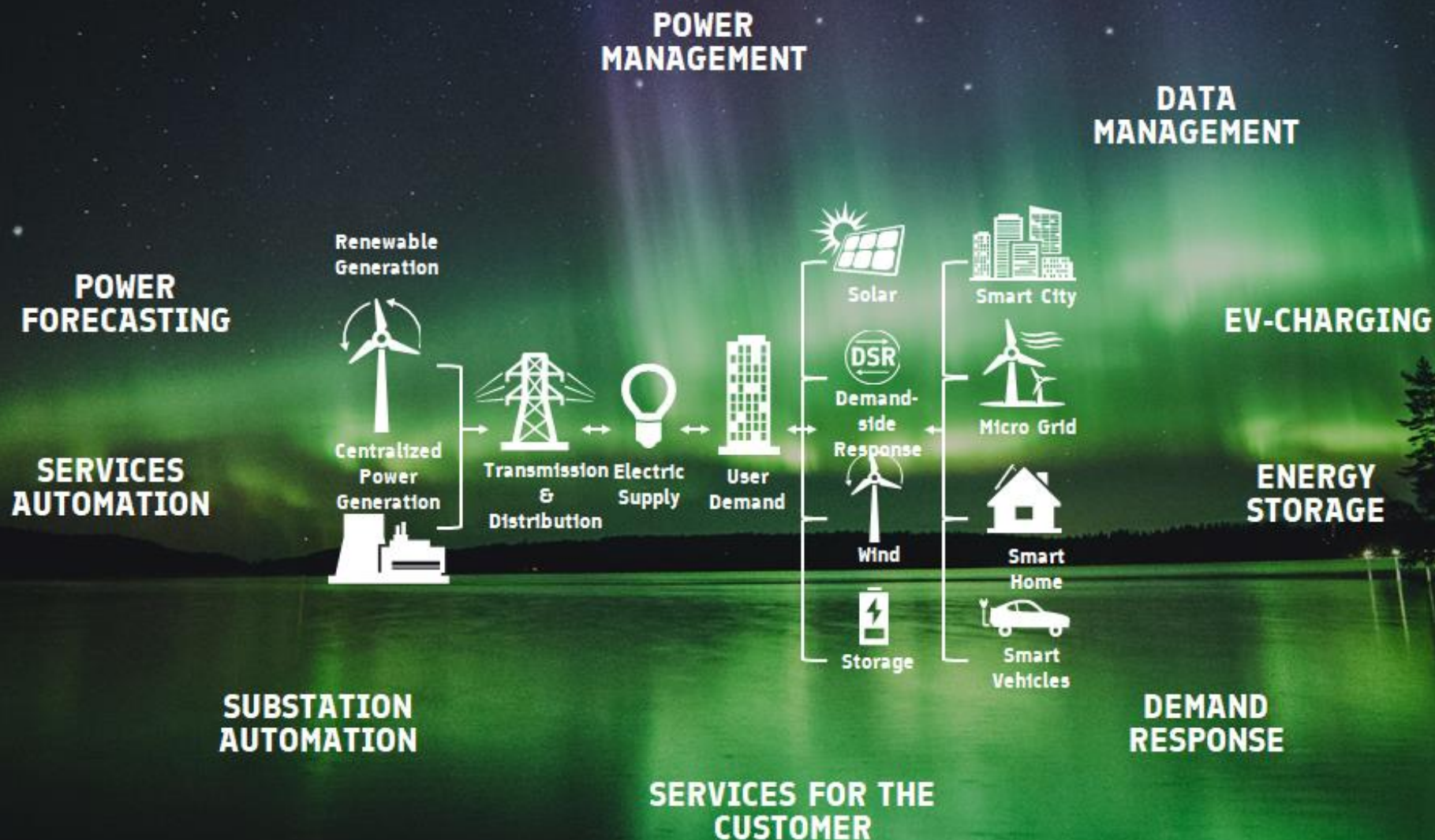
99,9%

99,9998% grid reliability at
transmission lines*

BUSINESS FINLAND

DISTRIBUTION AUTOMATION – ADDING THE FINNISH LAYER TO THE GRID

From traditional to stabile, flexible and automated (self learning) grid



ADDING THE FINNISH LAYER TO THE GRID

RELIABLE DATA & TRANSFER

- Industry leading standards in data transfer
- Utmost reliability in wireless network solutions
- Cyber secure platform for critical functions

POWER QUALITY AND RELIABILITY

- World class hardware to grid harmonization, reliability and balance
- Smart digitalization of substations

OFF-GRID AND MICROGRID

- Automated microgrid solutions
- Local energy grid
- Intelligent connection and utilization of renewable energy

MODERN AND CLEAN ENERGY PRODUCTION

- Waste to Energy and fuel cell energy production
- Renewable Energy and Back-up Power

MONITORING OF MAINTENANCE AND AUTOMATION SERVICES

- End to end services for digitalized monitoring
- Service digitalization
- Safety and security

AURELIA TURBINES

aureliaturbines.com



THE MOST EFFICIENT SMALL GAS TURBINE IN THE WORLD

- Aurelia Turbines develops, manufactures and commercializes durable and efficient small gas turbines, especially for small-scale processes and the SME industry.
- Aurelia's main product, Aurelia®A400, has a nominal output of 400 kWe and an electrical efficiency of 40 %.

BENEFITS FOR THE CUSTOMER

- Energy efficient
- Fuel flexibility
- Low emissions and noise
- No need for lubricants -> long maintenance intervals
- Faster payback

REFERENCES

- Several patents.
- Team with years of relevant experience.
- Technology is based on 30+ years R&D by Lappeenranta University of Technology (LUT), Finland.
- Energy Efficient Award winning PERPETUUM 2017.
- Awarded financing from the EU H2020 -program.
- Multiple authorized distributors and marketing partners.
- Strong ties to a wide range of technology suppliers.
- The first commercial delivery in 2020.



BACKGROUND

Convion Ltd. is a leading fuel cell system developer committed to commercializing solid oxide fuel cell systems in range of 50–300kW for distributed power generation.

PRODUCTS & SERVICES

Convion provides a complete power generation solution based on SOFC technology. Products will be distributed to global markets in cooperation with key partners and customers.



OUR SOLUTIONS

Solid oxide cell technology is the most efficient power generation and storage technology available in the world today. The power is generated or stored by electrochemical conversion of the fuel, without internal combustion. The technology enables virtually emission free power generation and storage from natural gas, bio as well as synthetic fuels.

BENEFITS FOR THE CUSTOMER

Solid oxide cell technology has the potential to reshape how the world is powered, allowing efficient, clean, and reliable off grid energy generation. It can help us sharply reduce our use of polluting fuels, moving from coal to cleaner fuel sources, and eventually to renewably generated hydrogen. The implications are huge for power distribution, for energy bills, and most importantly for the environment.

COMPETITIVE ADVANTAGE

Due to the unique and patented technology Elcogen products have delivered a world record in fuel conversion efficiency to electricity. Elcogen solid oxide cell stacks use 50% less fuel than conventional distributed power generation technologies such as micro-gas turbines and diesel engines; emit 50% less CO₂ and near-zero NO_x, SO_x or VOC.

Clean and efficient Power generation



HELIOSTORAGE

heliostorage.com

Low cost heating and cooling with
zero CO2 emissions



SEASONAL THERMAL STORAGE

- Store excess heat in the ground in summer
- Recover the heat for heating in winter
- Control system optimises storage and recovery

SOLAR COLLECTOR ROOFING

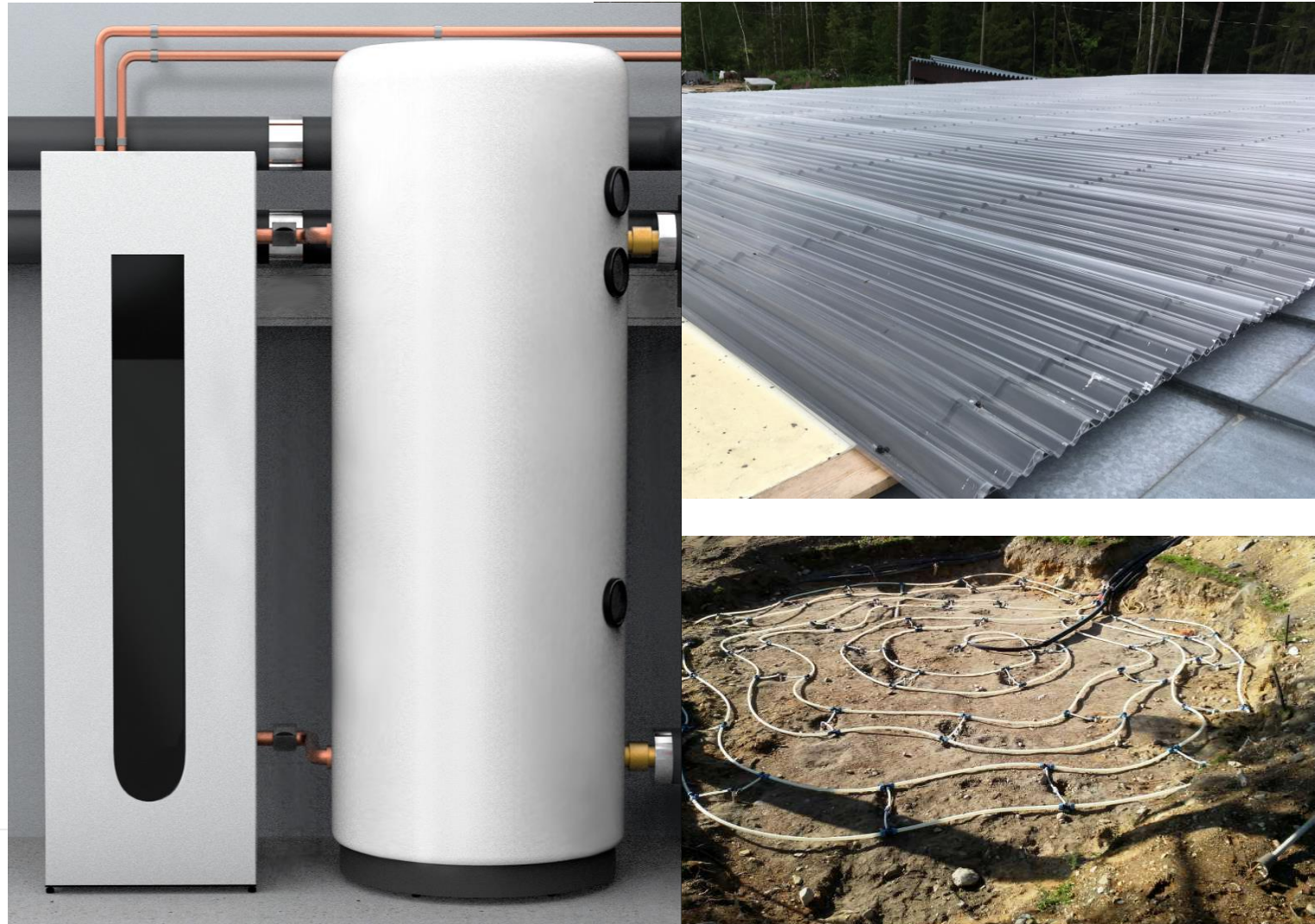
- Roofing module that includes solar collector
- Produces hot water up to 100 C
- Can be used to provide heat for storage

BENEFITS FOR THE CUSTOMER

- Zero CO2 emission thermal energy
- Low cost heating and cooling
- Recycling of waste heat from industry

REFERENCES

- Guangzhou Power Supply
- Finn Spring www.finnspring.fi
- Kaustisen Opisto www.kaustisenopisto.fi



SENSOR-TO-CLOUD CONNECTIONS FOR ENERGY & GRID IoT

ionSign designs and provides hardware to aggregate your sensor data to the cloud of your choice. Smarter, more flexible and less expensive than global brands, we make the applications technically and commercially viable, that you skipped until now.

Stop looking for the right data logging hardware. We design it for you!

BENEFITS FOR THE CUSTOMER

- IoT benefits: leverage data to develop better products & services faster, provide better service, use less to provide more
- With ionSign: get up & running faster, with a perfectly fitting, customised hardware
- No vendor lock-in: use any sensor, send to any cloud

REFERENCES

- FINGRID – The Finnish national grid operator & global pioneer
Monitoring of disconnectors and circuit breakers at unmanned substations for predictive maintenance & grid availability
- Browse to ionsign.fi/en/cases/ for more cases



KEEP YOUR BATTERIES ALIVE FOR LONGER THAN BEFORE WITH OUR GAME-CHANGING POWER ELECTRONICS TECHNOLOGY

- L7 Drive's core is an innovative way to boost Li-Ion cell voltage to required level with excellent efficiency and very compact design.
- L7 Drive power electronics technology can be utilized in multiple ways from Electric Mobility to Telecom sector power back-up and with L7 Drive IoT + Cloud solution it can be used also as a Virtual Power Plant (VPP) system.

BENEFITS FOR THE CUSTOMER

- L7 Drive intelligent self-balancing battery technology's main customer benefits are:
 - Lower lifetime cost
 - Reliability over battery pack lifetime
 - More robust charging options
 - Easy battery module refurbishment
 - Real-time connections
 - Easy to use (UI, Cloud)
 - High security
 - All relevant data available

REFERENCES

- Smart UPS for Nokia driven LuxTurrim 5G -project.
- Customers in telecom sector (existing CSP towers (2-4G) and new mmWave (5G)), automotive and Light Electric Vehicles.
- Patented technology which benefits have been tested by VTT Technical Research Centre of Finland.



ELECTRICAL ENERGY STORAGE AND POWER QUALITY SYSTEMS

- Merus Power is a global green technology company, that designs and delivers world-leading electrical energy storage and power quality systems.
- Power electronics, advanced and reliable control software and innovative electrical engineering are the heart of Merus Power.
- In addition to the smart Merus™ Energy Storage Solution Merus Power's product portfolio includes active harmonic filters, STATCOMs, SVCs, updated UPS systems (UPQ) and also hybrid power compensators (HPQ).

BENEFITS FOR THE CUSTOMER

- Significant energy savings while boosting productivity, ensuring process reliability and increasing profitability.
- Offering a completely new source of revenue by providing growth opportunities in the frequency regulation markets.
- Accelerating renewable energy transition by enabling easy grid connection, ensuring grid stability and grid code compliance.

REFERENCES

- Merus Power provides deep technological and engineering knowledge to give the best customer experience possible.
- Various customer references in industry, utility, infrastructure and renewable energy applications in 52 different countries.



TURNING SOUND INTO VALUE

- We provide smart solution that solve our customers' maintenance problems in a convenient and non-intrusive way.

BENEFITS FOR THE CUSTOMER

- Our energy saving solutions save typical factories with pneumatic / compressed air solutions tens of thousands of euros per year, even up to hundreds of thousands.
- Our non-intrusive maintenance solutions provide smart deviation detection for existing assets, with automatic detection of early fault indicators.

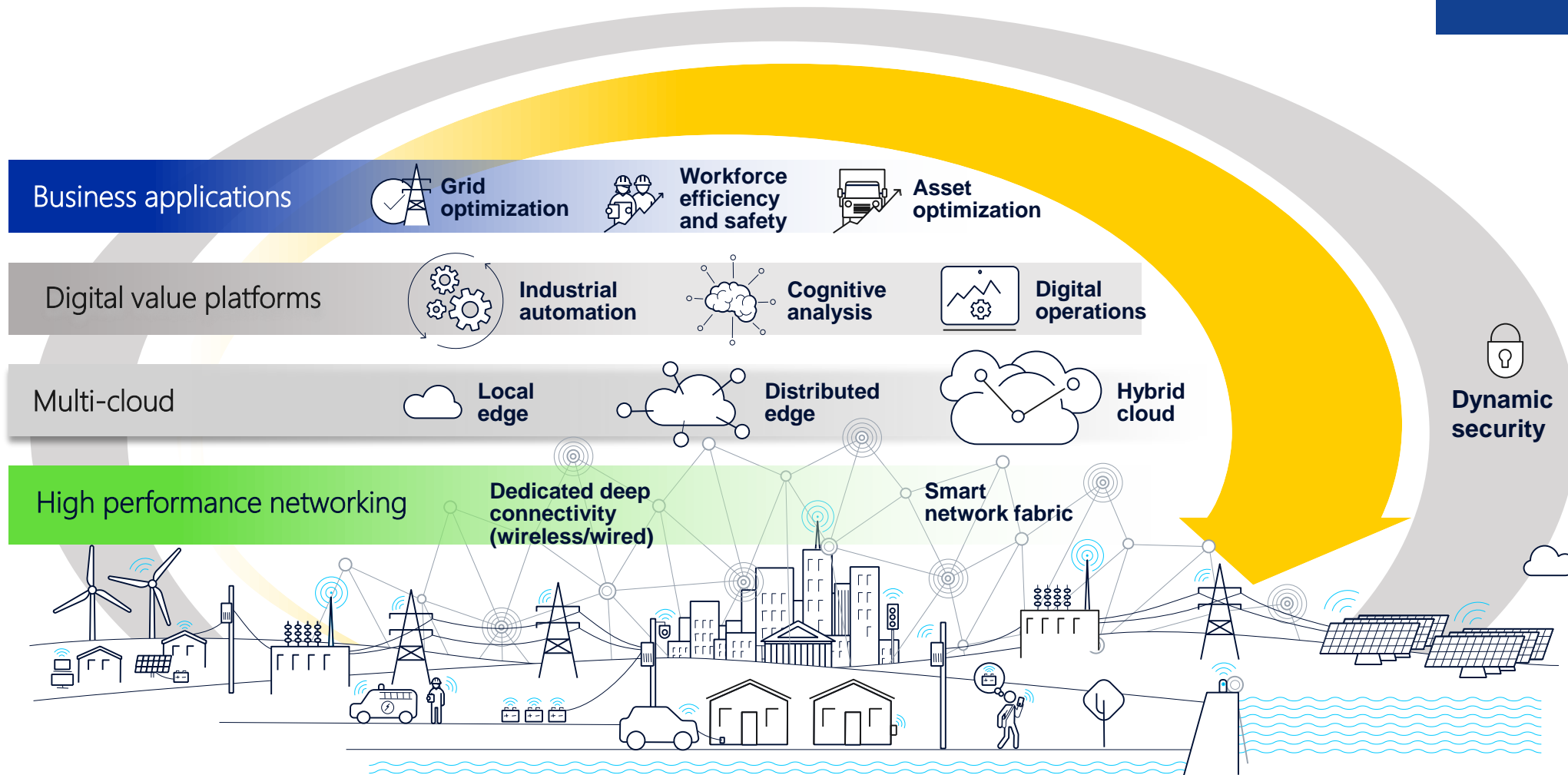
REFERENCES

- Leak detection solutions used by for example:
Atlas Copco, Airbus, Procter & Gamble, UPM
- Partial discharge detection:
RTE France, Gazprom, Fingrid
- Predictive maintenance solutions:
Wärtsilä, Webasto



Nokia - Future X architecture for power utilities

NOKIA



Renewables integration, automation and new business models

Nokia Future X for industries

VTT – Energy efficiency solutions

<https://www.vttresearch.com/>



EXPERTISE ON GRID MANAGEMENT AND LOAD FORECASTING

- Peak load shaving and grid optimisation
- IoT Sensor and AI based Energy efficiency solutions
- Electricity consumption forecasts
- Automated demand-response platform development
- Positive energy district planning
- Zero Energy Block and off grid solutions

BENEFITS FOR THE CUSTOMER

- Maximising the grid throughout
- Maximised electricity quality
- Avoiding black outs
- End-user cost save by reduced electricity bill

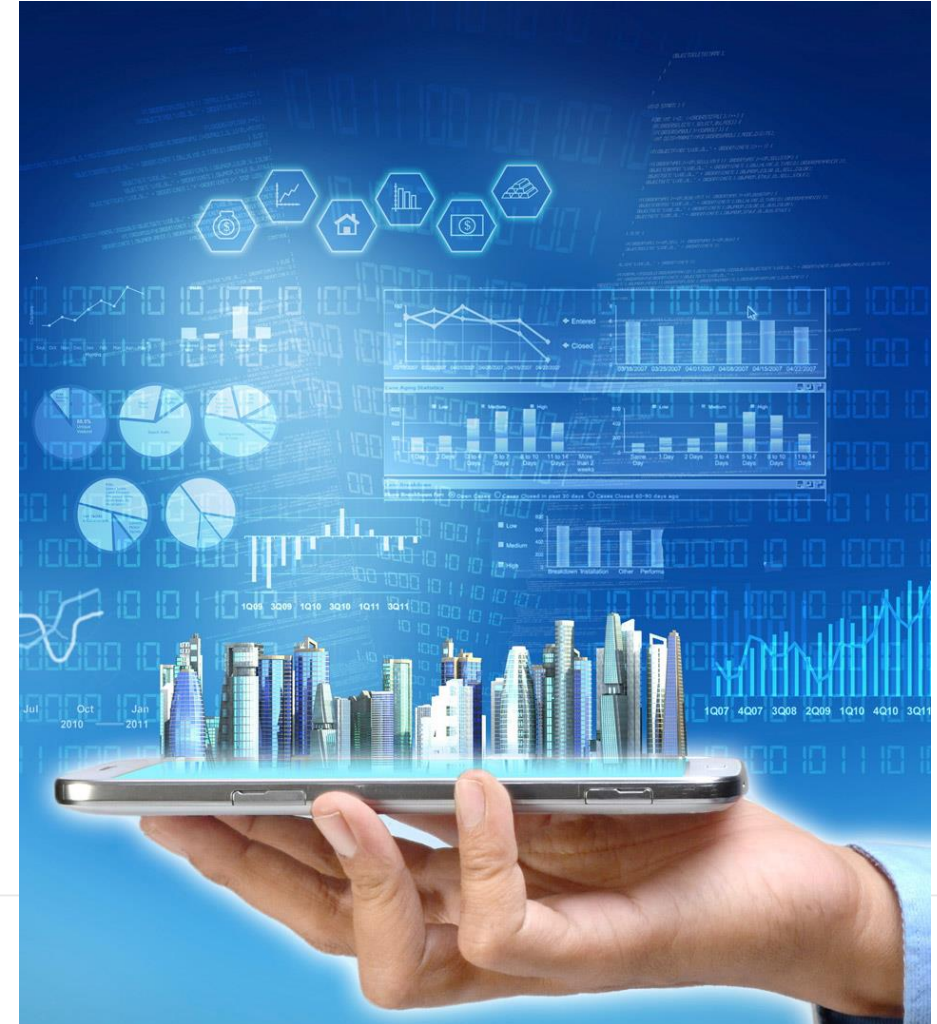
REFERENCES

NordPool – Nordic Energy Market SW development

Weekly energy consumption forecasting for Finland

Development of the most energy efficient Supermarket in the world

Over 10 M€ research program portfolio with European partners

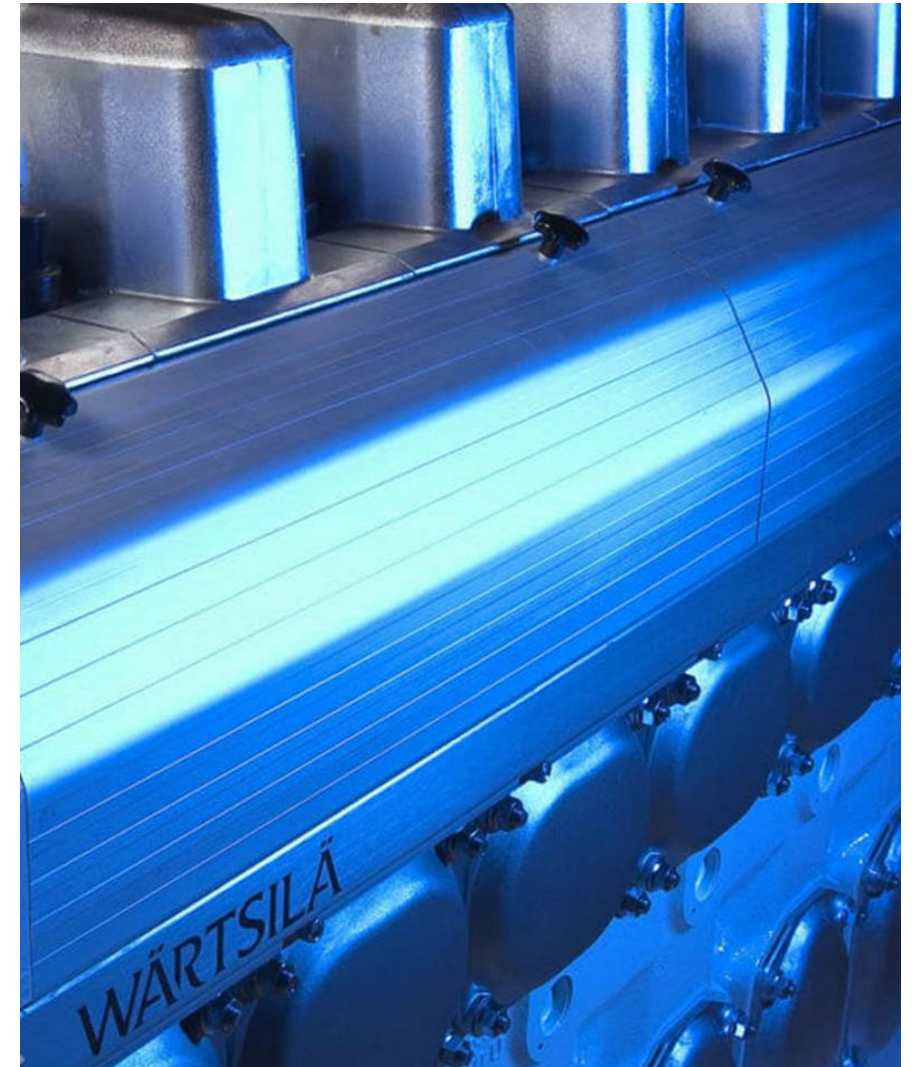


COMPANY BACKGROUND

We are a leading global systems integrator offering a broad range of environmentally sound solutions. Our flexible and efficient solutions provide superior value to customers and enable a transition to a more sustainable and modern energy system

PRODUCTS & SERVICES

- Flexible baseload power plants
- Capacity for grid stability, peaking and load-following generation, and back-up power for integrating wind and solar energy
- Multi-fuel solutions enabling use of any gas or liquid fuels
- Utility-scale solar PV power plants and solar-engine hybrid solutions
- Energy system integration capabilities
- Small and medium scale LNG liquefaction plants, LNG terminals and distribution systems
- Project development and EPC capability



An aerial photograph of a landfill, showing a vast expanse of discarded waste. A yellow bulldozer is visible in the upper right quadrant, working on the waste. The overall scene is a mix of various colors from the trash, creating a textured, chaotic appearance. The text "BIOENERGY and WASTE TO VALUE" is overlaid in large, white, bold letters on the left side of the image.

BIOENERGY and WASTE TO VALUE

#214408631

BEST PRACTICES FROM FINLAND – Municipal Solid Waste (MSW)

99%

of MSW is recovered either as
energy or by material
recycling

1%

In 2006, 52% to landfills
In 2018, 1%

50

SO₂ emissions
EU air emission standard 50
mg/Nm³
For coal: 400 mg/Nm³

BEST PRACTICES FROM FINLAND - Biogas

47%

Share of Renewables in Electricity
Generation (67 TWh)

0%

Organic waste forbidden to
take landfills

1 TWh

Biogas energy production in
2016. Mostly with landfill
gases.



MATERIAL HANDLING SOLUTIONS FOR POWER PLANTS, PULP & PAPER INDUSTRY, CEMENT KILNS AND WASTE MANAGEMENT COMPANIES

Solid fuel handling – Underlining availability

- Turnkey solutions for handling all solid fuels, such as wood chips, round wood, stumps and other forest residues, energy willow, olive kerns, peat, pellets, bark and SRF/RDF.

Waste refining and handling – Recovering value from waste

- Fully integrated, industrial scale TYRANNOSAURUS® process for turning solid waste (MSW, ICW) into high-quality SRF/RDF, which can replace fossil fuels.
- Automated process with excellent availability and high capacity producing sustainable fuel and simultaneously separating metals and other valuable materials for recycling.

Life Cycle Services – Maximising process life cycle

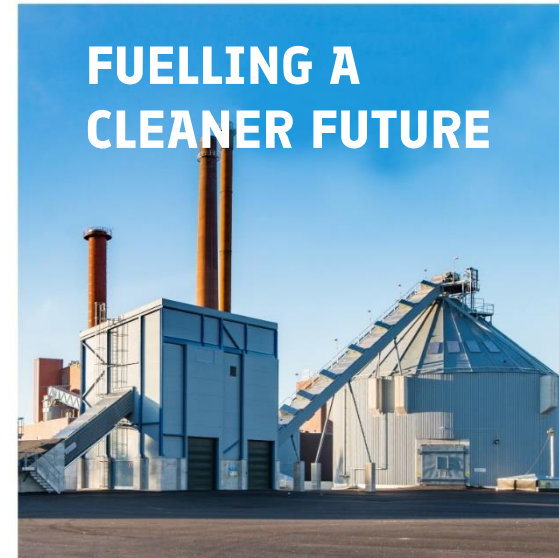
- A large scale of services and know-how from spare parts supply and preventive maintenance to service agreements and modernisation of entire production lines.

BENEFITS FOR THE CUSTOMER

- Improved boiler efficiency and lower emissions.
- Increased recovery of recyclable materials and reduced landfilling.

REFERENCES

- Hundreds of reference plants around the world since 1960s
- All activities comply with ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018.



CROSS WRAP

crosswrap.com



WRAP IT SMARTER

WRAPPING, OPENING AND DEWIRING SOLUTIONS FOR BALES AND PACKAGES

- Cross Wrap's offering includes a broad selection of solutions for bale wrapping, bale opening, bale dewiring and board packaging.
- Cross Wrap's mission is to help companies around the world to operate smarter when it comes to bale or package handling, wrapping, opening or dewiring.

BENEFITS FOR THE CUSTOMER

- Cross Wrap machines are built and engineered to last and perform. They are the industry standard in waste management and in waste to energy.
- CW Bale Wrappers are compatible with all balers and with all bale sizes and capacities.
- CW Bale Opener is fully automatic, high capacity solution for bale opening.
- Automatic CW Dewiring machine is revolutionary solutions that improves work safety and operational efficiency, by cutting and removing bale wires. It has been engineered to work in plastic and paper recycling.
- CW Board Packaging Lines can pack different size boards all on the same line fully automatically, fast and with fully recyclable packaging materials. This all sides covering wrapped protection helps in transporting and gives weather protection.
- Cross Wrap has over 25 years of experience manufacturing the industry's most effective bale wrapping machines for over 55 countries worldwide.

REFERENCES

- Powerday, UK is using CW 2200 Bale Wrappers to wrap RDF and SRF fuels.
- Sonoco Alcore, Finland is using CW Bale Dewiring machine to open recycled cardboard bales for manufacturing core board
- Lafarge Holcim, Spain is using Cw Bale Opener to feed their cement manufacturing with SRF fuel.
- Sveza, Russia is using Cw Board Packaging Lines to wrap their plywood boards in many locations

**BUSINESS
FINLAND**



NEXT GENERATION BIOGAS PLANTS FOR IMPURE WASTE FRACTIONS

- Doranova has developed a dry digestion biogas plant concept, Hardferm biogas plants to process the most demanding organic fractions, such as OFMSW
- Plants are modular and can process 10-150,000 tons of waste annually

BENEFITS FOR THE CUSTOMER

- Suitable for all waste fractions
- Patented technical solutions ensure the best in class cost-efficiency
- Scalability ensures agile production ramp-ups
- Local sourcing reduces initial capital expenditures

REFERENCES

- Over 20 years experience in biotechnology
- Several biogas and landfill gas plants executed after year 2010
- First Hardferm plant built to Jyväskylä, Finland in 2019/20
- Several other Hardferm projects under negotiations



PIONEER IN FINNISH BIOGAS FIELD

Metener provides technology for:

- Wet fermentation
- Dry batch digestion
- Biogas upgrading
- Hydraulic biogas compressing
- Pressure reducing system

BENEFITS FOR THE CUSTOMER

- Company has solid R&D
- Reliable and durable technology
- Low operational costs

REFERENCES

- Metener has designed and constructed 15 biogas plants, almost 10 biogas upgrading units and 3 public biogas filling stations
- Projects in Finland, China, Australia and UK



COMPLETE SUPPLY CHAIN MANAGEMENT AND REPORTING SYSTEM FOR ENERGY AND CIRCULAR ECONOMY COMPANIES

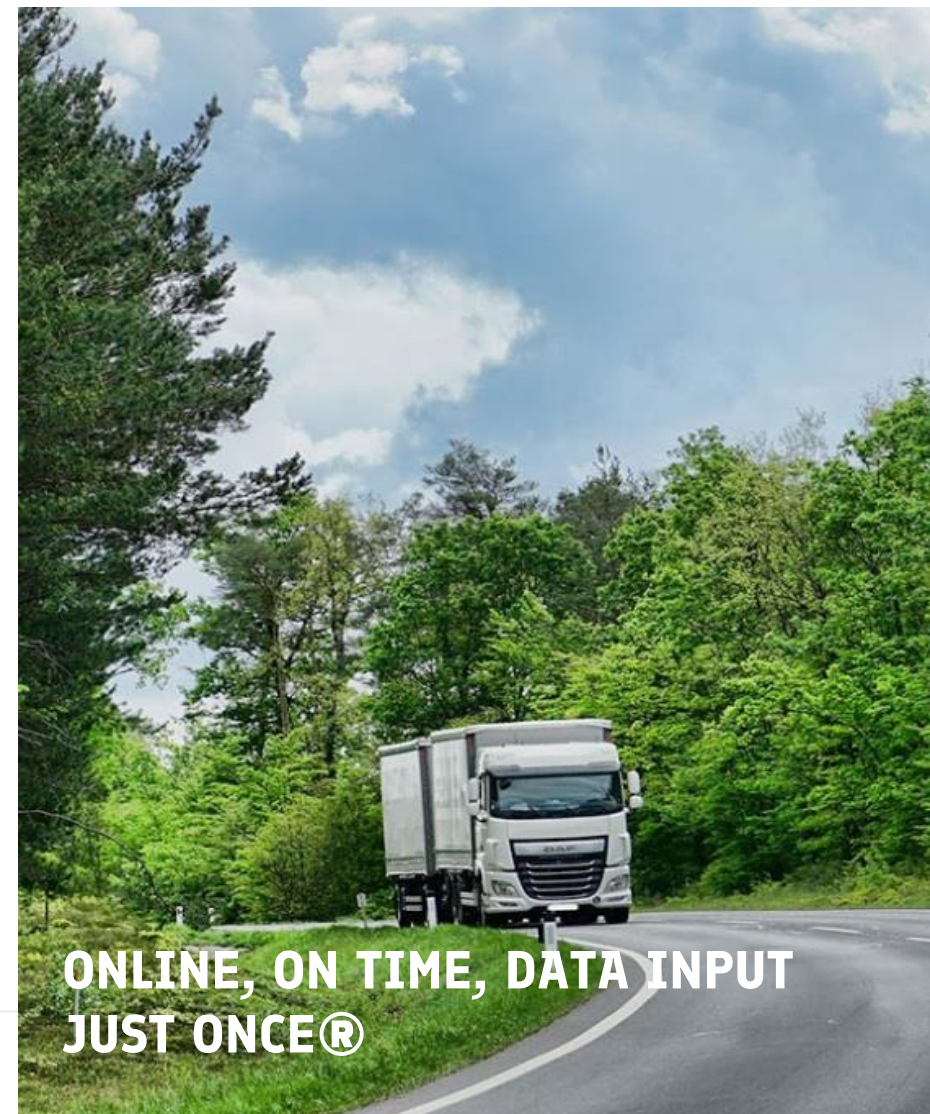
- Pinja Once® system manages the supply chains and material flows for energy and circular economy companies in real-time.
- Once allows you to manage your entire material flow and supply chain in one system, streamlining and speeding up your entire supply chain management and reporting, saving your money, time and effort.

BENEFITS FOR THE CUSTOMER

- Cost-efficient material flow management to the entire supply chain ecosystem
- Save resources and manage your entire material flow and supply chain in one system, in real-time
- Up-to-date information and accurate asset management
- Streamline reporting and ensure traceability and sustainability of the raw materials
- Improve the efficiency and quality in supply chain, reduce hidden costs, manual work and risk of human error
- Share information and create transparency in the entire supply chain ecosystem

REFERENCES

- Over 30 years of experience, >300 locations and >3,000 users in Scandinavia, Central Europe, Baltic Countries and Russia
- Customers: Energy companies, waste-to-energy, biogas production, biofuel production, pellet production, forest industry, recycling and waste management
- Our customers include leading energy and circular economy companies such as Fortum, UPM, Gasum, Vapo etc.
- Easy to scale to large and smaller production environments



**ONLINE, ON TIME, DATA INPUT
JUST ONCE®**



uros.com

TURNKEY IOT SOLUTIONS AND SMART CONNECTIVITY TECHNOLOGIES

- **UROS Connect** - Global Connectivity as a Service for IoT devices and deployments, simplifying your go to market strategy and helping you scale easier.
- **UROS Sense** - A wireless single-sensor solution that helps you detect quality deviations in real time, in any type of liquid, and is designed for even the harshest environments.
- **UROS Flow** - A digital service package that helps you improve operations and functionalities in the most critical points of municipal water management.

BENEFITS FOR THE CUSTOMER

- **a one-stop-shop for clients seeking comprehensive Smart Connectivity and IoT solutions.**
- One agreement with UROS provides global data connectivity without needing country specific SIM cards or separate agreements.
- Easy, affordable and low-maintenance solution for liquid quality monitoring
- Smart Water Cycle for increased efficiency and water quality for cities, municipalities and water utilities globally.

REFERENCES

- City of Jyväskylä
- City of Neijiang

BUSINESS
FINLAND



RELIABLE TECHNOLOGY PARTNER in changing energy markets

- We know how to combine energy solutions based on biomass, waste, industrial side streams and fossil fuels.
- Together we can develop innovative solutions based on our decades of experience and wide offering covering process technologies, automation and services.

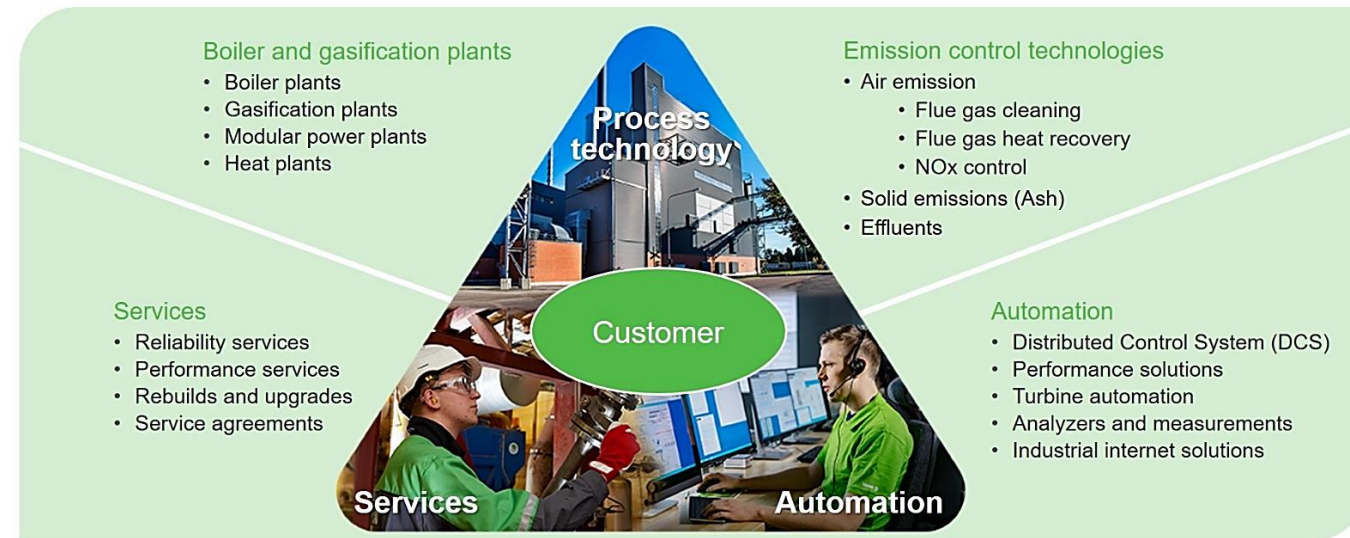
OFFERING


- Biomass to energy plants
- Waste to energy (RDF, SRF) plants
- Multifuel to energy plants
 - Co-firing biomass, waste (RDF, SRF), side streams and fossil fuels
- Emission control technologies
- Automation
- Services

REFERENCES

- Over 200 bubbling fluidized bed boilers (BFB) since 1979
- Over 100 circulating fluidized bed boilers (CFB) since 1980
- Over 30 modularized biomass power plants since 1999
- Hundreds of emission control systems
- Over 1200 power plant DCS systems

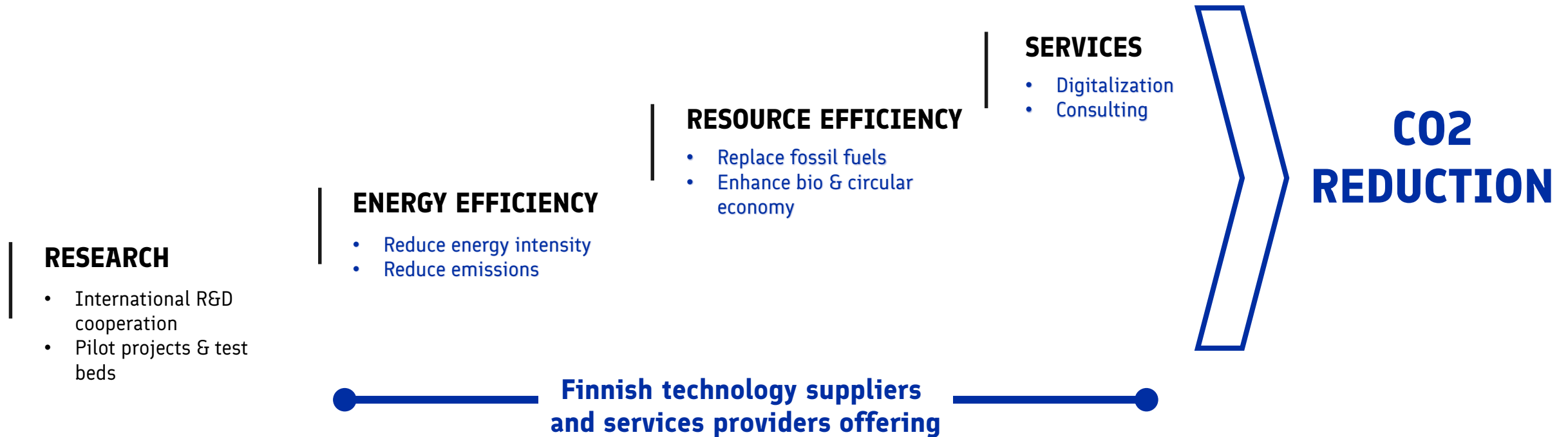
Resource efficient, flexible and clean energy solutions for power generation and industrial customers globally



A photograph of an industrial facility, possibly a power plant or refinery, featuring large green buildings with white piping and two prominent white domes in the background. The scene is framed by a lush green field in the foreground and a large tree on the left. The text 'INDUSTRIAL ENERGY EFFICIENCY' is overlaid in large white letters.

INDUSTRIAL ENERGY EFFICIENCY

FINLAND OFFERS SOLUTIONS TOWARDS CO2 REDUCTION



KPA UNICON

kpaunicon.com



OFFERING

Turnkey clean-energy solutions for a variety of fuels:

- Bio & Waste
- Heat Recovery
- Liquid & Gaseous

Cleantech plant upgrades

Digital insight & control – Digital service platform PlantSys

BENEFITS FOR THE CUSTOMER

- Turnkey solutions with an option for long term O&M services
- Modular, price competitive technology with high efficiency and availability
- Robust and proven technology
- Capability to arrange financing for the projects through our partners

REFERENCES

- 315 Biomass boiler plants
- 38 Biomass power plants
- 1650 Oil and gas boiler plants
- 87 PlantSys deliveries



WATER MIST FIRE PROTECTION SYSTEMS

HI-FOG® water mist fire protection system safely suppresses fires using significantly less water than conventional sprinkler systems, reducing water damage, operational downtime and building infrastructure requirements.

Typical applications to protect are turbines, cable infrastructure, power transformers, machinery spaces and electrical rooms.

BENEFITS FOR THE CUSTOMER

Safe for people, equipment and climate

Less requirements on building infrastructure (water feed, drainage, space, etc.). High performance fire suppression

REFERENCES

HI-FOG® water mist fire suppression technology safeguards hundreds of gas turbines, power plants and substations globally.

<https://www.marioff.com/references/>



SARLIN BALANCE SMART MANAGEMENT SYSTEM FOR COMPRESSED AIR

Sarlin Balance solution includes process auditing, report about current situation and improvement plan, technological solution environment, onsite installation and commissioning, AI Automated reports, 24/7 remote support and continuous improvement with our experts.

BENEFITS FOR THE CUSTOMER

- A thoroughly tested turnkey solution for compressed-air control in all industrial applications
- Enhance system security and capability
- Improve production efficiency
- Save up to one third of the power used by compressors
- Facilitate compressor maintenance and troubleshooting
- Help in planning further development

REFERENCES

- Over 60 years experience in compressed air industry
- Delivered a long list of solutions for global players in several continents
- Business reached standardizations for ISO 9001 and 14001 certifications



SAMMET DAMPERS

www.sammet.fi

SAMMET CLEAN FLOW DAMPER SYSTEMS FOR MARINE AND INDUSTRY

Sammet is the global technology leader in industrial dampers. Our Clean Flow damper systems for marine and industry are developed for the benefit of our partners and environment, ensuring maximum energy efficiency and reliability.

BENEFITS FOR THE CUSTOMER

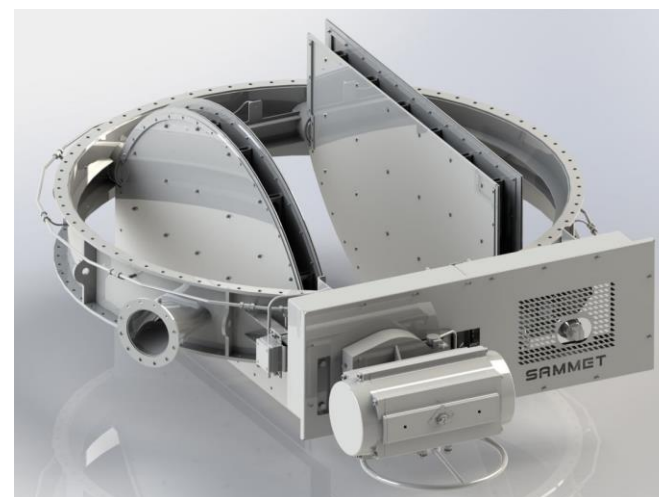
What sets our line of dampers apart from the others is the unique mix of technological innovation and quality. We are offering the most advanced Clean Flow solutions tailor-made to the specific requirements of our customers' plants and ships. Our very existence is built upon own inhouse research and development, ensuring that every detail and function is carefully tested and reviewed to provide the highest possible performance. We take great pride in our industry-leading product portfolio. Based on our regular customer satisfactions studies, our partners agree, as they keep rating our dampers cutting-edge.

REFERENCES

Based in EU and China, Sammet is the global market leader in Industrial Dampers. Our reach and market is worldwide and our volume rapidly expanding. Currently, Sammet industrial dampers are in use in more than 110 countries - on every continent and every ocean.

**BUSINESS
FINLAND**

SAMMET



MARINE

Dampers for scrubbers
and NOX / SOX
reduction systems

INDUSTRY

Dampers for power
and process industries
and emission control

SERVICES

Original Sammet spare
parts and services for
industrial dampers

SAVOSOLAR IS A LEADING PROVIDER OF INDUSTRIAL SCALE TURNKEY SOLAR THERMAL ENERGY PLANTS

Our focus areas are district heating and cooling as well as industrial process heating.

We are a global leader of large scale solar thermal solutions

KEY BENEFITS FOR CUSTOMER

Savosolar provides the lowest cost of energy through award winning patented collector technology with the highest energy density and lowest heat losses in the market. Our solar collectors have the longest lifetime and best visual appearance in the market.

REFERENCES

Our installed capacity exceeds **100 000 m²** with annual energy production estimate exceeding **40 000 MWh**.

Delivered +15 large scale solar plants in France, Germany, Denmark, Finland and Sweden with business development ongoing in China, Latin America and Australia.



A global leader of large scale solar thermal solutions

ENERGY OPTIMATIZION SYSTEMS

- Smart grid platform, for smarter energy decisions - reduce electricity usage and shift it to inexpensive off-peak hours.
- Coal-fired power plant, defining the optimal operation - reduction in coal consumption by optimizing the process values.

BENEFITS FOR THE CUSTOMER

- Direct economic benefit with less cost in electricity usages or fuel consumption.
- Better energy efficiency and improved operation reliability by eliminating system defects.
- Environmental benefit with less emissions.
- Huge values in carbon emission trading with the expectation China to be the largest carbon market.

REFERENCES

- Strong support from parent company *Synchron Tech* with over 25 years in delivering industrial IT systems and services.
- Best software and expertise in energy market.
- Provider of smart grid platform to the biggest solar power plant in Finland.
- Top level cyber security with secured data center from reliable business partners located in China.
- Achieved 5% improvement in fuel efficiency of Chinese coal-powered combustion power plant.

Thank you
谢谢

SMART ENERGY

FINLAND – CHINA

Together we are stronger!