



IHMEC

Breaking the Infection Chain

Indoor Hygiene
Excellence from
Finland, Estonia
and Sweden



Pandemics and antibiotic resistance are a threat to global health

One of the biggest threats to global health today is the COVID-19 situation that we are facing. The pandemic has shown that new innovative means to stop this and any future global pandemics from spreading are needed.

Along the pandemic situation, a growing number of infections - such as pneumonia, tuberculosis, gonorrhea, and salmonellosis - are becoming harder to treat as the antibiotics used to treat them become less effective. Antibiotic resistance leads to longer hospital stays, higher medical costs and increased mortality.

The combination of globalization of both people and goods, urbanization and challenge of healthcare associated infections and resistant microbes enables the global spreading of harmful infections. The Middle-East climate forces people to remain indoors and hence, large crowds, who are meeting daily at e.g. shopping centres, airports, schools and hospitals, are at risk of catching infections. Traditional means of good hygiene are no longer sufficient and new solutions are desperately needed to prevent the global spreading of serious infections.

UNIQUE INDOOR HYGIENE KNOW-HOW IN FINLAND

Finland has been the global pioneer in creating and implementing instructions of indoor hygiene. Existing co-operation with researchers and companies has resulted in unique know how in indoor hygiene solutions in Finland. The result of our work; the first and only existing Indoor Hygiene Guidelines can be applied in e.g. healthcare facilities to prevent infections spreading.

INDOOR HYGIENE GUIDELINES

The comprehensive national level Indoor Hygiene Guidelines introduce the basics of indoor hygiene, design & building & furnishing principles, and maintenance instructions. In addition to proper hand hygiene and cleaning practices, which are the basis of infection prevention, we can provide a new innovative material and design related concept to proactively break the infection chain.

IHMEC PROJECT

IHMEC is a project that is connecting professionals in planning, designing, building, and furnishing indoor hygiene spaces to form indoor hygiene solutions. The project brings together relevant clusters from Finland, Sweden and Estonia who can offer new and tailor-made solutions.

Members of our team belong to the leaders of European Union level COST AMICI consortium focusing on Anti-Microbial Coating Innovations to prevent infectious diseases (www.amici-consortium.eu/, www.cost.eu/COST_Actions/ca/CA15114).

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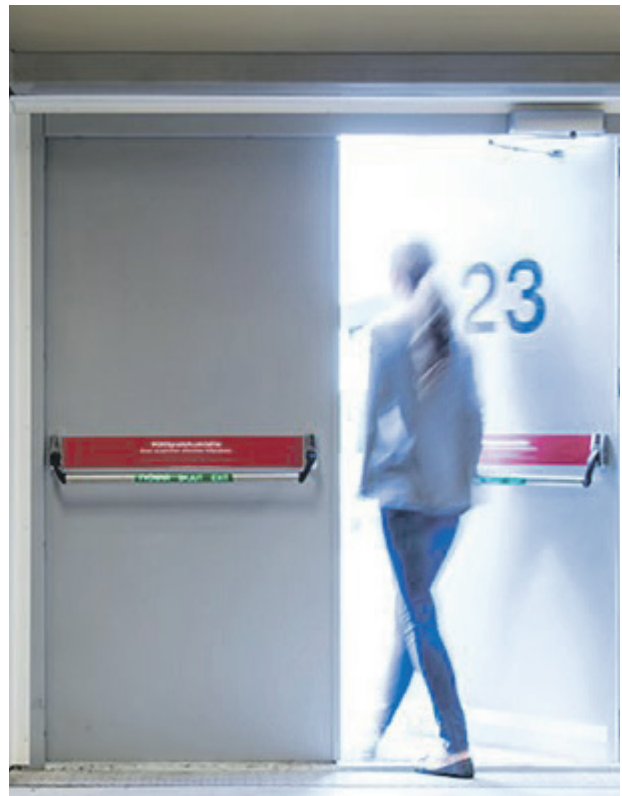
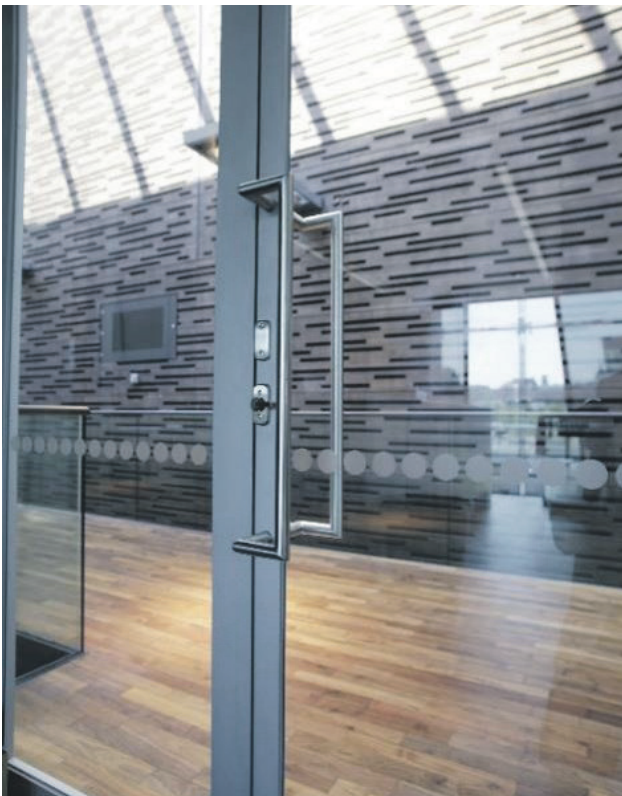
www.uu.se/en

Abloy – Antimicrobial architectural hardware

Abloy Oy is part of world leading door opening solution supplier ASSA ABLOY. ABLOY protects people, property, and business operations on land, at sea, and in the air – in all circumstances. Solutions created for user's individual needs extend from locking of homes to sites and operations.

Abloy has developed ABLOY ACTIVE technology which is available for door environment products such as door handles and pulls, panic bars and cylinder housings. ACTIVE is powder coated hygienic surface which destroys 99% of all harmful bacteria. ACTIVE is easy and efficient way to improve hygiene safety and reduce customer's operational costs.

www.abloy.com/en/abloy/abloycom/products/abloy-active/



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Aqua-Q – Warning system for detection of water contamination

Aqua-Q has developed a real-time online monitoring process AQUATRACK® an early warning system for detection of water contamination and automatic water sampling process, which captures water samples at the time of contamination, contrary to traditional random sampling for biological & chemical analyse and alarms the operator so that the operator can act proactive and avoid biological growth in water.

Aqua-Q's water quality monitoring system AQUATRACK® is patented and EU ETV validated for different water matrix applications. 2018 IWA (International Water Association) recognised at Tokyo, as the best

market-changing water technology. Founders of Aqua-Q received the highest honour and Gold price.

Founders of Aqua-Q are looking for investors, cooperation partners, who can open doors at endusers, for real-time early warning system, to avoid biological and chemical water contamination in water. Elimination of pharmaceutical residues, pathogens and antibiotics in water is Aqua-Qs focus.

Aqua-Q was founded in 1992 and it is a member of Stockholm Cleantech, WinWater at Lund and The European Water Platform WssTP at Brussels.



AQUA-Q
Online Water Control & Ozone Application

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Cleamix – Superior decontamination of surfaces and air

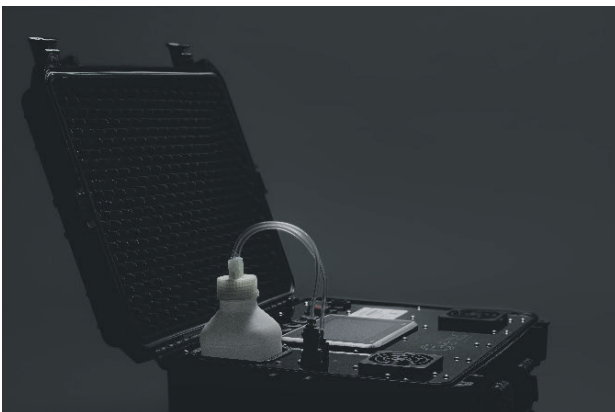
Cleamix Ltd. has developed a revolutionary solution for the decontamination of hospital facilities and equipment, sterile disposable equipment, laboratories and ambulances.

Environmentally friendly and efficient

Cleamix is a decontamination device for combating viruses, bacterias and harmful contaminants. The system produces high output of Hydrogen Peroxide Vapor that eliminates all harmful contaminants safely on any surface, delivering a decontamination result of 99.9999% microbiological reduction on surfaces and air in the decontaminated area. Environmentally friendly decontamination process leaves no residues and the hydrogen peroxide vapour degrades into water vapor and oxygen.

Simple to set-up and operate

Compact, briefcase-sized unit weighting 9,5 kg is designed for mobile decontamination. Sophisticated control software and automated process offers an intuitive user experience. Just specify H₂O₂ concentration and duration, and the unit takes care of the rest. Cleamix is easily scalable from small treatment volumes to larger facilities with additionable extension units. Cleamix process is always validated and with preprogrammed treatment parameters easily repeated with constant reliable results.



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Ecosir Group – Hygienic vacuum transfer for waste and soiled linen

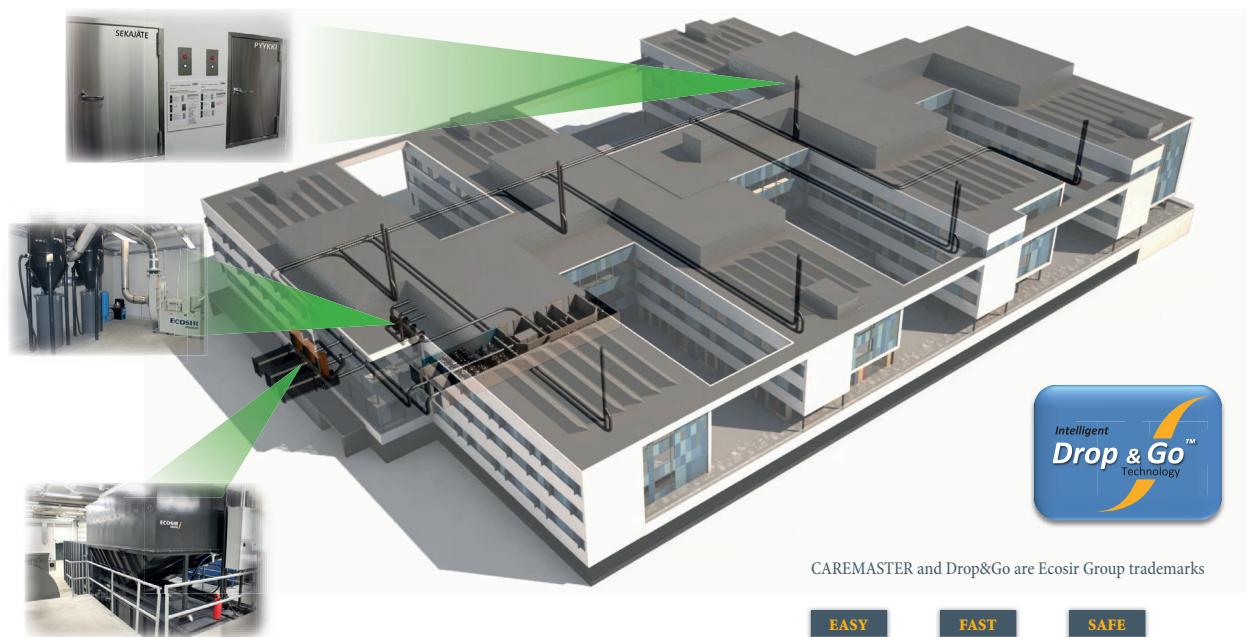
ECOSIR automatic transfer solution eliminates the risk factors of soiled linen and waste by a vacuum pipeline network. It takes only a few seconds to safely remove dirty linen or waste from the hospital wards through Drop&Go™ points.

The system protects patients, nursing staff and visitors from exposure to infections, eliminates odors and noise, and also saves treatment time.

We are specialized into the demanding logistic vacuum transfer solutions for the buildings and city environment applications. The main business is focused into most demanding Health Care segment. The high end experience is utilized for city residential areas and special buildings like skyscrapers.

Over 100 major system projects, 30 years history and experience from 1000 vacuum systems makes us the leader in its field.

Drop & Go™



ECOSIR
GROUP

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EstNor – Prefabricated timber frame element and modular houses

EstNor OÜ is an Estonian capital based company founded in 2000. The main field of activity is manufacturing and production of wooden houses (timber frame element and modular buildings, handcrafted log houses, Post&Beam houses). During the past 17 years has EstNor built over 450 houses (over 600 units)

EstNor manufactures pre-fabricated timber frame element and modular houses that are produced in a factory in Kiili, Estonia. The factory produces exterior, interior, incerted ceiling, roof and terrace elements. In terms of modular houses, the house modules consist of floor-, wall and roof elements which are assembled together in the factory.



The clients of EstNor are building companies, developers, mediators and private clients (end-users).

Membership: Estonian Woodhouse Association, Estonian Wooden Houses Cluster

Certificates: ISO 9001; Central Approval in Norway; Successful Estonian Company 2018 (credit rating AA)



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Estonian Solid Wood Solutions – Cross-laminated Timber

Estonia Solid Wood Solutions is a brand name (Start Up Company) that combines the best knowledge and people.

Our goal is to discover and extend the use of CLT beyond its current boundaries and we hope to provide new solutions for people with high environmental awareness, solutions for the growing population and for an aging society, and security solutions for difficult times.

We would like to offer a complete range of services, including product development, engineering, production, supply and project management.

We provide solutions for people with high environmental awareness.



Sustainable and environmentally friendly, healthy micro and mobile houses made of solid wood - CLT (MHM) for living, recreation, retirement.



Estonian Solid Wood Solutions

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Genano – Ultimate air decontamination

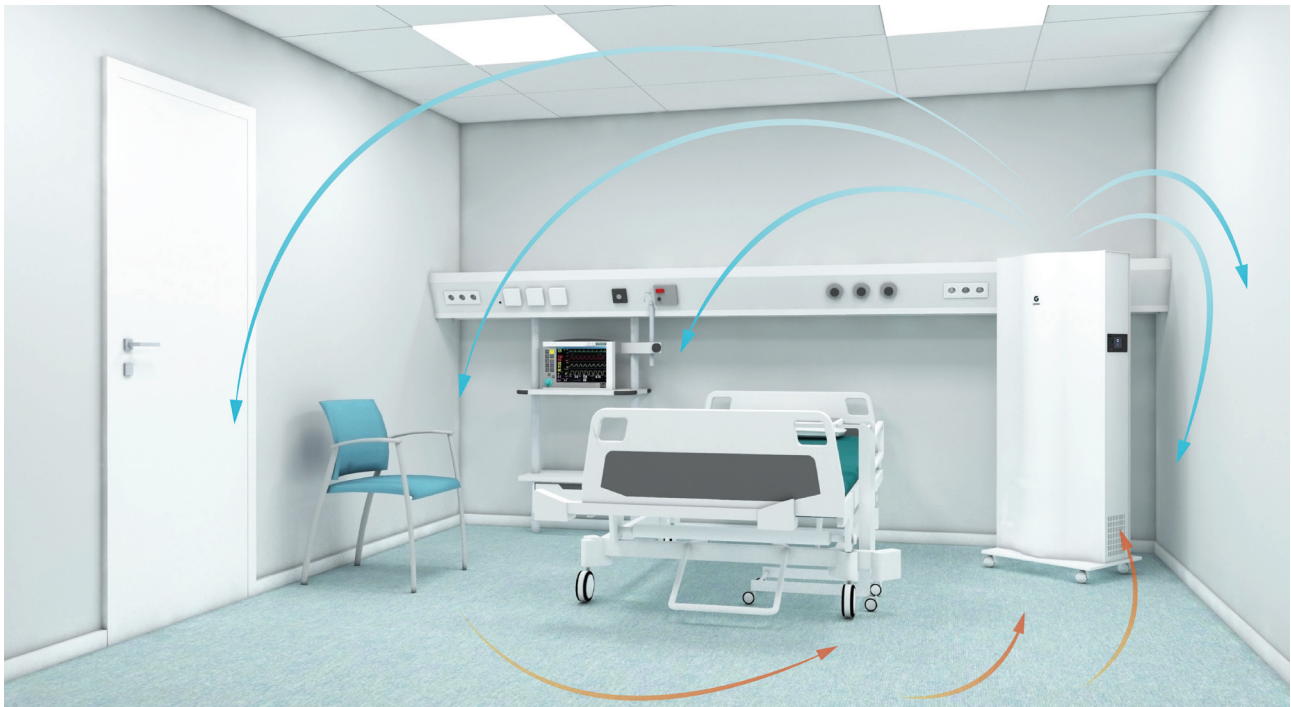
Genano Ltd from Finland has developed a unique patented technology for air decontamination for hospitals, laboratories and other cleanrooms.

In hospitals the focus is in reducing the rate of hospital acquired infections (HAI) by protecting patients and staff.

Genano has over thousand worldwide installations for example in hospital isolation rooms, OTs, ICUs, haematology and in IVF and DNA labs.

The Genano Technology® has several advantages compared to the traditional filtration systems

1. It collects even the most dangerous ultra-fine particles
2. It eliminates all microbes from the air including viruses, bacteria and fungi
3. It also absorbs gases and odours.



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Granlund – Building on innovation

Granlund is a strongly growing group of companies that specialises in the construction and property sector and makes significant investments in innovation and development. Our key goal is to make properties more functional and smarter and to improve human well-being in the built environment. Our areas of expertise include technical building services design, property, energy and environmental consultation, software and renovation.

Granlund was established in 1960. Today we have over 1,000 customer organisations in 30 countries, and employ over 900 professionals in Finland, Scandinavia, UK, Asia and the Middle East.

Granlund is the leading expert in cleanroom design in Finland. Our experts

offer their knowhow and experience, along with the most advanced tools, ensuring the appropriate and energy-efficient condition control of cleanrooms. There is no room for error in a cleanroom. For this reason, cleanroom design requires extensive experience. Our designers are used to solving conflicting demands between relief and vacuum spaces and controlling conditions with the help of appropriate ventilation and filtering levels. We design cleanrooms for hospital pharmacies, the pharmaceutical, bio and food industries, as well as the electronics, optical and semiconductor sectors.

Granlund represents Finland in an international cleanroom working group of cleanroom standards.



Granlund

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Harmet – Complete solutions for modular houses and health care housing

Harmet Modular Houses is an Estonian manufacturing company that produces modular houses, pre-fabricated modules and various modular on-site facilities, whereby 90% of the entire module structure and interior is built in the factory. We offer our customers complete B2B solutions – from design to the final assembly of the buildings, including all aspects of architecture, engineering, construction and maintenance.

HARMET BATHROOM

Harmet bathroom is an industrial manufacturer of wet rooms (incl bathrooms, saunas etc) for buildings. Factory-made, assembled and finished wet rooms accelerate the completion time of the

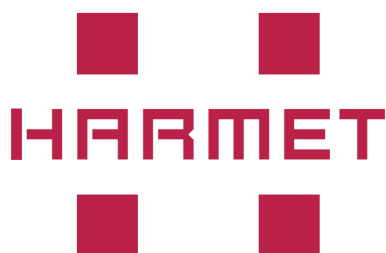


construction project and reduce the quality-related risks.

We offer our customers complete B2B Solutions - from design to final installation of wet room units, including all aspects of design, construction and maintenance.

HARMET HOSPITAL MODULES

Our latest development project includes different hospital module units – Surgery unit, Emergency unit (ED), Medical Care unit, Supply and Storage unit etc. With different units, it is possible to easily combine together the whole hospital according customer specificity. All units include built in ventilation, piping, electricity, finishing materials and built in technology.



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ISKU – World class healthcare facilities from Finland

Isku is a Finnish family business founded in 1928 in Lahti. Isku designs, manufactures and markets furniture and holistic interior design solutions for homes, schools, offices, health care and all public spaces. In addition to a chain of stores covering all of Finland, Isku operates in the Nordic countries, the Baltic countries, Poland, Russia and the Middle East.

Isku's own furniture factories are located in Lahti. Isku complies with the ISO 9001 quality system, and actively develops ecological production: Isku was the first in the industry to be awarded the ISO 14001 environmental certificate, and today, its entire production is PEFC certified, meaning that the origins of

all wood used by Isku is known and that the wood has been produced according to the principles of sustainable development.

Isku offers modern solution for the needs of health care to support customer experience and care work and combines Finnish knowhow in health care, technology, science and design. Isku's solutions strengthen patient centered health care and supports healing and staying healthy. Permanent and safe antimicrobial feature in critical indoor touch-surfaces eliminates pathogens and reduces infections when combined with hand washing and cleaning. ISKU+ -solution is researched and proved.



ISKU

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Korpinen – An easy way to gain safety and functionality

Korpinen is a Finnish pioneer and leader in accessible bathroom solutions. We offer durable, customizable bathroom solutions that are designed with specific areas of use in mind.

The layout of our bathrooms has been carefully researched and tested to promote the dignity and the independence of the elderly and disabled in the bathroom facilities. Our furnishings and auxiliary equipment simultaneously work to reduce the workload of assistants and care personnel.

Korpinen advanced bathroom solutions are used to increase safety and minimize the risk of falls and other accidents.

All Korpinen bathroom products have the antimicrobial feature offering the unique hygiene safe bathroom environment. The bathrooms have many surfaces to grasp that ensure the safety of users and their assistants. These touch surfaces accumulate microbes that can cause harmful infections that spread easily.

Our hygienically safe products prevent microbes from growing on them and reduce the risk of them spreading through bathroom furnishing.

Our bathroom furnishing comes with an antimicrobial protection that is proven to reduce microbes by up to 99.9%.



KORPINEN

– A PART OF **AddLife**

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LED Tailor – Chemical-free disinfection solution

LED Tailor is a Finnish company specializing in the development and manufacture of chemical-free disinfection solutions based on blue LED light. Our solutions contribute to better surface hygiene and air quality in healthcare facilities, industrial premises and sites with indoor air quality issues.

All our products are developed and manufactured in Finland. Our continuous R&D is conducted within an extensive international network of expertise. We

are the first European company to supply disinfection solutions based on blue light.

Our solutions are used for effective disinfection of spaces and objects, and they also work on antibiotic-resistant bacteria (incl. MRSA, EHEC, ESBL).

In addition to contributing to a cleaner and safer environment, they create significant savings in the consumption of chemicals, water and energy, as well as in sick leave and healthcare costs.



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Lojer Group – Antimicrobial hospital equipment

Lojer Group is the largest manufacturer of medical furniture in Scandinavia. In our two facilities we manufacture for example operating tables, examination tables, treatment tables and hospital beds. We aim to create solutions for maintaining a high and an extremely high level of hygiene. Antimicrobial solutions and new materials reduce the risk of infection and increase the safety of both patients and medical professionals.

The Lojer Antimicrobial product range is designed to prevent microbes from spreading. Microbes travel from person to person via touch surfaces: from a person's system to their hands; from their hands to a surface; from the surface to another person's hands; and from their hands to their system. This is why we have paid special attention to critical touch surfaces in designing our products.



LOJER® *For easy care*

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Matek – Timber frame element and modular buildings

Matek is a producer of custom made prefabricated timber frame element and modular buildings, established in 1988, thus the oldest company engaged in modern prefabricated timber solutions in Estonia. The main activity of Matek is the design, production and erection of timber frame houses and constructions on prefabricated elements and volumetric elements.

Membership: Estonian Woodhouse Association, Estonian Wooden Houses Cluster, Estonian Chamber of Commerce and Industry.

Certificates: ETA, SINTEF, ISO 9001



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Medanta – Innovative antimicrobial textiles

Medanta is providing innovative textiles and smart services specially to clients in healthcare, in HORECA and in various other segments.

Medanta is also a Finnish Design and Health tech company focused on infection control and providing antimicrobial textiles and disposable surgical masks (also FFP2 ja FFP3), surgical gowns, antimicrobial face masks (made of micro fibre fabric, double layer) and other protective medical products to fight against COVID-19.

Medanta is focused on developing solutions to protect both workers and patients from acquiring diseases. As the threat of microbial disease becomes more and more prominent world-wide, Medanta is providing antimicrobial treatments for uniforms and patient wear designed to endure industrial laundering.

Medanta is the first textile company to launch the revolutionary antimicrobial innovation, txt-coating which is developed by nature and perfected by science.



medanta*

DESIGNED WITH CARE

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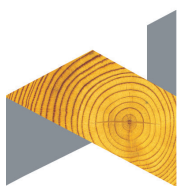
Nordic Houses – Design, production and construction of timber frame buildings

Nordic Houses core business is design, production and construction of timber frame buildings. The company has been operating over 16 years and during this period has delivered around 2000 homes in several export markets. The main clients of the company are distributors, developers and constructors.

Nordic Houses has its own standard solutions, but also working with local architects and client's design and visions. Based on responsible approach and

standardised solutions, combined with the latest technology, the aim is to offer clients "more time for living".

Nordic Houses has two production plants and technologies - pre-cut and element. Experienced architects, engineers, project managers working together with the client to find and agree most optimal solutions in each project. Timber-frame buildings are increasing trend globally in terms of ecology, durability, quality, time and cost efficiency.



Nordic
Houses
More time for living



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Oras – Touchless faucets

As the forerunner of advanced sanitary fittings, Oras introduced some of the first touchless faucets on the market almost 30 years ago

Touchless faucets substantially improve especially hand hygiene, are easy to clean and safe to use. They also help to save water and energy.

A special coating available with antimicrobiaöl paint. Made by Teknos with Biocote's antimicrobial additive that will provide premium protection from microbial colonisation.

Increased hygiene in health and care facilities

In hospitals, clinics and elder care facilities, hygiene is a top priority. To reduce the spread of germs, many facilities throughout

Europe have switched to smart faucets. By eliminating the need to touch the faucet, smart faucets prevent pools of bacteria from accumulating around it, limiting the spread of germs by 85%.

Smart faucets are also an effective solution against the spread of legionella. Using automatic control settings, staff can set the faucets to flush at regular intervals. This prevents water from stagnating in the pipes and legionella bacteria from growing in them.

Many smart faucets for health and care facilities also feature laminar flow, which means the water is not mixed with air. This helps prevent the possible spraying of bacteria around the washbasin, adding yet another layer of protection against legionella.



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Rakennustieto – Guidelines for indoor hygiene

The Building Information Foundation RTSr is a private, non-profitmaking Foundation whose task is to foster both good planning and building methods and good property management practices. The Foundation and its activities are directed by a Board and an Assembly that represents the entire building and construction industry through 54 associations and organisations.

Building Information publishes Tietoväylä (=information route) database including instructions for building and property management, regulations, contract forms and product information.

Indoor Hygiene-instruction cards

The RT Building Information file contains laws and regulations governing the construction industry, general quality requirements (RYL), instructions and product information. The data content is specifically designed for construction and design and

also serves for contracting. Indoor Hygiene Instruction cards are part of RT Building information file.

In indoor buildings, in particular, improving hygiene, ie microbiological cleanliness, is a major means of preventing the spread of infections. The purpose of the Hygiene Indoor Guide is to increase building awareness of the importance of hygiene in indoors.

It is a good idea to look at the hygiene point of view already in the development phase of the construction project. Especially in architectural, interior and exterior design, solutions can be developed to improve hygiene. The instructions apply to both new and refurbishment. However, for the sake of a healthy indoor environment alone, the use of design solutions is not enough; including interior cleaning and maintenance, user operation and hand hygiene are of great importance.



RAKENNUSTIETO >

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Saviukumaja – High quality natural building materials

Saviukumaja OÜ produces natural building materials whose roots reach from generation to generation. 40 years of plastering experience from father to son have created extensive and profound knowledge of both clay and lime. We focus primarily on the production, development, and selling of high-quality clay and lime plasters and other natural building mixes and materials.

The quality of our products has been checked in the laboratory in Berlin, Germany where both clay and lime products have been tested and approved.

The clay products that we offer are the base layer-, finishing-, and final finishing plasters but also Stucco, inspired by Japanese plaster technology, which is suitable for finishing walls and floors.

All our clay plasters have been tested according to DIN 18947:2013-08 and according to the German standard (DIN), they are among the highest quality clay plasters. Saviukumaja plasters are 100%

natural, with the widest selection of colors in Estonia, and with a special feature that the color has been achieved by only using natural clays.

Saviukumaja also manufactures clay CEB (compressed earth blocks) blocks and lightweight blocks for various building solutions and quality clay mixtures for building stoves and ovens.

From the lime range of products which all have been tested according to EN 998-1. We produce base plasters, finishing- and fine finishing plasters, lime filler for filling works, lime paint for plaster protection, mixes for masonry, special hydraulic lime mortars and Venetian-inspired Lime Stucco for floors and walls. Lastly, a perfectly designed mix called Gekolakt which is ideal for bathrooms and final finishes. Gekolakt is inspired by original Moroccan Tadelakt.



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SmartVent – Cloud based software for building management

SmartVent turns building automation from a product to a service, avoiding custom workarounds and helping building managers make their buildings more comfortable and more efficient.

We provide better building automation software with lower initial costs and better long-term support with a SaaS business model.

What sets us apart is our ability to work with the customer's building management system and our dedication and capability for constant improvement of our platform. No longer will your BMS be obsolete by the time it's installed.

We integrate with the existing BMS or

integrate to sensors and actuators directly to monitor and control hardware. This means the initial cost of integrating SmartVent into your building can be as low as 850 euros. Additional air quality sensors or other necessary additional hardware may be purchased from SmartVent or from our partners.

We have implemented our software in five buildings so far. For example, at Raekoja plats 16, SmartVent saves 180 euros every month on ventilation and heating costs with accurate ventilation control alone. After integrating our control system with 10 wireless sensors in the building, ventilation electricity use and thus heat energy use fell by 27%.



SmartVent

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Teknos - We make the world last longer

Teknos is a global coatings company with operations in more than 20 countries in Europe, Asia, and the USA. It employs approximately 1,800 people and the net sales in 2017 was EUR 384 million. Teknos is one of the leading suppliers of industrial coatings with a strong position in retail and architectural coatings. Teknos wants to make

the world last longer by providing smart, technically advanced paint and coating solutions to protect and prolong. Teknos always works in close cooperation with its customers. It was established in 1948 and is one of Finland's largest family-owned businesses.



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Tervemaja – Healthy and high-quality building materials

Tervemaja OÜ started in 2005 inspired by idea "Healthy spirit in a healthy house". Tervemaja OÜ's goal is to offer people healthy and high-quality building materials. All our products have been tested in appreciated laboratories and are recognized for safe use. It is a proof that the producer

cares about customer's health and that these products are used in both standard buildings and in buildings that have higher requirements needs. Most of our offered products are meant for wooden houses and Estonian Woodhouse Association's members are also using them.

Tervemaja OÜ is the official representative of the following well-known German building material trademarks in Estonia:

- **Fermacell** – the inventor and producer of gypsum fiber board. Cement tiles, mounting accessories.
www.fermacell.com
- **Pro Clima** – world's first producer who has specialized only for airtightness and offers everything that is essential to build an air resistant building.
www.proclima.com
- **STEICO** – world's biggest wooden building material producer – I-beams, wood wool panels, wind protection boards etc. This system is approved by Passive House Institute.
www.steico.com
- **James Hardie** – the pioneers of seventh generation fiber cement.
www.jameshardie.eu



... and the insulation
is perfect



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Uppsala University



Tartu Business Advisory Service



Satakunta University of Applied Sciences



Royal Institute of Technology



Estonian Woodhouse Association



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