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ECONET GROUP
CUSTOMER MAGAZINE
2 | 2019

EFFECTIVE WATER MANAGEMENT WILL SAVE THE WORLD

CROSS-BORDER WATER COLLABORATION

ARCTIC REGIONS CHANGING

WATER TREATMENT IN FOOD PROCESSING

FINLAND FOR CLEAN WATER

aq

ECONET GROUP'S CUSTOMER MAGAZINE AQ

Make jewellery from trays

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Water for Life

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FIN-00700 Helsinki, Finland
Phone no +358 9 836 6250
www.econetgroup.fi

Editor-in-chief
Lauri Leskinen

Producer
Magnolia Tuotanto
Eija Öhrnberg

Editing and layout
Magnolia Tuotanto

Graphic design
RINSSI GRAFdesign

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iStockPhoto

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HÄMEEN KIRJAPAINO OY

Econet Group Oy is a water and environmental engineering services management group. The Group includes the subsidiaries Econet Ltd., Dewaco Ltd. and Oy Slamex Ab.

Econet's mission is to design and provide worldwide solutions for clean water and the environment. Laitila-based Dewaco is specialised in sludge thickening, sludge dewatering, and sludge removal systems. Slamex, located in Lahti, designs and manufactures equipment for water and wastewater treatment. Wiser, a part of Slamex, manufactures water purification equipment based on flotation technology. The Group's turnover is about €12 million.

Editorial

How can we save the world?

CLEAN WATER is essential for life. Without clean water, our Earth cannot sustain life as we know it. That's why it's important for us to understand it and how it affects everything we do.

OUR DAILY decisions as individuals and groups have an impact on whether our living conditions improve or worsen. We've been successful in many things. Global poverty has been halved. An increasing amount of people have access to clean water. Equality has improved in almost every sector of life. Yet, there's much still to be done, so that we could leave the Earth to our children in a better condition than our parents passed it on to us.

HOPEFULLY, COMPETITION methods that support sustainable development will soon be the only methods approved by the end customers. Hopefully, governments, cities, companies, and individuals will make decisions that benefit nature, so that all of our wellbeing will improve. There are hardly any climate change deniers left. July 2019 was the warmest month measured in human history.

I STILL don't understand people who think that humankind has only played a little part in climate change and that's why people's actions have no significance; global warming will happen anyway. I think this overlooks the key issue: what HARM does it do to humankind and our planet if we act sustainably, taking nature into consideration? What HARM does it do to the environment if a city treats its wastewater before draining it in the sea or a nearby river? What HARM does it do to our planet, if we as consumers demand to have cars with low emissions, or food grown locally?

HOW CAN we save the world? Just like we cannot eat an elephant all at once, we must do it bit by bit. If we as individuals, communities, governments and companies make decisions that consider sustainable development and reduce environmental load in a reasonable way. The world can be saved by small and big decisions. Decisions made by individual consumers guide businesses. In the future, clients will reward companies who are best at creating such a sustainable competitive advantage that does its share in saving the world.

ECONET GROUP is one of the leading water and wastewater treatment companies in the world. The equipment and plants we have supplied to more than 80 countries; individual machines and projects each do their part in making the world a better place every day. By choosing Econet Group as your water or wastewater treatment facility supplier or equipment supplier, you'll ensure that your competitiveness is sustainable, and that your production processes can continue with uninterrupted efficiency while preserving the environment.

EVERYONE HAS a right to clean water.

Lauri Leskinen
Managing Director, Econet Group

The world can be saved by small and big decisions.

Your privacy is important to us

The privacy policy on our website outlines our privacy practices. The security of your privacy is as important to us as the security of clean water. We always strive towards the highest possible standards in everything we do.

Sanni Joensuu is happy to answer any questions you might have about this topic: sanni.joensuu@econetgroup.fi, +358 44 745 2240.

Exporting water know-how

The new CEO of Finnish Water Forum, Topi Helle, knows the water industry well. Now, he is guiding Finnish know-how to the world, in collaboration with international operators.

Eija Öhrnberg **PHOTO** Finnish Water Forum

How did you become the CEO of Finnish Water Forum?
I noticed that FWF was looking for a new leader. I've worked with the process waters and equipment export in the forest industry for years. This job seemed interesting and I decided to apply for it.

How would you describe the current level of Finnish water know-how?
Finland has a wide range of expertise in almost all areas. In addition to companies, there is valuable expertise also in universities, vocational colleges and research facilities, which complements corporate know-how well.

How would you characterise the competitive opportunities of the Finnish companies of this field, within the EU and elsewhere in the world?
There's plenty of expertise, but the small size of the companies is a challenge. This is what FWF has been trying to alleviate, by creating consortia to solve challenges in the water industry, such as a dam safety project or a water safety project.

Which products and services are Finnish export assets?
Some top products for water purification, sludge treatment, monitoring and software, as well as comprehensive management and collaboration between different operators.

Which areas in the water industry expertise or services should be developed, and which should possibly receive less attention?
Digitisation offers new features for traditional products, and the chance to stand out among competitors. We should be actively involved in this. We shouldn't try to compete for massive projects, if our companies are too small for them.

What challenges do Finns face in international competition?
As I said before, our companies are too small for very extensive projects. Furthermore, many competing countries have more bilateral development aid targeted at the donor country's companies. In this aspect, Finland could improve. Often, bilateral development aid has been cost-efficient, as it has reduced the chances of corruption. Unfortunately, corruption is a major problem in many developing countries.

How does digitisation affect water industry export?
It opens up new opportunities, and we have a lot of know-how in this area in Finland, such as Valmet, Nokia, Uros, and other automation and telecom companies.

How would you describe the opportunities of the Finnish water know-how service export?
Finns have been involved in water industry planning and consultation work globally for a long time, and I believe it will continue in the future. If Finland's development aid is increased, it would be desirable if it could create opportunities also for engineering firms and other kinds of service export.

Does FWF have any ongoing projects or activities abroad?
FWF has consistently had projects around the world. Some are big, such as the Water Safety Project (WSP); some are small, such as arranging the export promotion trip. We currently have projects in Vietnam, South Africa, China and Peru. New projects are being prepared in Egypt, Kenya, Nepal and Uzbekistan.

Does FWF collaborate with Nordic or international organisations of this field?
Yes, we do, for example with Danish Water Forum, VWSA (Vietnam Water Supply and Sewerage Association), and CEWP (China Europe Water Platform). FWF will also be participating at Expo Aqua 2019 Peru, Vietwater 2019 Vietnam, Dubai Expo 2020 and the IWA Copenhagen 2020 fairs. Companies keen to attend any of these can participate with FWF.

Topi Helle camping on a canoeing trip at Heinävesi, "There are clean waterways in Finland for swimming and boating.

Did you know that...

The UN General Assembly proclaimed clean water as a human right in 2010?

MBBR – a common process solution in Sweden

MOVING BED BIOFILM Reactors (MBBR) have for a while been a common process solution in Sweden both within the municipal sector and the industrial sector. The MBBR process means that aeration basins are filled with small plastic carriers, which move around in the basin. The sizes of the carriers can vary from approximately 10 mm to 50 mm and vary a lot in shape depending on the type of work the carriers do. The Biomass grows on the protected surfaces of the carriers, and each cubic meter of carriers has several hundred square meters of protected surface.

The advantages of MBBR process solutions are, for example: the capacity of existing wastewater treatment plants can be increased easily without adding new basin volumes. The process solution also handles flow fluctuations well and is a good way and is very resilient to toxic shock. Furthermore, it produces lower amounts of sludge than a conventional active sludge process.

Swedish municipalities are currently very focused on concentrating their wastewater treatment plants to bigger entities, so that operating gets easier and treatment results are improved. They close old and small wastewater treatment plants and change them to pumping stations, which transfer the wastewater to one big wastewater treatment plant within the municipality. By changing the existing active sludge process to the MBBR process, municipalities can increase capacity cheaply and efficiently. Econet Vatten & Miljöteknik has been part of many of these projects recently.

The pulp and paper industry is a huge economic sector in Sweden and very well known internationally. The MBBR process is very good for handling the wastewater from a pulp and paper mill and Econet has long experience in the field. Our knowledge and competence have resulted in MBBR projects within the pulp and paper sector on the other side of the world, i.e. New Zealand. Currently during the time of the fair in Amsterdam we have five 40-foot containers with carriers on its way to New Zealand, and more will be shipped before the new year.

Example of carriers used in the MBBR process.

Did you know that...

The Baltic Sea is bordered by nine coastal countries?

The Baltic Sea – our common concern

IMPROVING the condition of the Baltic Sea is making progress, slowly but surely. The Baltic Sea remains one of the most polluted seas in the world. It appears that up to 80 percent of the impact on the climate comes from seas. Research and decision-making take time, implementation does not happen instantaneously.

Over the past ten years, the phosphorus load usable in the Gulf of Finland has been reduced by 75 percent. However, diffuse pollution caused by agriculture is a problem, as is the old nutrient load on the seabed. It is difficult to control how the nutrients and contaminants accumulated on the seabed are released back into the sea. The gypsum treatment of fields can effectively reduce diffuse pollution, but in bad years, the internal load can be more than double compared to the diffuse load.

The coordination of the conservation work of the Baltic Sea took a significant step forward when in 2010, the Baltic Sea Action Group Summit convened operators from the public, private and third sector.

Since then, several different operators have done valuable work to save the Baltic Sea. The Finnish government has reserved more than 20 million EUR for the gypsum treatment of fields in the unique Archipelago Sea area for the period 2019-2021.

The key operators protecting the Baltic Sea:

- The Baltic Marine Environment Protection Commission HELCOM, established in 1974
- The John Nurminen Foundation, established in 1992
- The Baltic Sea Action Group, established in 2008

Sources: HELCOM, the John Nurminen Foundation, BSAG

Sardine

Sardinops sagax

SARDINES move around in large schools, and the same name is also used for many other fish in the herring family elsewhere in the world. The word "sardine" refers to the island of Sardinia in Italy.

In many countries, oily sardines are a major source of food, and commercially fished to a great extent. Sardines are dried, salted, smoked and preserved in tins. Sardines are also used for producing sardine oil, which is used for making paints, lacquers and linoleum, and sardines are used for making fishmeal for animal food.

Did you know that...

Each household connected to the sewer network has a direct connection to the water system?

ECONET GROUP REFERENCES

2002	Landfill leachate treatment plant, process and plant design	Zagreb Croatia
2002	Sewage treatment plant, renovation works, turnkey contract	Jekabpils Latvia
2002	Industrial wastewater treatment plant, process design, plant and equipment design	Hylte Sweden
2002	Sewage treatment plant, delivery of equipment	Porvoo, Finland
2003	Wastewater treatment plant, extension works, process and plant design	El-Annania Egypt
2003	Sewage treatment plant, equipment engineering and delivery	Sakaka Saudi Arabia
2003	Sewage treatment plant, construction design	St. Petersburg Russia
2003	Wastewater treatment plant, renovation works, main contract	Tampere Finland
2003	Water treatment plant, renovation works, turnkey contract	Kuusankoski Finland
2003	Sewage treatment plant, extension and renovation works, turnkey contract	Haapavesi Finland
2004	District heating system, delivery of equipment and piping	Xian Yang China
2004	Wastewater treatment plant, delivery of equipment	Wusu China
2004	District heating system, delivery of equipment and piping	Qingdao China
2004	Sewage treatment plant, equipment engineering and delivery	Makkah Saudi Arabia
2004	Industrial wastewater treatment plant, design of piping	Kemi Finland
2004	Water supply system project, project and process consulting	Son Tay-Hoa Lac-Xuan Mai-Mieu, Vietnam
2004	Sewage treatment plant, extension works, delivery of equipment	Helsinki Finland
2005	Industrial wastewater treatment plant, process and plant design	Brazil
2005	Improvement of sewage treatment plant, project management, site supervision	El-Annania Egypt
2005	Industrial wastewater treatment plant, extension works, process and plant design, project management	Changshu China
2005	Raw water and demineralization plant, extension works, process and plant design, project management	Changshu China
2005	District heating system, delivery of equipment and piping	Yanji China
2005	District heating system, delivery of equipment and piping	Zhangye China
2005	Water treatment plant, turnkey contract	Ventspils, Latvia
2005	Industrial wastewater treatment plant, process and plant design, project management	Husum Sweden
2005	Sewage treatment plant, renovation works, turnkey contract	Sestroretsk Russia
2005	Biological waste treatment by anaerobic digestion, process consulting	Ho Chi Minh City, Vietnam
2005	Sewage treatment plant, main contract	Kiuruvesi Finland
2005	Sewage treatment plant, extension works, process machinery delivery and installation	Vihti Finland
2005	Sewage treatment plant, extension works, Turnkey contract	Riihimäki Finland
2005	Sewage treatment plant, renovation works, project management	Karjalohja Finland
2006	Raw water and demineralisation plant, design, supply and installation of equipment	Myllykoski Finland
2006	Demineralisation plant of refinery, improvement of capacity, main contract	Porvoo Finland
2006	Sewage treatment plant, renovation works, delivery of equipment	Mikkeli Finland
2006	Renovation of the raw water pumping station, main contract	Nurmijärvi Finland

Did you know that...

Only about one percent of the world's fresh water is available to people?

Conserve your water environment correctly!

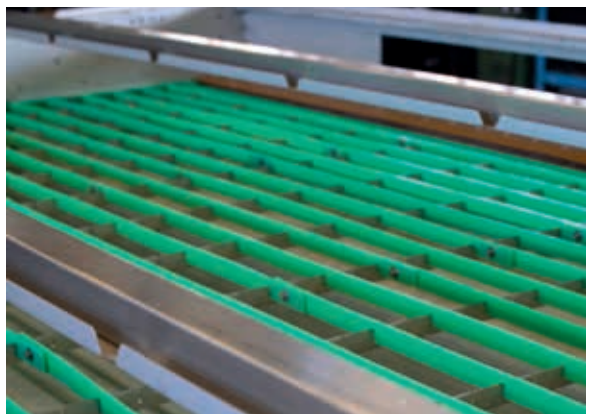
ALL OF OUR wastewater goes down the drain, to the water supply plant's sewer, to the treatment plant and then to the water system. We can influence the condition of waterways with our actions. The Finnish Water Utilities Association guides you how to act in accordance with the principles of sustainable development:

- Use environmentally friendly chemicals
- Use chemicals reasonably and dose detergents correctly.
- Take medicines and other hazardous waste to the designated collection points.
- Put bio-waste in a bio-waste bin, not down the drain.
- Put solidified grease in the bio-waste bin or with mixed waste when packaged, not down the drain.
- Direct the rainwater on the property to the ground, to ditches or to storm water drains. Rainwater directed to the sewer complicates the operation of the sewer network and the treatment facility.

Source: Finnish Water Utilities Association

Did you know that...

The phosphorus load of the Baltic Sea has been reduced by 75 percent in ten years?



Certified quality

BY CHOOSING Econet Group as your partner, you can be sure to have expert service and a sustainable solution. Econet Oy, Dewaco Oy and Oy Slamex Ab are certified according to the quality management system ISO 9001:2015. The certification has been conducted by Bureau Veritas. ISO 9001:2015 is an internationally renowned quality management standard.

Our goal is to get everything right the first time

Ensuring good quality throughout the entire project or job requires a methodical approach from the very beginning. As the project progresses, the quality of the work is monitored and documented.

– We truly want to provide our customers with the best and most knowledgeable service in a sustainable manner. This includes the entire lifespan of the project or equipment, from planning to spare parts. Our goal is to help our customers cope with ever-increasing competition by making sure that the facility or a piece of equipment we have manufactured works impeccably for a long time, says Lauri Leskinen, CEO of Econet Group.

Focusing on customer satisfaction and quality would not be possible without competent employees. That's why Econet Group is focused on the maintenance and development of the professional skills of its employees. Design and projects adhere to the standards and guidelines defined by the clients and the EU, as well as the general regulations of the field.

Quality policy is an integral part of business. To support objectives and to ensure development, Econet Group is committed to continuous improvement. A satisfied customer is at the heart of our operations.

Compliance with internationally accepted policies is important, because they promote sustainable development and global water security. The task of Econet Group is to provide contracting and equipment in the water sector that meets environmental and quality standards in a sustainable manner. Because everyone has a right to clean water.

Recycled fertilisers save waterways

RECYCLED fertiliser products made from manure or industrial sludge are an alternative to mineral fertilisers based on non-renewable energy and nutrient resources.

Agriculture, industry and societies produce a lot of nutrient- and carbon-rich liquid waste, which is currently not utilised efficiently. The processing of these biomasses enables to generate renewable energy, and products developed from these can be used for fertilisation and soil improvement. Using recycled fertilisers increases the carbon content of arable land, which is important for water conservation, security of supply and managing climate change, for example. Increasing the amount of carbon stored in arable land improves nutrient and water retention.

The Natural Resources Institute Finland has published a guide for anyone using recycled fertilisers. Farmers, agricultural consultants and other interested parties can use this guide for information about the possibilities of using the products in different physical states.

The guide "Recycled fertiliser: planning, practices and future prospects" has been published online in Finnish at http://luke.juvenesprint.fi, and the Swedish version will be published later this year.

Climate change affects fish stocks

FISHERIES are experiencing the highest growth compared to other areas of global food production. Consumption of fish and other seafood has increased at an annual rate of about 6 percent since 1960. In China, fisheries production has tripled since the beginning of the 21st century. Fish products are believed to help alleviate food shortages in the future.

Fishing industry production volumes are feared to drop by 30 percent over the next three decades in South-East Asia due to the effects of climate change. Rising temperatures, acidification of sea water and algae blooming as a result of the eutrophication of waterways impede fisheries. The use of antibiotics in fish farming also has an adverse effect on production volumes

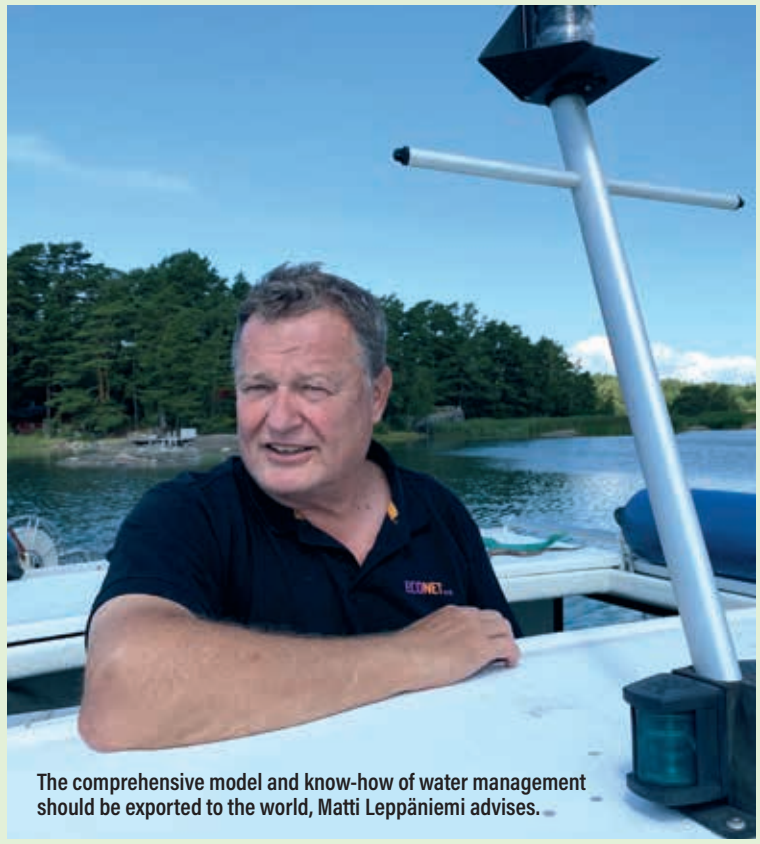
Source: FAIRR

ECONET GROUP REFERENCES

2006	Industrial wastewater treatment plant, extension works, process and plant design	Anjalankoski Finland
2006	Modernisation of water treatment of a thermal power plant, process design, equipment delivery	St. Petersburg Russia
2006	Wastewater treatment process and plant, design, consulting services	Phan Rang-Thap Cham, Vietnam
2006	Wastewater treatment process and plant design, consulting services	Dien Bien Phu Vietnam
2007	District heating system, delivery of equipment and piping	Yanchuan China
2007	District heating system, delivery of equipment and piping	Tianshui China
2007	Sewage treatment plant, turnkey contract	Jurmala, Latvia
2007	Sewage treatment plant, turnkey contract	Jelgava, Latvia
2007	Solid Waste Treatment Centre, renovation of irrigation system at tunnel composting plant, main contract	Espoo Finland
2007	Sewage treatment plant, renovation of the sludge dewatering system, delivery of equipment	Hämeenkyrö Finland
2007	Sewage treatment plant, renovation works, main contract	Hyvinkää Finland
2007	Sewage treatment plant, renovation works, turnkey contract	Pori Finland
2007	Water treatment plant, delivery and installations of the booster stations, main contract	Kangasala Finland
2007	Sewage treatment plant, renovation of the sludge dewatering system, delivery of equipment	Lappeenranta Finland
2007	Process water plant, extension works, process and plant design	Rauma Finland
2007	Industrial wastewater treatment plant, process design	Uruquay
2007	Wastewater treatment process design, consulting services	Pleiku Vietnam
2007	Consultancy and design of waste water treatment processes, process design	Bin Thuan Vietnam
2008	District heating system, delivery of equipment and piping	Wuwei China
2008	Industrial water treatment plant, condensate treatment, extension works	Lappeenranta Finland
2008	Sewage treatment plant, delivery of equipment	Turku, Finland
2008	Sewage treatment plant, extension works, delivery of equipment	Oulu Finland
2008	Wastewater odor control station and bubbling compressor system of the dock basins, main contract	Helsinki Finland
2008	Sewage treatment plant, renovation works, delivery of equipment	Laihia Finland
2008	Sewage treatment plant, renovation works, main contract	Jämsä Finland
2008	Biogas plant, turnkey contract	Ilmajoki, Finland
2008	Biogas plant, design of water and gas pipeline	Turku, Finland
2009	Upgrading water supply and wastewater facilities, equipment and machinery design	Bacau Romania
2009	Drinking water treatment plant, extension and renovation works, turnkey contract	Drobeta Turnu-Severin, Romania
2009	Wastewater Pumping Stations, delivery of equipment	Kotka Finland
2009	Groundwater project, raw water pretreatment, delivery of equipment	Huittinen Finland
2009	Sewage treatment plant, sludge receiving station, main contract	Kuhmoinen Finland
2009	Solid Waste Treatment Centre, Control centres for recycled water system, main contract	Espoo Finland
2009	Sewage treatment plant, delivery of equipment	Turku, Finland
2009	Solid Waste Treatment Centre, process equipment for recycled water station, delivery of equipment	Espoo Finland
2009	Sewage treatment plant, renovation works, turnkey contract	Pernaja Finland
2009	Sewage treatment plant, renovation of sludge dewatering system, main contract	Lempäälä Finland
2009	Process water treatment and cooling plant, project management	Hanko Finland
2009	Water treatment plant, extension and renovation works, turnkey contract	Kemiö Finland
2009	Sewage treatment plant, extension and renovation works, main contract	Hanko Finland
2009	Modernisation of power plant water treatment plant, turnkey contract	Kirishi Russia
2009	Wastewater treatment of food industry, process design	Gorelovo Russia
2010	Sewage treatment plant, equipment delivery, supervision of installation	Zhuzhou China
2010	Sewage treatment plant, extension and renovation works, main contract	Ylöjärvi Finland
2010	Solid waste treatment centre, filtration water pumping station at composting plant, renovation works, main contract	Espoo Finland
2010	Construction of salt brine tank, subcontract supply of machinery and electrification	Espoo Finland
2010	Sewage treatment plant, turnkey contract	Porvoo, Finland
2010	Sewage treatment plant, change works applied turnkey contract	Nummela Finland
2010	Tail-water storage and booster station, supply and installation of water treatment equipment, main contract	Nummi-Pusula Finland
2010	Water treatment plant, renovation works, delivery of limestone filtration and UV disinfection	Imatra Finland
2010	Sewage treatment plant, renovation works, delivery of equipment	Pori Finland
2010	Sewage treatment plant, renovation works, main contract	Loviisa Finland
2010	Water and condensate treatment plant for Thermal Power Station, delivery of equipment, supervision of installation	St. Petersburg Russia
2011	Sewage treatment plant, equipment delivery, supervision of installation	Huainan China
2011	Water treatment plant, equipment delivery	Hong Kong, China
2011	Sewage treatment plant, renovation works, main contract	Lohja Finland
2011	Wastewater pumping station, renovation works, main contract	Porvoo Finland
2011	Waste Treatment Center, ORC-gas power plant, thermo-oil piping & pumping station, main contract	Espoo Finland
2011	Sewage treatment plant, equipment delivery	Kaliningrad Russia
2012	Mine pumping stations, equipment, piping and structural design	Pajala Sweden
2012	Sewage treatment plant, renovation works, main contract	Heinola Finland
2012	Sewage treatment plant, renovation works, supply of flotation process	Orivesi Finland
2012	Biogas Plant, reject water treatment, main contract	Ilmajoki Finland
2012	Water treatment plant, main contract	Seinäjoki Finland
2012	Sewage treatment plant,renovation works, turnkey contract	Karkkila Finland
2012	Sewage treatment plant, extension works, main contract	Lempäälä Finland
2012	Sewage treatment plant, extension works, delivery of equipment	Kouvola Finland

Continued on page 17.

Functional water management is the sum of many factors


The comprehensive model and know-how of water management should be exported to the world, Matti Leppäniemi advises.

The founder, principal owner and Chairman of the Board of Econet, Matti Leppäniemi, has travelled around the world on water business for nearly four decades. He has been involved in building and running water management projects in developing as well as industrialised countries.

TEXT & PHOTO Paul Öhrnberg

Leppäniemi has seen how unevenly fresh water is distributed around the world, and how attitudes towards water vary depending on how much of it happens to be available somewhere. According to him, this situation will not change any time soon. On the contrary, climate change threatens to exacerbate the situation.

– Here in Finland and in most other industrialised countries, people are used to the abundant supply and use of clean water. On the other hand, there is a lack of water in many developing countries. When you have to carry it back home from a well that's several kilometres away, every drop is precious. Working on different projects, I've had to learn how to wash myself with just a few litres, Leppäniemi chuckles.

According to Leppäniemi, the uneven distribution of water has resulted in water management focused on wastewater treatment in industrialised countries. In turn, developing countries are most interested in potable water.

– It's important to remember that wherever there's a severe shortage of water, it can easily become a political pawn, boosting selfish aspirations. We should be able to identify these, for example with regard to development aid projects related to water management. At the same time, we should give more consideration to how to make the most of tight resources, Leppäniemi urges.

– Finland's development cooperation traditionally focuses on the poorest sections of the population, women's rights and basic issues. That's all well and good, but I think it's a problem that resources are often concentrated to rural areas, although the truly big problems are found in the slums of big cities, Leppäniemi ponders.

> "Development cooperation in the water sector should be directed at the slums of large cities."

– Development aid is used for digging simple shallow wells, although we could offer a very high level of knowledge and expertise regarding the water management of built-up areas. If the goal is to do as much good as possible with the same money, you have to go to the city slums.

Matti Leppäniemi thinks that water management know-how is great in Finland, but he's slightly concerned that new innovations emerge in this field only rarely.

– Maybe it's because we have enough water to waste. If water were scarce, we'd be forced to think of new things. Consider Israel, for example, which has developed into a renowned and recognized expert in water management, although it has very little water resources.

According to Leppäniemi, Finland should be able to profile itself like Israel, and promote its international reputation as an expert in the water sector. He says that pristine Finnish nature and thousands of lakes are advertised around the world but he wonders if it evokes thoughts of Finland's level of expertise.

– When looking at a nature photo, does a tourist think that we just happen to have lovely nature here, or do they think that Finland has the kind of know-how and technology that has made it possible to preserve pristine nature?

– I think we should emphasize that we've managed to take care of things properly. That we have a well-functioning, well-managed infrastructure, technical know-how and legislation that have preserved pristine nature. The strengthening of such an image would promote the export of Finnish water know-how.

According to Leppäniemi, a well-functioning water management system is the sum of many factors, with volunteering being an important part of it. Almost every lake in Finland has a water protection association that monitors and reports on the condition of the water. Various societies and associations do significant work around the waters.

– This is the kind of comprehensive water management and know-how we should be exporting to the world, instead of low-tech ring wells.

Towards a better world

We work in the world improvement business. This is how CEO Lauri Leskinen sums up Econet's line of work.

Paul Öhrnberg **PHOTO** Jouni Harala

It's undeniably a somewhat surprising answer, but that's how it is. Econet develops solutions and equipment for an increasing amount of people to be able to use clean water and enjoy a clean environment.

There's plenty to do in this field. Clean drinking water is not something that can be taken for granted everywhere in the world, and the challenges will only continue to grow as climate change progresses.

– Until now, making sure there is clean drinking water has been a priority, but recently there has also been a focus on protecting the environment and the water systems. Wastewater treatment requirements are getting stricter all over the world, also in developing countries. People have acknowledged that something must really be done now, Leskinen explains.

Water and the environment are global issues, and Econet's playing field is therefore the entire world.

– We have supplied equipment and solutions to more than 80 countries, and the majority of our sales are international.

The global market and internationalization bring their own challenges to a relatively small company like Econet, which is also located far away from the big market. On the other hand, Leskinen thinks that the company has significant strengths.

– We really know how to do this. We've been operating internationally already for over 30 years and are thoroughly familiar with this industry. Our products and services are top-notch, and we've also turned geography to our advantage. We're able to manufacture equipment that works in harsh and extreme conditions.

Econet is currently launching a project to further accelerate the company's growth and internationalization.

– We are strengthening our global distribution network through local partners. These partners are close to the clients, and have their feelers out for the market of their business area.

According to Lauri Leskinen, competition in the water sector is tough. Almost all countries have their own equipment manufacturers and project companies. There are also several major international players in the market.

– Our strength is our comprehensive range of products and services. We have everything under one roof: design, product development, manufacturing and related services. We're also renowned as a company whose machinery and solutions are durable and functional.

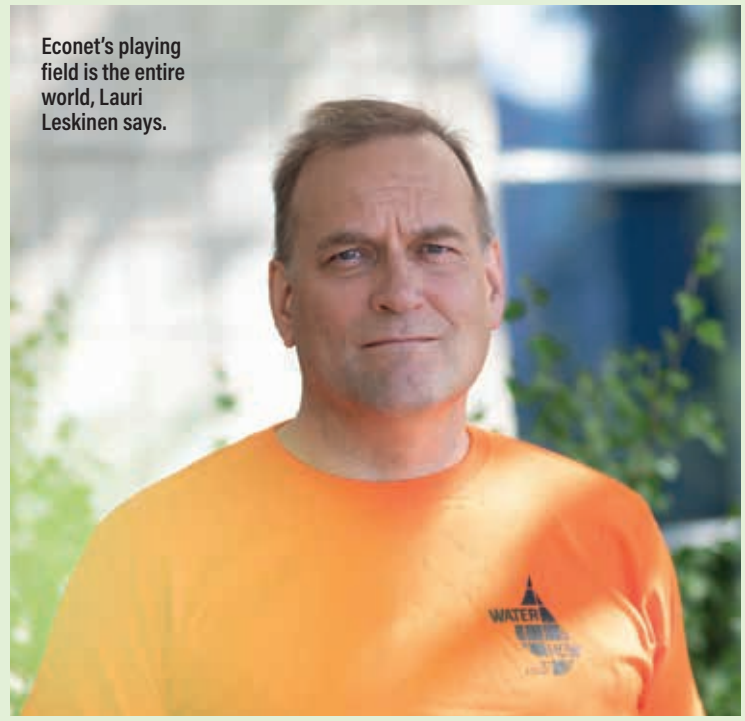
Of course, quality has a price, which is why Econet prefers to emphasise the total cost of ownership, which includes the expenses accumulated during the entire lifespan of the investment.

– It's easy to outline just the purchase price of a product or service, but it's not the whole picture. It would be great if buyers had particular procurement specifications that take into account the total cost of the investment over its lifespan, including maintenance, repairs and downtime. In this regard, we are very competitive, Leskinen explains.

He is certain that Econet's products and services will continue to be at the forefront of developments in the water sector. Currently, the company's designers are researching the use of smart IoT technology.

– With smart technology, we can optimise our equipment and processes to be even more efficient and reliable.

"Wastewater treatment requirements are getting stricter all over the world."



Econet's playing field is the entire world, Lauri Leskinen says.

Sludge has turned into liquid gold

Municipal wastewater treatment, industrial, and agricultural processes often create sludge: mixtures of liquid and different solids.

Paul Öhrnberg **PHOTOS** Jouni Harala

Riku Granberg and Jari Virtanen

Previously, sludge was considered to be a nuisance and an extra cost, which people just wanted to get rid of, but the situation is changing now. Sludge is turning into liquid gold.

Dewaco, a subsidiary of Econet, specialises in sludge treatment. Situated in Laitila, Western Finland, this workshop manufactures equipment for wastewater clarification, sludge thickening and dewatering.

– This field of industry has not become suddenly popular in the media, but in reality, working with sludge is surprisingly varied and challenging, laughs **Jari Virtanen**, Plant Manager.

– The current development where materials are recycled and utilised increasingly more precisely keeps creating new applications for sludge, says **Riku Granberg**, Sales Manager for the European market.

Sludge and the solids it contains can be valuable.

In the past years, the main motives for sludge treatment were environmental protection and official requirements for the quality of wastewater discharged into water bodies. Solids separated from the sludge were often taken to landfills.

Now, the circular economic way of thought has also emerged. It has been found that there may be value in sludge and the dry matter it contains. It can provide raw materials, energy, and nutrients.

According to Virtanen and Granberg, research on the further processing and utilization of sludge is currently a hot topic around the world.

There is also a lot of research carried out vigorously regarding environmental protection, for example, for seeking new solutions for removing microplastics, pharmaceutical residues, or heavy metals from wastewater and sludge.

– We're currently going through a kind of a transition in this field, and the need for water and sludge treatment is only going to grow, so we have plenty of work to do. Among other things, we'll be investing extensively in smart solutions and the Internet of Things. The future is looking good and interesting, Virtanen says.

Dewaco, established in 1986, is expected to be very busy over the next few years. Equipment manufactured by Dewaco has been installed at over 1,600 sites in over 80 countries.

– More than 90 percent of our production is exported from Finland, says Jari Virtanen.

Product range includes chain scraper systems for removing sludge and scum, belt filter equipment for thickening and dewatering sludge, polymer preparation units as well as flocculators for mixing sludge and polymer.

The company's latest product is the belt filter press DEWA VDP Combo, comprising modular units for thickening and dewatering sludge.

– The design of the Combo model was focused on efficiency and user-friendliness. In addition, it is designed to be delivered in a standard container, while other similar equipment is generally transported in wooden crates as bulk cargo. Our solution makes transport considerably easier and cheaper, Jari Virtanen explains.

Cost-efficiency is aimed at the optimization of transport and other ancillary activities, because the company would never compromise on the quality of its products. Only the best materials and components will do.

– We have our own testing laboratory for ensuring quality, strength, and durability. It is important, because this equipment generally has to operate in very harsh conditions.

Econet's uncompromising approach towards quality means that the acquisition cost of equipment is often higher than that of competitors', but low life-cycle costs balance the situation.

– Customer feedback has been positive. We have a worldwide reputation for durable high-quality equipment, says Riku Granberg.

He says that he recently visited a client in Southern Europe who had bought a chain scraper system for a particularly challenging site 12 years ago. Back then, the client had wanted equipment that would last for at least ten years.

– It was nice to see that our equipment has been operating smoothly in a really challenging environment well over the client's time specifications. Now, there are ongoing negotiations about the next project with the same satisfied customer.

Quality products from specialty steel

Slamex' production plant in Lahti is bustling. Shiny brand new roster components are being loaded onto two trucks, which are due to leave Finland the next day for Russia.

Paul Öhrnberg **PHOTOS** Jouni Harala

Slamex is specialised in the design and manufacturing of water treatment equipment.

The components are headed towards Koryazhma in Arkhangelsk Oblast, where they will be assembled into two circular clarifiers, which will be a part of the wastewater treatment system at the pulp mill of the Russian-American joint venture Ilim Group.

Slamex' Production Director **Heikki Viitanen** and Sales Engineer **Ilkka Niskanen** are pleased with the progress of the loading. The clarifiers, which will be installed in 40-metre tanks, are dispatched on time, as have been the many other products manufactured by Slamex.

In the Econet Group, Slamex is focused on manufacturing and designing water treatment equipment. The company's production plant in Lahti mainly uses bright steel grades as raw material.

– We have an extensive range of products. In addition to clarifiers, we manufacture, for example, screening equipment, sand dewatering equipment, tanks and vessels, different conveyors, presses, thickeners, and hatches, Viitanen enumerates.

A demanding client understands the importance of quality.

Besides water treatment equipment, Slamex also manufactures high-quality tanks and vessels for the demanding requirements of the food and pharmaceutical industries.

– Our welders are very good at using challenging super-alloys, such as Hastelloy.

The basic principles of wastewater treatment have remained largely unchanged for a long time: first, solids are removed as precisely as possible, and then the water is clarified. These mechanical processes are generally followed by biological and/or chemical cleaning measures. However, the equipment and the methods have developed tremendously over the years.

– We are constantly involved with product development, to make our equipment even more durable and efficient. We are particularly focused on life-cycle costs. Water treatment equipment has to withstand challenging conditions, often simply due to the weather, particularly if the facilities are located in regions with severe winters, Heikki Viitanen explains.

According to him, Econet designs and manufactures products on the principle that these should last over 30 years. Econet also offers design services, and the offered solutions are often tailored to the client. This means that the purchase price of the equipment might not be the cheapest. But considering the price-quality ratio of the products and the life-cycle costs, we are very competitive.

– Competition is tough, and there are many companies in this industry around the world. Fortunately, there is an increasing amount of demanding clients who understand the importance of quality and calculate investment costs over a long-term period.

Econet's clients are mainly various municipal wastewater treatment plants and industrial facilities that treat the wastewater generated by their own processes. The largest group of industrial clients is comprised of the paper and pulp industry.

Ever-tightening official requirements also accelerate the development of the water industry.

– In many countries, there's already a worrying scarcity of water, which is solved by water recycling, among other things. It's one of the main driving forces in this field, Ilkka Niskanen says.

According to him, there has been a completely new attitude towards wastewater treatment around the world in the past ten years.

– Now, we're thinking about how to remove microplastics and pharmaceutical residue from wastewater, so there are plenty of challenges and work still to do for a long time to come.

Heikki Viitanen and Ilkka Niskanen.

Faster treatment with a bubble machine


Jan Rönnberg

The newest member of the Slamex water treatment product range is Wiser, a flotation technology specialist.

Paul Öhrnberg **PHOTO** Jouni Harala

In flotation, air is dissolved into water, which makes the removal of solid matter from the water more efficient and quicker. Solid particles or oils adhere to the air bubbles and rise with them to the surface of the water, where they are removed.

Traditionally, flotation needs compressed air, which requires the use of an energy-consuming compressor. Instead, Wiser has developed a solution whereby air-saturated water or dispersion water is produced by a special nozzle, without compressed air. Compressed air is only needed for nozzle adjustment, making the process very energy-efficient.

According to Slamex Project Manager **Jan Rönnberg**, Wiser flotation equipment is mainly installed in smaller water treatment systems.

– We've had clients from around the world who have purchased these. We've also made some dispersion water equipment ("bubble machines") for large basins, he says.

– For example, we've got many clients in the food industry. There, the companies' own process wastewater is pre-treated, and flotation is used to remove impurities and nutrients so that the wastewater can be discharged into the public sewer network. Flotation is also used in the final water treatment processes, after the biological treatment stage, whereby solids are removed from the wastewater even more precisely.

Wiser flotation equipment adheres to the same quality and life-cycle criteria as Econet's other products: the equipment must be durable, reliable and as easy to maintain as possible. For example, water dispersion nozzles only have to be serviced once a year, and even then the treatment process does not have to be stopped.

In addition to flotation equipment, Wiser has gas purification equipment, which is mainly used in various industrial facilities. These are used to purify flue gases and to remove any solids mixed with the gases.

According to Rönnberg, the gas purification technology is quite different from Econet's other product ranges, but he also sees some similarities in it.

– For example, the role of gas purification technology may well grow with regard to sludge treatment. We have already offered gas purification technology for removing odour nuisance.

Specialised in water treatment in cold climates

Olga Malmi-Lewizki from Econet's Russian sales department knows the big eastern neighbour's market well.

Eija Öhrnberg **PHOTO** Econet

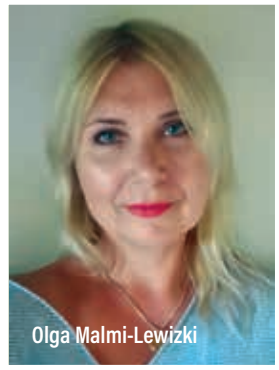
Econet equipment designed for arctic conditions is particularly well-suited for water treatment in Siberian regions, for example. Among others, Malmi-Lewizki is involved in sales work together with project manager Konstantin Vasilev.

What products and solutions does Econet offer for water treatment in cold climates? Various stainless steel grades and the high-quality products made from these have been specially designed to withstand high temperature variations.

– A good example of this kind of technology is the wading wheel solution, which has been used by the Ilim Group in Koryazhma, for example, Malmi-Lewizki says.

With regard to products and solutions aimed at arctic climates, Econet's main market is located in the Arkhangelsk and Koryazhma areas.

– We do marketing at trade fairs and various events, we monitor market developments as well as official requirements and legislation. Sales visits are also an important part of our work, and online sales shouldn't be overlooked either, Malmi-Lewizki lists.


Olga Malmi-Lewizki

Environmental investments on focus

The business is running very well in Econet Vatten & Miljöteknik AB in Malmö, Sweden. According to Managing Director Håkan Persson, there is currently a high interest of environmental investments in Sweden.

Håkan Persson **PHOTO** Econet VMT

We have very interesting projects both in the industrial and municipal sector. For example, we are building a new aeration basin for a pulp & paper factory, in which the basin size is more than 20 000 m3. In the municipal sector we have several projects, which are focusing on energy saving, i.e. new blowers, new aerations system, and more effective control system. We have also been part of the first Nereda installation in Sweden.

The main business in Sweden is to execute contracts in water and wastewater sectors. The future plan is to further expand and increase the business in Sweden, with increased number of staff and turnover.

– Our strength compared to our competitors is that we are inventive in finding good and cost-effective solutions for the customers, concludes Håkan Persson.


Håkan Persson

A wading wheel solution.

Water treatment in extreme conditions

In Arctic climate zones, temperature fluctuations can be great: the +30 °C in summer can change to -50 °C in winter. In this case, water treatment equipment must also be built to withstand demanding operating conditions.

Eija Öhrnberg **PHOTO** Econet

Slamex suction clarifiers and Dewa chain scrapers have been installed in the far north, and even in the Siberian taiga. The cold season has been taken into consideration not only in the design of the equipment but also in the planning of the deliveries and the timing of the installation work.

The wading wheel solution used with circular clarifiers is a great example of equipment built specifically for northern conditions. The accumulation of snow on the clarifier's wheel track is a problem in arctic climates. In the Slamex unit, the wading wheel solution replaces both a snow brush and heating cables. Water is removed from the clarifier basin over the wheel track, keeping it constantly thawed and free from snow. The trolley wheel moves or "wades" in the water. With regard to construction and operation costs, this is a much more affordable alternative to snow brushes and heating the wheel track.

Quynh Le Nhu

Long-term operations in Vietnam

Quynh Le Nhu has been responsible of the marketing and operations in Vietnam for several years. She sees the future of water business and environmental development in Vietnam growing.

Quynh Le Nhu **PHOTO** Econet

Econet's focus in Vietnam is on construction projects, including water supply, wastewater treatment, and solid waste treatment.

Now Econet Group is approaching the cities of Vietnam for the potential projects and introducing Finnish concessional credit, which is called Public Investment Facilities (PIF).

– In May 2019, Econet gave a presentation about Econet Group and PIF to the leaders of Vietnamese cities during the Annual Management Meeting of Association of Cities of Vietnam (ACVN). The participants of this meeting are the high senior leaders of the cities, including chairmen, vice chairmen, and project directors of the cities, Le Nhu clarifies.

To date, Econet has completed three engineering-procurement-construction contracts of water supply and wastewater treatment projects, including Project for Water Supply in Vinh city Neighborhood, Bac Kan Water Supply and Sanitation Project, and Dien Bien Phu City Drainage Waste Water Collection and Treatment Project. Two of those, Vinh City and Bac Kan, are already in operation. Good reference for Consulting Contract is Water and Sanitation Programme for Small Towns, Sustainability Phase (WSPST III), for eight small towns and provinces of Vietnam.

The Supply Contracts have been operated in The Second Ho Chi Minh city Water Environment Improvement Project with DEWA chain scraper system, as well as Hue city Water Environment Improvement Project, where DEWA belt filter press and chain scraper systems were installed. They both were funded by JICA.

– The Finnish Concessional Credit is still needed for supporting the Vietnamese projects. I am now working with the cities of Vietnam for the preparation of project proposal, which is then submitted to the Ministry for Foreign Affairs of Finland. The cooperation with ACVN will be also a good chance for Econet in order to approach the projects of the cities in the future.

Finland has good reputation in Vietnam since 1980 to support the Government of Vietnam for the Water Supply Program. The value and quality of products from Europe are appreciated in Vietnam. Econet has long-term experience in Vietnam with a lot of references. We are now also developing further cooperation with the Vietnamese cities for potential water and environmental projects.

Cross-border water collaboration

Finland is known throughout the world as a country where waters are managed well. There is a high level of expertise, and there are many areas of cooperation with other countries. There is plenty of water know-how to export.

Eija Öhrnberg **PHOTO** Ministry of Agriculture and Forestry

Seppo Rekolainen, Director of International Water Cooperation at the Ministry of Agriculture and Forestry of Finland, knows water through and through. His previous long career at the Finnish Environment Institute gives him a perspective on the topic both in Finland and internationally.

– At the ministry, we're involved in bilateral cooperation in water resources management between Finland and several other countries, as well as multilateral cooperation within UN organizations and other international organizations. A large part of international cooperation concerns transboundary waters, Rekolainen says.

Rekolainen sees the effects of climate change on water management on two different levels: the impact in Finland and globally. When talking about climate change in Finland and in many developed countries, mitigation and adaptation have to be taken into account.

– Mitigation can affect carbon dioxide emissions both regarding potable water and wastewater. Energy recovery is another important issue in wastewater management. In Helsinki, for example, it is being implemented successfully, and the recovery could be developed further.

– Improving energy efficiency again applies to both potable water and wastewater management; water does not move without energy, pumping costs are often high. Focusing on energy efficiency could help with mitigation, Rekolainen says.

According to Rekolainen, adaptation applies to the entire water supply chain. Climate change will bring us more floods, more droughts, and a decreased quality of raw water sources in surface water and groundwater. If water treatment facilities are not properly prepared for it, problems may arise.

– Preparation and risk management apply throughout the chain. Water companies should be prepared for all of this.

On a global scale, the situation is different. There are countless people in the world without clean water and sanitation. One of the sustainable development goals on the UN 2030 Agenda is to sort these things out.

– It's quite an undertaking, and climate change and population growth aren't exactly making the situation easier. The effects of climate change are not immediately apparent, but they must be taken into consideration, Rekolainen points out

Development cooperation is one way of slowing down the pace of climate change, and cross-sectoral links must be taken into account. Food does not grow without water, and energy must always be taken into consideration in the particular circumstances in every corner of the world. The same solutions cannot be transferred as is, the local conditions must always be considered, not just in terms of natural resources, but from the perspective of the whole socio-economic system.

– Europe is not detached from these problems. Drought threatens countries in southern Europe, and water shortages are predicted to worsen. Growing vegetables requires a lot of water, and for example, importing vegetables from Spain to Finland is not sustainable.

– In Central Europe, cooling water is a large issue. As the climate warms, river waters will also warm, which in turn will deplete fish stocks, Rekolainen says.

Seppo Rekolainen

When it comes to water know-how, Finland has a lot to offer to the world. Finland's small size is a challenge.

– We have good technical expertise, but our companies are often too small. For our part in the Ministry, we have promoted the access of Finnish companies to the global market.

– Besides technical know-how we have high-quality comprehensive know-how in water management. In addition to the ministry, it can be found in research institutions, companies and large water facilities that can cover the entire chain of expertise, Rekolainen sums up.

Water protection requires international cooperation on many levels, and it's also important to a wider extent than just between neighbours. Almost all of the major rivers in the world cross the territory of more than one country, which requires transboundary water management co-

A large part of international cooperation concerns transboundary waters.

The effects of climate change must be taken into account in water management planning.

operation. According to Rekolainen, it is important for neighbouring countries to be able to agree on water-related issues.

– Such agreements and operative action are not universal. Transboundary water issues can be a delicate matter, so countries are cautious to cooperate.

Finland has a long and good history in transboundary water management. This goes back to the 1950s, and the government has always been able to fund the operations. In this aspect, we are larger than we look: our own water management is working well.

– Finland and China have a bilateral cooperation agreement on water issues. Efforts have been made to promote business collaboration in this field as well. A lot is happening in China regarding water management, things are improving.

There are a variety of collaboration projects happening within the European Union, for example through the EU Water Framework Directive.

– We're working together with many EU member countries, for example regarding transboundary water management issues. We also collaborate with EU institutions. World Water Week held in Stockholm in August is a good example. We had our own session there, organised jointly with EU institutions, Rekolainen says.

Large meetings and conferences are important, but small-scale meetings are also essential. Finnish companies should seek cooperation models and mergers, to form larger companies or syndicates that are more competitive.

As a small country, Finland not only has a lot to offer, but also a lot to learn from others regarding water issues.

– We can also learn from less developed countries. Big technologies often come from the most developed countries, but China, for example, has interesting water management solutions whose success is being monitored. For example, the water market has been opened in China. Just like we have emissions trading, China has water trading, a water stock exchange where you can buy rights. They have also implemented the hierarchical River Chief system, where different officials are responsible for specific catchment areas.

In Finland, things are in a relatively good condition. There's plenty of water, its quality has improved, and the point load is also under control. But new challenges keep popping up, such as microplastics and pharmaceutical residues. *aq*

COLUMN

Why should Finland make an effort for clean water?

FOR SOME time now, I've had the opportunity to get acquainted with the water industry and Finnish water know-how in one of the leading companies of this field. I've learned a lot about the strengths and development opportunities in this industry. The amount of people devoted to this incredibly important work is small and dwindling, and its potential is not widely known in society. Perhaps the people in Finland have been taking the privilege of pure water for granted, paying attention to it mainly when it's at risk.

LET'S START with customer needs, an individual person. In a developing country, an entire family can get by with 10 litres of water a day. In Finland, the same amount of water per every Finn is wasted every day just from leaks in water distribution systems. It's also quite a privilege that wastewater is taken out of sight just with a press of a button, to be processed into clean water, energy and fertilizer. In many countries, it makes people sick and ruins waterways.

THE UN General Assembly declared that clean water is a human right, albeit only in 2010, and water is not directly mentioned in the Declaration of Human Rights, unlike work and social security, or even paid leave. There is a growing global need for clean water and sanitation, which is why it's one of the sustainable development goals (SDG6) established by the UN. Another goal, no. 14, relates to clean seas and waterways.

WATER IS an essential element also for achieving other sustainable development goals. Without water, it is not possible to achieve a healthy life, sustainable agriculture and food production, sustainable urbanization, industry and infrastructure, or economic growth and employment. Water is the key factor in fighting against and adapting to climate change, and achieving peace and security. To the greatest extent, clean water is also a matter of equality.

FINLAND HAS a good international reputation for solving problems, for example, as the leading country of know-how and clean water, and we should continue to strengthen it. This hasn't always been the case: we also have a good story to support development, environmental improvement and cleaning solutions. To be sure, we're still far from perfection, and together we should create even better solutions also in Finland.

THERE'S A GOOD foundation for it. Finland has strong expertise in the water sector, developed in collaboration between the private and public sector, spanning water treatment plants, engineers and builders, as well as technology and service providers. The water treatment industry is again full of a good spirit of co-operation and a desire for reform, as well as opportunities for concentrated collaboration for improving infrastructure and know-how, implementing new innovations, as well as developing business models and partnerships. All of this only needs to be channelled into specific projects in Finland and abroad.

IN ADDITION to solving development challenges, big mega trends offer new opportunities. Finland's strength is in using digitisation, and there is plenty of digital potential in this field. Bioeconomy and circular economy open up opportunities for strengthening business and developing new business operations. There are many challenges with regard to removing microplastics and other negative issues. In other industries, service export has been the fastest-growing section, but the service business of the water industry is still in its infancy. Strong ownership is important for taking advantage of these opportunities, based on the fact that owners understand the many aspects that need updating in the water treatment industry as well as the prerequisites and opportunities for international growth.

FINLAND SHOULD make better use of its development and influence potential in this field. We have the opportunity and the duty to influence the availability of clean water and the cleanliness of waterways, there's a lot of work to be done in Finland and around the world. At the same time, Finland can solve problems caused by a lack of clean water and sanitation, bring know-how and added value to the promotion of bioeconomy and circular economy, strengthen Finland's image and improve the industry know-how, new export efforts, the economy and employment. In this way, Finland can contribute also in this field to solve global problems while using its own strengths and upcoming opportunities. We are also in a good position to build additional partnerships, for example with Nordic operators.

THERE IS a strong foundation for the measures of promoting water treatment development and the water business, for the implementation of the conclusions and recommendations of recent reports. I believe that the companies in this field are even more prepared for extensive collaboration with NGO-s, the research community and the public sector. Now we need a strong shared strategic vision and the will to develop co-operation with the goal of growth, renewal and international success of the field.

YOU'RE WELCOME to join the discussion. What's your contribution to clean water?

Simo Karetie

The Arctic – Ice or water?

The volume of Arctic sea ice has reduced by more than a half in less than two decades. Glaciers are turning into water. Sea water in the arctic is contaminated with microplastics. Simultaneously, the Arctic holds vast investment and business potential.

TEKSTI Tero Vauraste, CEO Mariadi ltd, Vice Chairman, Arctic Economic Council

Indigenous and local interests are a major part of the development. Global interests in the Arctic have jumped to a whole new level, whereas, the protectionist acts of the USA, China and Russia globally and in the Arctic have slowed down many projects. What is the future role of international trade collaboration in the Arctic? Could water-related energy production be an Arctic forerunner? Will we have clean water in the future in the Arctic and elsewhere?

Mapping of the Arctic Sea started during the 15th century, as did efforts to trace various Arctic sea routes. Finnish-born polar explorer Adolf Nordenskiold was the first to navigate the Northern Sea Route in 1878, successfully sailing from Norway through to the Pacific. Nordenskiold was made a baron, but the Arctic was not ready for travel, trade, and development. Livelihoods remained based upon traditional fishing and hunting. Water and ice have had a great significance in the Arctic as the source of life for centuries.

Industrialisation continued throughout the 1900's. Simultaneously, the human impact was already visible in the climate. The developments have become quickened during the past two decades. Climate change in the Arctic is very significant as temperatures in the area rise at double to triple the pace of the rest of the world. This is mostly due to human activity outside the Arctic. Furthermore, very recent scientific studies show that the Arctic seawater has been polluted by microplastic particles. This is a sad example of such developments – where remote activities emerge in a distant, pristine area.

The World Economic Forum have estimated that Arctic investment potential is around 1 trillion USD. Approximately 15-20 percent of this investment opportunity lies in the Barents Euroarctic Area. However, recent global geopolitical actions and the increase of protectionism are affecting the pace of investment developments.

The energy sector is still considered to hold the greatest potential, but it's not just about hydrocarbons. The Arctic holds vast potential in renewables, including wind, hydro, geothermal, and solar. In the European Arctic, around half of the estimated economic potential is in the energy sector, divided 50-50 into hydrocarbons and renewables.

Hydroenergy potential in the Arctic areas is big. This includes the use of river flows, tidal, and wave energy. Tides in some parts of the Arctic are more than 10 meters and energy production opportunities have been researched, for instance in the Shetland Islands. The solutions could significantly improve Arctic local energy production in remote areas outside of power networks. These technologies could be an "Arctic hydro energy showcase". Hydro power production has been an important method in the northern parts of Finland for decades.

There are very big differences in productivity and the significance of Arctic areas in different countries. On the one hand, the Russian Arctic provides more than 15 percent of the country's GDP and Lapland's productivity in Finland is on a nationally high level. On the other, some areas the Arctic are still very poorly developed, with either weak or practically non-existent infrastructure. Unemployment rates are higher and social problems more severe when compared to "Non-Arctic" areas of countries.

Several years ago, the Arctic Council Task Force recommended the establishment of the Arctic Economic Council and envisioned a "Pan-Arctic Free Trade Zone." Indeed, establishing strong market connections and ensuring market access within the region has become very important. As the international community works on outlining a model for Arctic development, this is timelier than ever; protectionism endangers sustainable development of the Arctic by inhibiting free exchange of the best-available technologies and services.

The European Union launched its Arctic Policy in the winter of 2016. There are three main areas in the policy: Climate Change and Safeguarding the Arctic Environment; Sustainable Development in and around the Arctic, and International Cooperation on Arctic Issues. A policy renewal is expected and a recent EU White Paper stresses the importance of sustainable development.

Trade – or more specifically, creating barriers for trade has become a tool for driving geopolitical interests. The trade wars have unfortunate implications for the Arctic as well. Fortunately, there are also positive developments. The CETA-agreement between the EU and Canada, and the EU-Japan Free Trade agreement are examples of those. They are excellent examples to be followed between other countries and markets, too. Developing hydroenergy in the Arctic is certainly a common opportunity throughout the area. Solutions for cleaning microplastics from the water are needed rapidly. These potential opportunities could be developed with international collaboration. *aq*

The European Union launched its Arctic Policy in the winter of 2016.

High-quality water purification solutions guarantee safe food production

The cultivation of vegetables and fruit uses an enormous amount of water, and a considerable portion of it is needed for washing fruit and vegetables.

Sanni Joensuu **PHOTO** VAM WaterTech

In agricultural production, safety is an integral quality requirement throughout the entire life cycle of a foodstuff. Already from washing fresh produce, there is a risk of cross-contamination, for example due to pathogens and allergens. Using hazardous chemicals to tackle the problem is not desirable. VAM WaterTech has combined DEWA's belt filter presses with its systems, and can now provide a safe solution that uses clean water to wash fresh produce sustainably.

Advantages of clean water used in the closed-cycle process for food processing

VAM WaterTech develops reliable water purification solutions for the sustainable packaging and processing of agricultural products. The company collaborates with the world's leading systems integrators, suppliers such as DEWA, and research institutions, to meet the growing demand for healthy products.

The closed-cycle process can save up to 95 percent of agrofood process water use. At best, the closed-cycle process saves millions of litres of water every year. Furthermore, disruption times and equipment wear are reduced thanks to clean water.

- 95 percent of the washing water is saved
- Continuous washing with clean water
- 100 percent clean potatoes, root vegetables and hard fruit
- Clean washing lines and production environment reduce costs

Clean washing water is essential for the safety and quality of processing fresh produce. In the washing water treatment process, screens remove the largest particles, after which the cyclone filters the sand out of the water. The water and the sludge are then separated, and DEWA's belt filter press concentrates the sludge into a compact, easily disposable mass. After this, the purified water can be used for washing vegetables and fruit. Alternatively, an ozone system, a UV light system or membrane filtration can be added to the process to make the water even more purified.

VAM WaterTech relies on DEWA's belt filter presses for their water treatment solutions. Together, the companies have supplied systems around the world to companies of all sizes, and VAM WaterTech relies on DEWA belt filter presses for sludge concentration. DEWA belt filter presses have been operating for more than 10 years on several sites, and the presses are still fully functional.

– We have chosen Econet Group as our partner for supplying belt filter presses, as their belt filter presses are durable and use significantly less power than a sludge dewatering centrifuge, for example. Making our processes efficient and sustainable is one of our core values, says **Eduard van Antwerpen**, Managing Director of VAM WaterTech. *aq*

Efficient and sustainable processes are a part of the core values of VAM WaterTech.

ECONET GROUP REFERENCES

2012	Water intake plant and water treatment plant main contract	Tampere Finland
2012	Biogas plant, delivery of equipment and piping	Kokkola, Finland
2012	Sewage treatment plant, process design, process equipment delivery	Vaida Estonia
2013	Sewage treatment plant, renovation works, delivery of equipment	Siilinjärvi Finland
2013	Water treatment plant, renovation works main contract	Kauhava Finland
2013	Water treatment plant main contract	Kirkkonummi Finland
2013	Sewage treatment plant, renovation works, main contract	Mäntyharju Finland
2014	Sewage treatment plant, extension and renovation works, main contract	Eura Finland
2014	Water treatment plant, renovation works, delivery of equipment	Hämeenlinna Finland
2014	Sewage treatment plant, extension works, delivery of equipment and piping	Helsinki Finland
2014	Industrial wastewater treatment plant, design and delivery of equipment	Arkhangelsk district Russia
2014	Water treatment plant, turnkey contract	Vinh City Vietnam
2015	Industrial wastewater treatment plant, renovation works, equipment delivery	Changshu China
2015	Process water treatment of production plant, renovation works, delivery of equipment & piping	Hanko Finland
2015	Water intake plant, extension works, main contract	Vihti Finland
2015	Water intake plant, renovation works, main contract	Myrskylä Finland
2015	Supply of process equipment of sewage collector tunnel, quipment delivery, supervision of installation	St. Petersburg Russia
2015	Industrial wastewater treatment plant, design and delivery of equipment	Arkhangelsk district, Russia
2015	Industrial wastewater treatment plant, design and delivery of equipment	Irkutsk district Russia
2015	Condensate treatment system for Thermal Power Station, delivery of equipment, supervision of installation	St. Petersburg Russia
2016	Water treatment plant, renovation works, main contract	Riihimäki Finland
2016	Artificial ground water plant, renovation works, delivery of equipment	Tuusula Finland
2016	Power Plant, condensate treatment, process design	Loviisa Finland
2016	Sewage treatment plant, extension and renovation works, turnkey contract	Forssa Finland
2017	Industrial water treatment plant, expansion of demineralization plant, main contract	Sunila Finland
2017	Industrial wastewater treatment plant, design and delivery of equipment	Arkhangelsk district Russia
2017	Industrial wastewater treatment plant, design and delivery of equipment	Karelia Russia
2017	Water and Sanitation Programme for Small Towns, phase III, Consulting services	Vietnam
2018	Water treatment plant, renovation works, main contract	Hämeenlinna Finland
2018	Artificial ground water system, potable water pumping, main contract	Turku Finland
2018	Sewage treatment plant, delivery of flotation	Kalajoki, Finland
2018	Sewage treatment plant, turnkey contract	Dien Bien Phu Vietnam
2018	Sewage treatment plant, turnkey contract	Backan, Vietnam
2019	Water treatment plant, turnkey contract	Tampere, Finland

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THE NEXT ISSUE WILL BE PUBLISHED IN DECEMBER 2019.

Savonian tenacity useful for sales

Environmental engineer Ilkka Niskanen is one of the latest additions to Econet's sales team. He thinks the future prospects of the group look promising.

Eija Öhrnberg **PHOTO** Jouni Harala

How did you end up working for Slamex?
Officially, I'm employed by Econet Oy, and I work in Malmi, Helsinki, at Econet's head office. I was approached by Econet: they wanted to offer me new work opportunities and I was keen to take on the challenge.

Tell us something about your previous career.
Before Econet, I worked for five years in the food industry as a specialist in water treatment and waste management, as a part of a real estate services company.

What interests you the most in the water sector?
As a tech-oriented person, a degree in environmental engineering was a great choice for me, and it laid the basis for my interest in water treatment. Clean water is vital to us, but it cannot be taken for granted in the modern world, so there are always some challenges and solutions to work with here.

What's your job description, what sort of work do you do?
My job title is "sales engineer". My job description includes working on projects in a variety of roles, calculating and preparing quotes.

What's the best thing about your job?
Satisfied customers, as well as the opportunity to learn a great deal about the water treatment industry.

What kind of challenges do you encounter in your work?
The biggest challenges are often related to timetable issues, when there are "several irons in the fire".

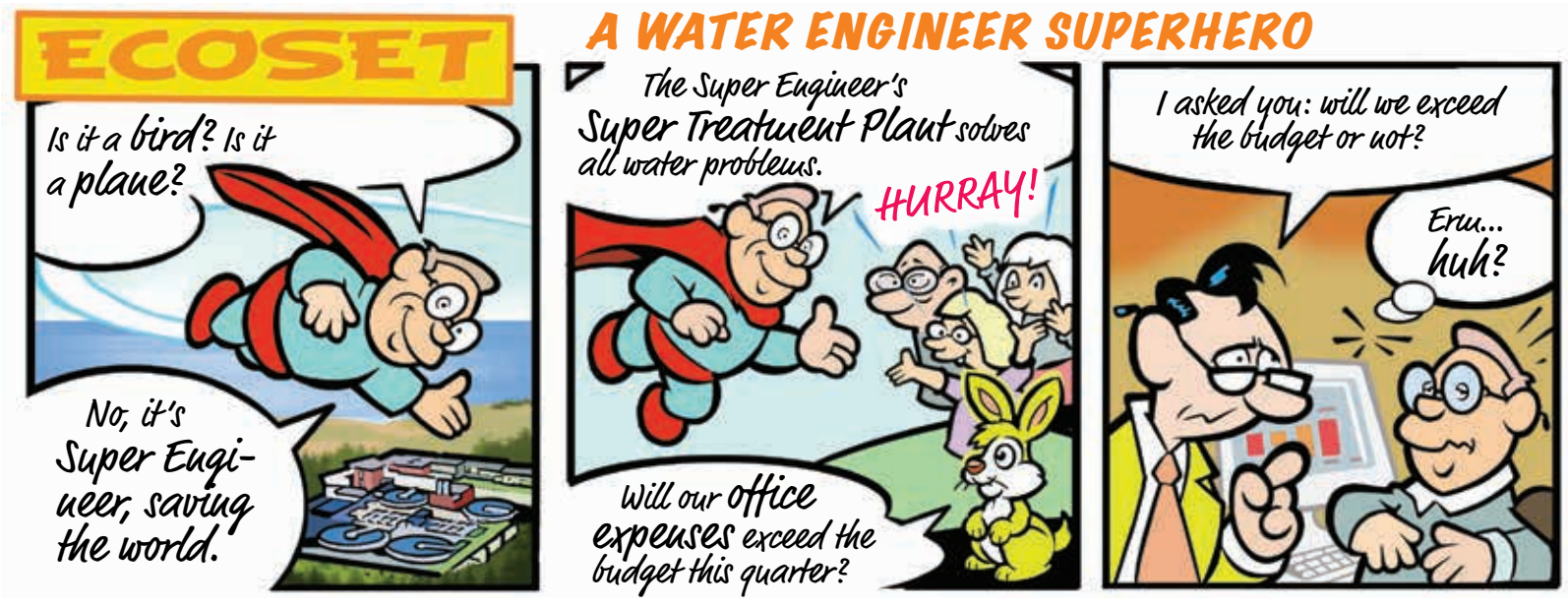
Who do you collaborate with at Econet?
At Econet's office, I work mostly with our project specialists such as Tommi Ikävalko, and from Slamex, I have worked with Heikki Viitanen.

How do you see Finland's competitiveness in the international market of the water sector?
In general, Finnish know-how is greatly esteemed around the world, and we have plenty of expertise in the water sector. When we succeed in highlighting our views and solutions, we're strong also on the international market, where competition is naturally tough.

How do you see Slamex and Econet in 2030?
In 2030, Econet and Slamex have grown even bigger, having become increasingly more prominent players in the water treatment sector. We are a reliable and global water treatment contractor and equipment supplier. We stand out from the crowd thanks to our high-quality equipment and excellent workmanship as well as versatile water treatment solutions.


Ilkka Niskanen

What's your motto?
I don't have one particular motto, but as a Savonian, I chose this, "Give it your everything, but don't give up."



Food packaging is usually colourful and patterned.

Trash or treasure?

Our rubbish bins are full of easily reusable materials, we just have to give them a chance. Plastic in particular can be used in many ways – its durability makes it great for jewellery, for example. At the same time, you can reuse parts of old pieces of jewellery. You will also need scissors, glue, preferred cover materials, pliers, and a needle for making holes.

You can use the same principle to make decorations for a chandelier, a bookmark, Christmas tree ornaments, etc. Have a closer look in your rubbish bin and unleash your creativity.

Cut shapes to your liking from clean plastic. Disassemble your old jewellery into reusable parts.

Cover the plastic pieces with the materials and patterns you want. You can cover the pieces with bits of fabric, beautiful paper, yarn. You can also paint the surface with acrylic paints, or leave the piece as is.

Make a hole in the piece, so that you can attach a metal ring, earring hook or other similar finding to it.

Enjoy your creation!

How does the decision-making of Finnish companies affect internationalization?

RESEARCHERS from the University of Vaasa and the University of Eastern Finland studied how the decision-making of Finnish companies affects internationalization. Altogether 355 Finnish companies responded to the survey, including Econet Group.

Companies' decision-making can be divided into two different ways: effectuation logic and traditional causation logic. In effectuation logic, the entrepreneur starts business operations with available resources and networks, and the goal emerges through trial and error. Traditional causation logic is based on a systematic approach where the set goals are based on an analysis, followed by an operational plan and obtaining resources.

The study found that the logic of decision-making has an effect, and both approaches are needed for successful international marketing. The study also revealed that entrepreneurial marketing increases the international economic capacity of companies.

Institutional uncertainty is often high in international markets. The study recommends using effectuation logic to strengthen the company's marketing in an uncertain market, where it's possible to test different approaches bravely and learn from any mistakes. Traditional causation logic is recommended when the markets are stable, when it's easier to make an international marketing strategy as comprehensive and thorough as possible.

Source: International startups: growth and decision-making. A Business Finland research project, Peter Gabrielsson and Man Yang, University of Vaasa; and Mika Gabrielsson,University of Eastern Finland.

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