

GREEN FUTURE

CUSTOMER MAGAZINE FROM CHILLER OY - A TRENDSETTER IN ENERGY SOLUTIONS • 1 • 2013

Annika Ljungbegr, manager of Mood Stockholm retail and experience complex:

CHILLER SOLUTION IS MORE THAN THE SUM OF ITS PARTS



► CHALLENGING COOLING AT RUUKKI'S RAAHE STEEL PLANT ► CHILLER AS A PART OF THE STATOIL SUCCESS STORY ► SERVICE NEXT™ - COMPREHENSIVE SOLUTION BRINGS COST CUTS

CONTINUOUS DEVELOPMENT, AND INVESTMENT IN QUALITY ASSURANCE AND TESTING

► FROM THE EDITOR-IN-CHIEF

Quality is also a competitive advantage in these economically challenging times. Here at Chiller, we have always believed in the great importance of productivity and quality. Continuous testing and the development of testing methods guarantee the high quality.

The markets for advanced property service solutions, cooling and heat pump equipment are limited in Finland, even in better times. This is why we have chosen to invest in export for almost 20 years. Export activity started naturally, first to Sweden and Russia, and then to other Nordic countries, and now to both Central Europe and the Middle East. Our participation in the Chillventa Trade Fairs, among others, has served just this purpose. In this issue of the magazine, we present some fine export destinations, including Russia, Sweden and Norway.

Climatic conditions vary in different parts of the world and we, as an equipment manufacturer, should be able to provide solutions for all climatic zones. We have developed climate chambers for different climate zones to guarantee the energy efficiency and functionality of the units delivered to the export markets. Each unit is tested in these testing rooms before going into production, because, for example, the conditions in the Nordic countries are completely different from those in the Middle East.

The Green Future magazine is now published in four language versions. The edition of the magazine you are reading has been made available in almost 40,000 units. I would like to wish all readers of our magazine a sunny spring and an enjoyable experience with our fresh magazine.

Heikki Lahdenperä
Managing Director, Chiller Oy



Image: Pauli Juppi

1 • 2013

GREEN
FUTURE

CHILLER OY'S CUSTOMER MAGAZINE, GREEN FUTURE

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NEWS FROM THE RESEARCH, CONSTRUCTION AND ENERGY SECTORS

Choices of energy use are essential for the global energy economy. The actions of governments and consumers are equally decisive.

Image: Lehtikuva



▶ NEW CLOUD SERVICE FOR MEASURING ENVIRONMENTAL CONDITIONS

A new cloud-based solution for real-time environmental monitoring, analysis and reporting has been developed in Finland.

The service platform provides an easy and affordable tool to different user groups for measuring environmental conditions.

The service platform was developed for the MMEA research programme under CLEEN Oy's "Measurement, Monitoring and Environmental Assessment" programme,

focusing on strategic environmental excellence.

The MMEA working group includes: VTT (Technical Research Centre of Finland), Vaisala, the University of Eastern Finland and HiQ Finland Oy. The programme is co-financed by Tekes (the Finnish Funding Agency for Technology and Innovation).

▶ **Read more:** www.vaisala.com

▶ SOLAR ENERGY IS BECOMING INCREASINGLY IMPORTANT IN CHINA THIS YEAR

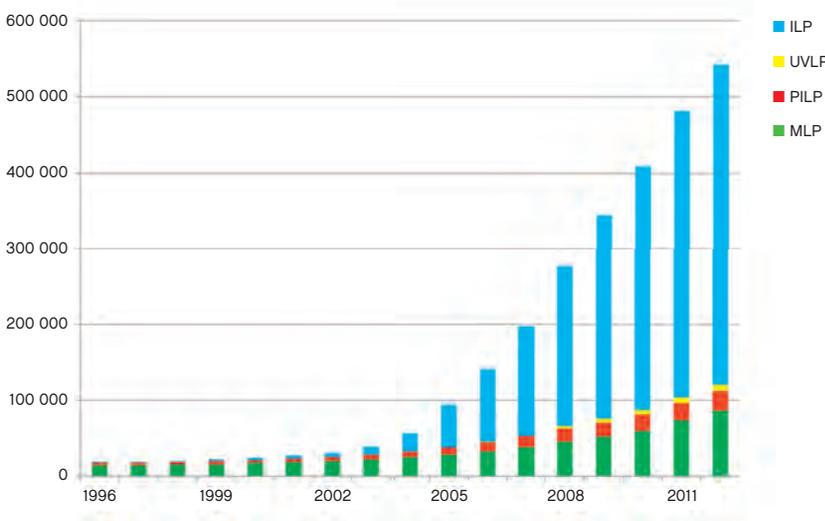
The solar energy industry is expected to grow this year, at the fastest rate since 2011. The reason is the rapidly-growing solar energy market in China.

The capacity of new devices will increase by approximately 14 % this year, up to 34 GW. A huge improvement on the 4.4 % growth in 2012.

Previous studies have shown that analysts underestimated the investments. A survey conducted a year ago predicted a 10 % decline for the period 2011–2012, during which time the number of new solar energy projects actually increased.

▶ **Read more:** <http://www.energy-enviro.fi> (Energy & Enviro World newsletter)

▶ THE NUMBER OF HEAT PUMPS IN FINLAND ALREADY EXCEEDS HALF A MILLION



As many as 540,000 heat pumps already extract local heat, providing renewable energy, from around buildings, from the rock, from the ground or from the air. Although the number of ground-source heat pumps slightly decreased compared to the previous year, the number of larger heat pumps increased by more than 25 %.

This meant an increase in both Euros and the amount of extracted renewable energy compared to 2011. The air-source heat pump market suffered a loss of almost 20 % due to the cold summer and the economic cycle, as shown in the Finnish Heat Pump Association (SULPU) statistics. In 2012, Finns invested almost EUR 400m in heat pumps.

In 2012, 13,000 ground-source heat pumps were sold, which was 7 % less than in 2011. However, the numbers in larger target segments, such as terraced houses and apartment buildings, increased by almost 30 %, which meant there was growth in the sector. Air/water heat pump sales remained unchanged, at 1,000 units. Exhaust air heat pumps were brought into new houses, and 1,900 units were sold, which is slightly less than in 2011.

One segment showing rapid growth is oil-heated terraced houses and apartment buildings, in which more than 1,000 heat pumps are bought per year. Also, large-scale commercial targets, such as Ikea in Tampere and Veturi in Kouvolaa, are doing well.

Puuvilla in Pori is looking for savings on its increasing energy costs by investing in heat-pump systems. As a bonus, the same systems also take care of the facility's cooling needs.

▶ **Read more:** www.sulpu.fi/uutiset



FIVE-STAR AIR-CONDITIONING

► Text: Dakota Lavento ► Images: Sokos Hotels and Chiller Oy

Renewal of the air-conditioning at St. Petersburg's top hotel in a 3-phase project. The old system has been replaced with the Chiller GRAND Vari™ -system.

Jyrki Tuominen, Managing Director at Ramilax Trading Oy, is an expert on high-quality hotel ventilation cooling contracting after completing the latest Sokos Hotel Palace Bridge project. The renovation of a functioning hotel is a challenging task. Usually, the wings and the floors are renovated. Naturally, the project is suspended during the most busy periods. Occasionally, the hotel has to put the work on hold at short notice when the entire accommodation capacity is required for use.

"Then we just have to clean up and leave", acknowledges Tuominen

When working on a hotel, you cannot come and go as you would at an ordinary construction site. Supplies cannot be stored just anywhere. The hotel guests must be taken into account. The noisy work cannot just be done whenever, and there are strict rules on dust and cleanliness. The work must proceed without attracting any attention and it must be on schedule.

This is particularly important in a five-star luxury hotel.

DIFFERENT AND EXITING

The seven-storey Sokos Hotel Palace Bridge, completed in 2007, is located in the historic centre of St. Petersburg, on Vasily Island.



◀ Alongside the Palace Bridge hotel cooling reformation the control systems was upgraded as well. GRAND Vari™ system brought a draft-free and comfortable indoor climate solution as elegant part of room architecture.

St. Petersburg sights, the Hermitage, Nevsky Prospekt and St. Isaac's Cathedral, are located within walking distance. There are 319 rooms in the hotel.

The competition on the emerging St Petersburg hotel market is intense. Sokos Hotel Palace Bridge has vastly improved its position after the renovation.

In addition to a beauty salon and a fitness centre, the hotel's fantastic wellness centre opened last year, with its six pools and eight saunas, one of which is an exotic snow sauna.

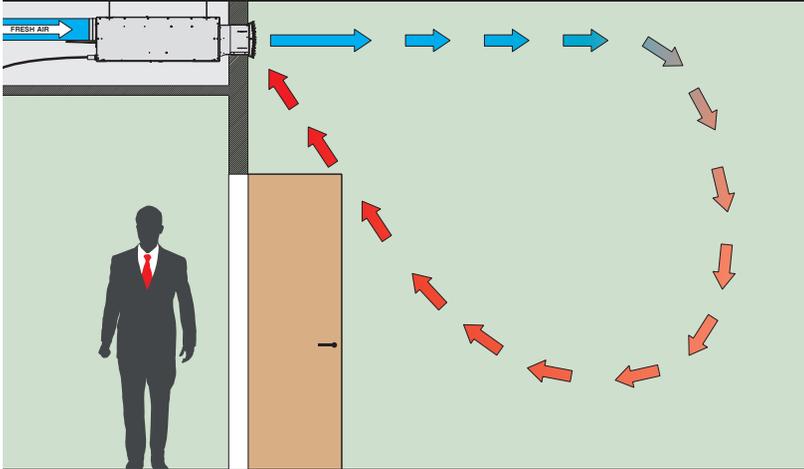
With its old heart, Sokos Hotel Palace Bridge stands out even from the new top hotels in St. Petersburg. Up until the revolution, the brick warehouse built in the mid 1800s served as the wine cellar of the St. Petersburg Jelisejev merchant family. Now, for example, a wonderful restaurant, Dans Le Noir, where you can enjoy a surprise menu in the darkness and where the patrons are served by blind waiters, or guides, is located under the old arches beside the wellness centre.

Visitors can also experience luxurious rooms, with marble bathrooms. Such luxury also requires five-star cooling and ventilation.

"We want to provide our customers with a high-quality environment, strengthening the St. Petersburg Sokos hotel brand", says Service Manager **Jaakko Mäkelä**.

FIVE-STAR INDOOR CLIMATE

The company, founded six years ago by Jyrki Tuominen, who became familiar with the construction market in Russia whilst working for YIT, is responsible for the project management contract to renew the hotel ventilation cooling. The actual installation and construction work are done by local partners. At most, 20 professionals have been involved in the job; HVAC technicians and electricians, as well as carpenters. The contract work was executed in three parts. The work started in spring 2012 and will be completed in March 2013.



◀ The GRAND Vari™ system forces the air-flow along the ceiling of the room. There is no draught, only a pleasant indoor climate. The tight structure and the sound-attenuation chamber in the blowing channel mean the units are extremely quiet.

CHILLER'S GRAND VARI™ PATENTED SOLUTION FOR HOTELS AND CHALLENGING SMALL HOMES

The air in the GRAND Vari™ system is forced along the ceiling surface to the room, draught-free. The devices are extremely quiet due to the tight structure and the sound-attenuation chamber in the blowing channel. Only a pleasant and draught-free indoor climate can be felt in the room.

The GRAND Vari™ system, developed as a terminal for air-conditioning and ventilation in hotel rooms, was selected on the advice of a HEVAC consultant.

"The devices are energy efficient, of high quality, easy to install and easy to clean. Their low sound level is important in top hotels", says Tuominen.

"We settled on this reliable system", confirms Mäkelä. The GRAND Vari™ system is very energy-efficient.

In normal hotel rooms, the power input consumed is 3...11 W, so the annual energy consumption is only a fraction of that of older solutions.

Air in the GRAND Vari™ system is forced along the ceiling to the room, draught-free. Due to the tight structure and the sound-attenuation chamber in the blowing channel, it is extremely quiet.

EASY TO INSTALL

Tuominen praises the easy installation of the device. This is important on a hotel construction site, where the installation work must adhere to schedule without fail.

"The hotel housekeeping has praised the system for being so easy to clean. The filter can be vacuum-cleaned or washed by quickly lifting up the hinged grille."

"The installation of the GRAND Vari™ solution is very straightforward, as the devices are mounted through fasteners on the base plate onto a fixed ceiling surface.

The hotel housekeeping has praised the system for being so easy to clean. The filter can be vacuum-cleaned or washed by quickly lifting up the hinged grille.

The automatic cooling and ventilation controller was

renewed in connection with the renovation. GRAND Vari™ can be delivered from the factory with a pre-wired automatic controller. Sometimes we are forced to come up with exceptional solutions, quickly.

Even when the installations of the automatic controllers were running late and the units had to be put into operation, the speed control was bypassed with a 9-volt battery, and it was operating like this for a couple of months!"

DELIVERIES TO ST. PETERSBURG WERE COMPLETED ON TIME

"Secure and timely deliveries are essential in such a project. The job must not be delayed, but the equipment cannot be stored at the construction site indefinitely. I have to say that Chiller turned out to be a really flexible supplier", comments Tuominen. •

◀ The GRAND Vari™ system grille is an integrated part of room architecture.



INSTALLATION · OPERATION · SERVICE

Ground-breaking concept offers effortless installation, use and service.

GRAND Vari™ features

EC grille

- ▶ Fan and valve control 0...100 %.
- ▶ Draught-free blowing, heating and cooling.
- ▶ Air is blown into the room from the top and is sucked into the unit from the bottom: excellent logarithmic temperature difference between air and water.
- ▶ Fresh air is brought into the room via the same blowing grille.

EC fan

- ▶ Fan and valve control 0...100 %.
- ▶ New device structure optimised for EC fans.

Service and use

- ▶ Filter is cleaned by vacuum or washing through the hinged grille.
- ▶ Condensation is handled either through a condensation pump or free drainage.
- ▶ A removable and easily-washable condensation trough guarantees a bacteria-free device.
- ▶ Factory pre-tested for direct use.

▶ Read more: www.chiller.fi/air-conditioning

Fiery inferno, hell's kitchen. Victorian England. The stark reality of the blast furnace buildings is what first comes to mind for most people when talking about the steel industry. And it's true that heat is needed in the steel industry; the melting point of iron is + 1535 °C. However, the conditions in the modern steel plant are quite different.

"Nowadays, steelmaking is well automated. Automation cannot withstand high temperatures. So cooling plays an extremely important part in steel production", explains **Ismo Vähäyjylkkä**, Regional Supervisor at the Ruukki's Raahe steel plant.

Approximately 2.2 million tonnes of steel per year are produced at the Raahe steel plant. Hot-rolled steel sheets and coils are manufactured for use in, among other things, the engineering, transportation and construction industries. The Raahe plant also manufactures a variety of special steels that are particularly wear-resistant, specially coated or very strong and impact-resistant.

HUNDREDS OF COOLING DEVICES

Vähäyjylkkä and his supervisor, property manager **Sauli Kallio**, work with approximately 2400 other Ruukki workers on this large plant site. Its surface area is more than 500 ha, and the total surface area of buildings alone is 46 ha, with a capacity of about 5.75 million cubic metres.

Nearly six million cubic meters can accommodate all kinds of properties, from the office buildings to a variety of production facilities. The most impressive of all the buildings is a rolling mill of over 16 hectares. Many of the production facilities, such as a blast furnace building, power plant, sinter plant and research centre, were built in the 1960s. The coking plant buildings are however, relatively new; they were completed in the 1980 and 90s. Some of the offices are located in modular buildings.

"Almost all buildings require some kind of cooling", explains Vähäyjylkkä. There are approximately 300 water chillers in the plant area, with a total cooling output of 7.5 MW.

► Text: Dakota Lavento ► Images: Ruukki and V-P Moilanen

The steel industry process is dependent on the high degree of heat, as well as cooling.

◄ Regional Supervisor at the Ruukki's Raahe steel plant, Ismo Vähäyjylkkä, has a lot of responsibility.

COOLING IN
THE KEY-ROLE

The total number includes the cooling of the normal office spaces, different automation facilities, electricity and IT facilities, and the cooling related to the process.

"The cooling water station for the main engine of the rolling mill, which was built in 2004, has the largest cooling output (1 MW)", he says.

He was involved in the investment decision on cooling units and in the preparation for modernisation, and as a supervisor of the actual project. He is also responsible for the assessment of HVAC conditions.

At such a large production facility, something is always being renovated, repaired or built. At the beginning of the year, investment decisions on three cooling units were stood waiting on Vähäyylkkä's desk. Old R-22 units are being replaced in the plant area. Last year, the blast furnaces were renovated, which significantly improved the production energy efficiency. The steel industry requires high temperatures, but the process also depends on cooling.

According to the property manager, Kallio, the cooling investments are significant even at the annual level.

"Of course, the quantity fluctuates each year, but EUR 100,000 is an indicative number."



▲ *Modern steel manufacturing is largely automated and requires efficient cooling to operate in the desired manner.*

SOMEWHAT SPECIAL SKILLS

So far, Ruukki has had its own planning organisation, but today the long-term partners are responsible for the cooling design and contracting.

"It is very important that both designers and contractors have vast experience of working with Ruukki. We can be confident that they are familiar with the house rules and needs", remarks Vähäyylkkä.

WIDE RANGE OF EQUIPMENT AND VAST AREA

Knowledge of the environment, processes and business practices is very important. Devices are required to provide a very high level of operational reliability. The damage caused by non-functional cooling is considerable. The power supply simply cannot be interrupted. Also, the cooling of the production facilities must not fail. Otherwise, a bridge crane, for example, might suddenly end up in a problematic situation.

Reliability, high quality, compact design and ease of installation are the reasons why approximately one hundred of Chiller's cold water stations, and dozens of cabinet machines at the Ruukki's Raabe plant, take care of the cooling of these special facilities.

The latest cold water stations, delivered in 2010, are under the Service Next™ overall concept. Service Next™ enables centralised monitoring and optimisation of the entire plant's cooling system. •

RUUKKI IN BRIEF

- ▶ *The Raabe plant is a part of Ruukki's steel business sector.*
- ▶ *Ruukki specialises in steel and steel construction.*
- ▶ *Ruukki employs approximately 9,000 people and has a wide distribution and dealer network in about 30 countries.*
- ▶ *In 2012, the group revenue was EUR 2.8 bn.*
- ▶ *Ruukki Construction supplies steel structure solutions for commercial, office and industrial buildings, port and waterway construction as well as roofing products and services.*
- ▶ *Ruukki Metals manufactures special steel products for private homes, such as wear-resistant and specially-coated products for challenging, energy-efficient applications.*

RAUTARUUKKI CHILLER SOLUTION

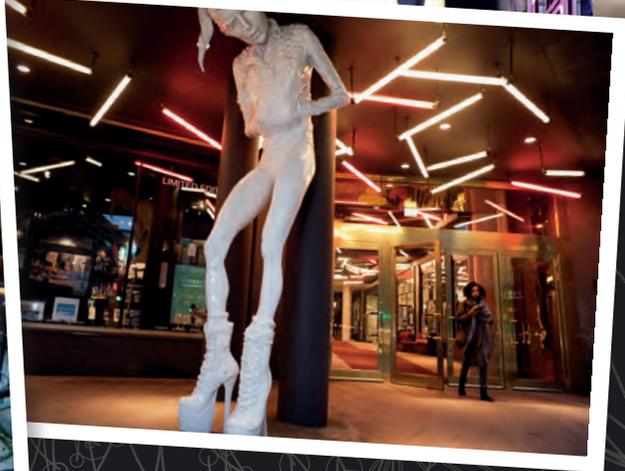
- ▶ *Chillquick™ cold-water stations with free cooling (CGIW-120, 300 kW)*
- ▶ *SMART Vari™ Standard air-conditioning machines with hot gas heating (energy control optimisation)*
- ▶ *Service Next™ overall concept explodes the unit into components and compares their limits with BMS's changing information. Best way to optimise the efficiency of the plant and control its thermal conditions is to analyse the information.*

Chillquick™ | **SMART Vari™** | **ServiceNext™**

▶ Read more: www.chiller.fi

CASE

Mood Stockholm



▲ With the mall on her shoulders. The statue Pretty Vacant signifies that there is something extra to be had here in the world of Stockholm shopping.

◆ As mall manager at Mood Stockholm, Annika Ljungberg has a special job.



► Text: Kerstin Lundell ► Images: Jens Lasthein and Mood Stockholm

Stockholm's newest shopping attraction Mood Stockholm boasts of special moves, art and unique interior.

Visitors to the Mood Stockholm shopping mall can see that there is something special about the mall in the entryway at the intersection of Mäster Samuelsgatan and Norrlandsgatan. Here stands a gigantic statue of a young woman dressed to kill – a fashionista. She crouches under the roof as if she were supporting the entire building on her slim legs and platform boots. The fashionista giant is an ironic take on the titan Atlas who in Greek mythology supported the heavens on his shoulders.

Inside the mall, real-life fashionistas of both sexes saunter by on their way to shops hand-picked to offer merchandise hard to come by anywhere else. This sense of choosiness among the shops is underscored by the fact that no storefront is like another.

They feature many variations of aluminum glazing and frames, just like the small shops off Bond Street in London or near Place de la Bastille in Paris for example.

SHOPPING AND SERVICES

"It's meant to be like a city within the city, you're supposed to feel like you're outdoors", says mall manager **Annika Ljungberg**.

While Chiller Magazine was on location, a couple of ex-ministers also dropped by Mood Stockholm. They may have needed concierge services like dry cleaning, dog walking, a tire change or something else.

"People have no time to spare. You have to help everyone out to save them the hassle of running around. Everything should be available under one roof. "The idea is that this is something beyond shopping", says mall manager Annika Ljungberg.

*"It's meant to be like a city within the city, you're supposed to feel like you're outdoors",
says mall manager Annika Ljungberg.*

It's obvious that she enjoys showing us around. There are plenty of things to show. The huge fashionista is one of several works of art in the mall made by prominent artists from Gallery Andréhn-Schiptjenko. Fashion Atlas, whose actual name is Pretty Vacant, is a work by **Cajsa von Zeipel**. Academy of Fine Arts professor **Peter Hagdahl** has also supplied a piece of artwork, as has **Katarina Löfström** with her technical installation in the form of a branching copper pipe. It leads to a tap where shoppers can quench their thirst. Really. Just turn the tap.

SEEN BUT NOT HEARD

The HVAC installations are also part of the whole. They are not hidden away behind a suspended ceiling, but contribute to the special, somewhat raw feeling you might find in a factory converted into architects' offices. This means that Chiller's air-conditioning units are visible in several locations with their

gratings and pipes, along with the sensors needed to control the system.

"Not hiding the units behind a ceiling makes them easier to maintain", explains mall operations manager **Erik Roswall**.

The ceiling height is also raised by the absence of suspended ceilings. Because the installations are not concealed, there were not many different types of technology to choose from, but the choice of cassette fan coils for the air-conditioning system was natural.

"This is a simple, a good system if you don't want a suspended plaster ceiling", says Erik Roswall.

In other words, the installations should be seen but not heard. Just below the installation on the second floor by Best of Brands, you can feel the chill of the air conditioning system, but any noise is completely drowned out by other noises in the shop. The ball bearings in the fan coil coolers by Chiller run quietly and year-round, causing no disturbance.



▲ Also entrances of the mall are unique and inviting.

Even though it is January and the outdoor temperature is around freezing, lighting and other factors mean that the shop needs to be cooled even today. "Today the unit is operating at max 70 W per square meter", knows store manager **Yusse Ibrahim**.

"You don't want it to get too hot for either customers or the staff. It should feel like where I'm standing right now", says Yusse Ibrahim from where he stands right under the unit before the photo shoot.

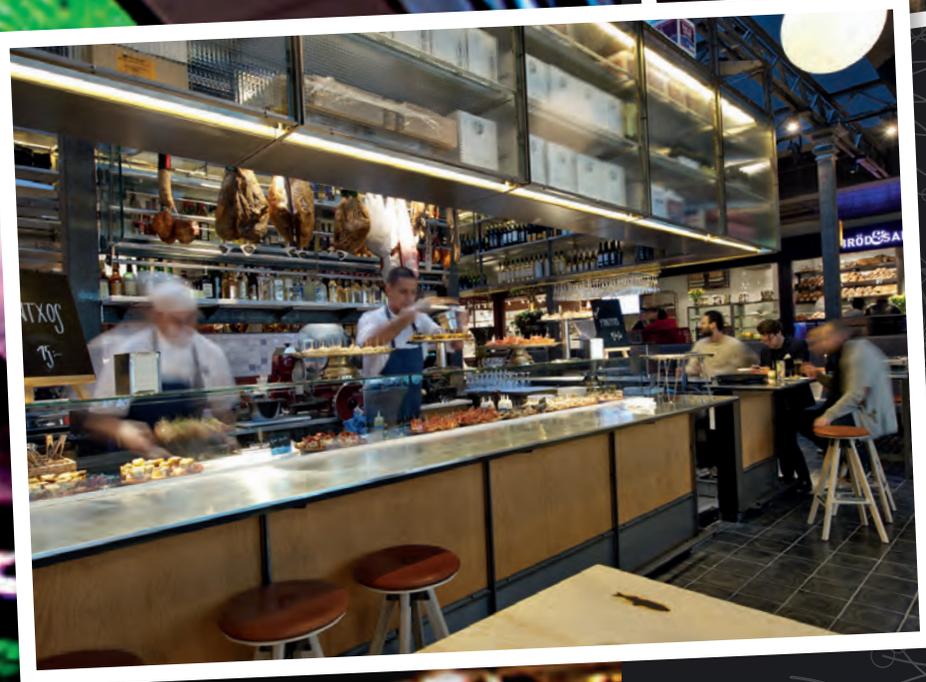
High temperatures mean that those working at the shop risk developing dry throats and headaches. And it makes it uncomfortable for customers to try on clothes. •

FACTS, MOOD STOCKHOLM

- ▶ **Owner:** AMF Fastigheter
- ▶ **HVAC consultant:** Joakim Löfström, Energo
- ▶ **Supplied by Chiller:**
 - Approximately 170 Chiller BOX120, dimensioned for remote cooling
 - Sound pressure level Lp(A): 22–29 dbA (100m³ space, 0.5 seconds of reverberation)
- ▶ **Pipe fitter:** City Rör AB

BOX Vari

▶ Read more: www.chiller.fi/air-conditioning
www.moodstockholm.se



▶ **Store manager Yusse Ibrahim enjoys good indoor climate produced by Chiller's BOX Vari™ -cassette fancoils.**

▶ **Lighting and other factors mean that the shop needs to be cooled year round.**



A SMALL PART OF NORWEGIAN OIL ADVENTURE

► Text: Håvard Utheim ► Images: André Ormset

Statoil Kristiansund office building project was planned and implemented carefully so that the system can operate in an optimal way. The challenges were pipings and the right Chillquick Thermo™ heat pump selection. A special feature of the solution is heat recovery from sea water.

Ever since the Norwegian oil adventure started in the 1960s the petroleum business has been big business, if not the biggest in Norway. The requirements for working environments and energy savings are getting ever higher and as Statoil builds a new administration building at Vestbase in Kristiansund they expect the best the market can provide.

The history of Kristiansund goes way back. In a town previously best known for salted and dried cod, shipyards and opera, visionary politicians and a working group were dedicated to attracting the land based part of the oil activity on the continental shelf outside central Norway, north of 62°.

In 1975 the government designated Kristiansund to be the main base in the region. Eventually an agreement was signed with Den Norske Stats Oljeselskap, what we today know as Statoil, and the work could start.

In 1980 the first phase of what we now know as Vestbase finished and since then the base has expanded immensely.

ENERGY EFFICIENT OFFICE

"Vestbase today is Norway's largest supply base at 600.000 square metres and about 80.000 square metres of floor area. It is jokingly called Norway's largest petrol station. Huge amounts of diesel flows through here during the course of a year", says **Ralf Larsen** who is, the project manager for the technical installations at Vestbase AS.

His company operates the base and is the main constructor for Statoil's new administration building. Both Statoil's local administration and Aker Solutions will be located in the building, which also houses storage facilities for Njord.

The building has a total floor area of 10.000 square metres divided between eight floors. On the ground floor there will be a 1400 square metres subsea hall while there'll be a 500 square metres joint cafeteria on the top floor. The building will house between 350 and 400 employees, and is equipped with heat pumps from Chiller. This is, according to Larsen, entirely in line with Vestbase's guidelines for maintaining the best possible work environment, and not least for saving energy.

◀ Energy efficiency and a healthy indoor climate work environment are central efforts.



◀ Project manager Ralf Larsen (left) and heat pump contractor Ragnar Ness are very satisfied with the co-operation.

**Chillquick Thermo™ sea water heat pump - delivered by Chiller
- takes care of Statoil's new office building heating in Kristiansund.
An oil company must also save energy.**

"Kristiansund is ideal for extracting energy from the sea. The ocean is 10 degrees all year round", Larsen points out. He adds that it doesn't mean this has been an easy project.

Many factors have played a part. It's a big building with many surfaces, which has been challenging. According to **Ragnar Ness** from the contractor Øyvind Lystad AS, this

has been their largest project so far when it comes to heat pumps. One of the challenges was installing pipes through the base out into the ocean while the base was in full operation.

"We had to dig 20 metres at a time while making sure the traffic and plant operations had free passage."



The COP of Chillquick Thermo™ heat pump varies between 3 and 5 through the year. That means a 75–85% reduction in the electricity consumption.

TAFF EXPERTISE

Stian Lystad, managing director of Øyvind Lystad AS, explains that a lot of engineering is required. To accomplish this, they procured consulting services from Rambøll in Trondheim. It is vital that the system is scaled to deliver according to requirements. This includes the design of the pipes, accounting for temperatures and the size of the pump.

"We have had tremendous cooperation between the different disciplines. Electricians, contractors, the developer, ventilation technicians and many more."

Erik Dyrseth is manager of Reftec, the Norwegian importer, and adds that generally speaking there will always be challenges adjusting to the building and location.

"The biggest challenge will always be to align the heating installation and the heat pump to make it perform optimally both when it comes to management and energy."

Ralf Larsen is impressed with the workers. There have been new requirements and conditions. Unexpected events have had to be dealt with.

"They've handled the challenges brilliantly and have done an excellent job. We are very satisfied with the installation as it is now being finalized."

HEAT FROM SEA WATER

"Our goal is to save 20 % by the end of 2013. This is a goal we work together with Enova to achieve. Heat pumps like these are absolutely necessary to accomplish that", says Dyrseth.

According to Dyrseth, the installed heat pump is liquid cooled, and extracts heat from sea water. The water enters an oversized titanium heat exchanger, where the thermal energy is transferred to a glycol circuit, which heats the evaporator. The temperature into the heat exchanger is + 6/2 °C, and into the heat pump + 0/4 °C, which generates + 50–35 °C of heating. The COP (coefficient of performance) varies between 3 and 5 through the year.

"That means a 75–85 % reduction in the electricity consumption",

Dyrseth explains that the heat pump has several control devices. **COPtronic** measures both momentary values and accumulates energy consumption. This is fed into a central unit and

ELtronic, which controls additional heating from the heat pump regulator. In addition, frequency controlled circulation pumps and desuperheaters heat tap water up to 65 °C.

DEVELOPING AREA

Vestbase has many buildings, a significant part of which are from the 1980s, built according to the standards and building codes of the age. Much has changed since then, and Ralf Larsen is very clear on the importance of investing in a well designed installation.

"The base grows quicker than the buildings and we have had to retrofit installations in several of them. That's why it is so important to install a proper system from the beginning."

When asked whether there will be more projects like these, Dyrseth is positive.

"Yes, many. We have contracts for several buildings at Vestbase, so there is plenty of work here in Kristiansund."

Stian Lystad agrees: "This has ripple effects. There is a lot of buildings going on in this area. Examples include the construction in Averøy, the airport and other industry. It's not only the oil business that is growing."

Vestbase and Larsen gets the final word: "We need more space, we need new buildings, more and more people are being hired, and we have bought new areas. We constantly need to adapt and upgrade the existing buildings. I believe the need for new and better solutions will only grow!" •

CHILLER STATOIL SOLUTION

- ▶ **Heating system in Statoil's building at Vestbase in Kristiansund is liquid cooled heat pump (rated at 200 kW which extracts heat from the sea)**
 - **Chillquick Thermo™ heat pump was delivered with circulation pumps controlled by the heat pump for optimal efficiency. The pumps only run when needed.**
 - **Titanium heat exchanger for use with sea water**
 - **Desuperheater – Heating of tap water from the heat pump heating coil. Temperatures up to +65 °C.**
- ▶ **COPtronic™ – An integrated COP sensor which measures both monetary values and accumulated energy consumption. Connected to a central unit using the heat pump regulator and Modbus TCP/IP.**
- ▶ **ELtronic – Controls additional heating from the heat pump regulator.**
- ▶ **Service Next™ and Modbus TCP/IP – Enables supervision of the heat pump using and IP adress. In case of problems, the vendor or manufacturer can log on to the heat pump and find or fix any issues before they become serious.**

Chillquick Thermo™

ServiceNext™

COPtronic™

▶ Read more: www.chiller.fi/heat-pumps



► Text: Dakota Lavento ► Images: Dakota Lavento and Chiller

Customers don't just look at a device, but at the whole entity; users require solutions for service, maintenance and life-cycle management. BMS-based temperature control is no longer enough. Service Next™ overall-concept explodes the unit into components and compares their limits with BMS's changing information. By analysing them, the operating efficiency of the plant is optimised and the thermal condition is monitored.

Here at Chiller, we considered how we could offer even better benefits for our clients, and realised that there was a need to look at things from a totally new perspective.

"Customer focus must be part of the entire service chain", emphasises Account Manager **Raimo Pöntys** at Chiller.

"The unit and its functionality have to be seen as a whole. That's the reason we sell and deliver solutions, not just units."

Solutions are developed based on a careful analysis; the life-cycle consulting approach was expedited in the VTT (the Technical Research Centre of Finland) Engine 2 project, funded by TEKES, the Finnish Funding Agency for Technology and Innovation.

SERVICE FROM START TO FINISH

In the full-service model, we have extended the interactive web-based Service Next™ overall concept already familiar to clients. The launch of the service revolutionised the optimisation, monitoring and lifecycle management of the units.

Customers have welcomed the Service Next™ with open arms. On-demand maintenance, as well as electronic documentation and reporting, saves money. The cornerstones of the success are our customer portal and our transparent

maintenance service. Remote monitoring can be implemented, provided the client has a good Internet connection.

"The telecommunication card needed for the surveillance is integrated into our new devices, and can be easily installed in the old ones", says Pöntys.

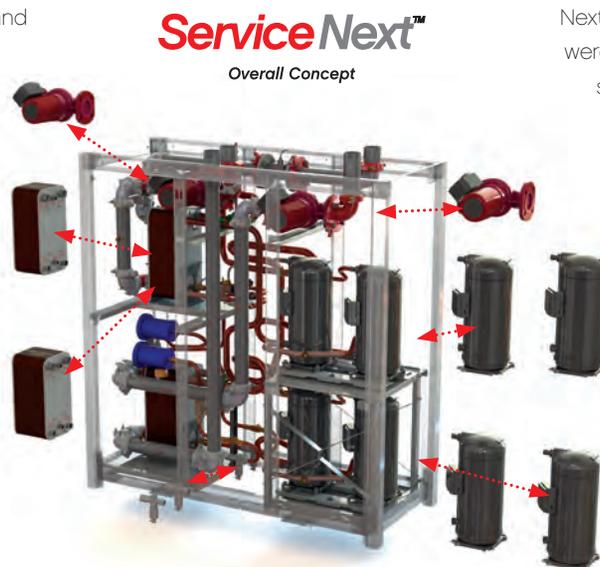
NEW OPPORTUNITIES

Next Service™ and the service platform were expanded with various options, such as energy monitoring. In addition, we offer comprehensive reporting, system exchange, design assistance, IT reporting, refrigerant leak checks and a remote help desk.

"The appliance installation, equipment commissioning, spare parts and repairs are of course part of our customized customer services", explains Pöntys.

THE WORK CONTINUES

At Chiller, the investment in full-service affects all R&D. Production has been regenerated, and the installation sites can be accessed remotely. It is no longer necessary to drive to a site to find out where the fault is. •



**- explodes
the unit into components.**

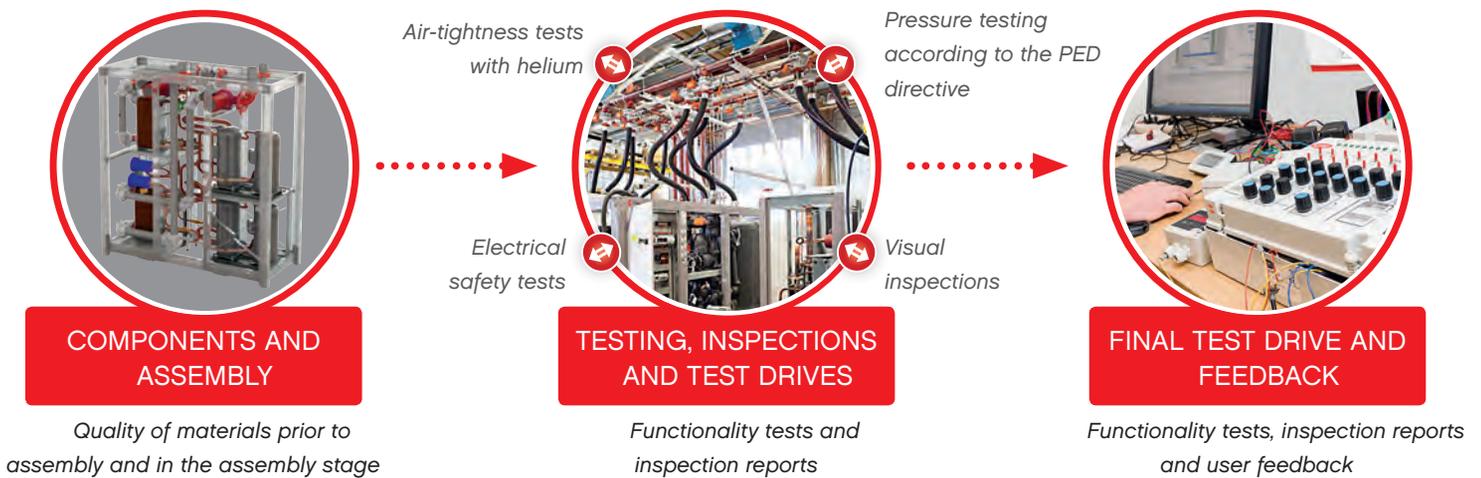
► Read more: www.chiller.fi/servicenext

QUALITY ACROSS THE BOARD

► Text: Dakota Lavento ► Images: Chiller and Pauli Juppi

Investment in quality requires resources. But it guarantees superior products and allows for active product development.

CHILLER'S PRODUCTION QUALITY ASSURANCE



Technical director at Chiller, **Pekka Salmi**, likes to talk about quality. It isn't just his responsibility to ensure the high quality of the heat pump and cooling equipment... it is everyone's responsibility; from the production crew to the top management.

"Take for example the GRAND™ Vari fan coils. The quality is based on the design and on precise testing. Each step in the production affects the quality. The quality of the experience is ensured by offering a professional installation and a great range of services. Next Service™ is part of the quality experience", Salmi knows.

As well as the product group managers, each employee contributes to the quality. Quality is a shared responsibility. Information on development projects and any potential problems is readily available to everyone. In our weekly team meetings, the

factors affecting quality, as well as customer feedback, are carefully reviewed.

"We value every kind of customer feedback. Even negative comments are welcome, as they allow us to further develop our products and operations. That's why we review the feedback carefully and learn from it."

"The common business cliché, "Our employees are our most important asset," is the lifeblood of our entire operations. Employees'

"We value every kind of customer feedback. Even negative comments are welcome, as they allow us to further develop our products and operations."

skills and motivation are maintained by arranging quality training on a regular basis. A handbook for new employees provides them with all essential information necessary to integrate them into the manufacturing chain. The company strives for the continued development of all activities as a means of improving quality. One example is electronic data management. This reduces errors and waste, and preserves the environment."



▲ Pekka Salmi explains that a laboratory enabling testing under extreme conditions is a big investment, but it's the only way of ensuring the durability of the devices under any given conditions.

QUALITY ASSURANCE IS A TOP PRIORITY

Producing quality is one thing, but assuring it is another.

"The customer expects first-class equipment. He doesn't want to have to test its functionality", Salmi comments. Quality assurance does not come cheaply, and Chiller has invested a lot in QA over the years.

"Devices have evolved tremendously in a short period of time, on the back of the diverse regulations from the authorities. The new standards require investments in effective testing methods. Export brings another set of challenges. In the Middle East for example, the conditions are quite different from those on Western markets. We cannot export equipment to the Middle East for testing, but rather the test conditions must be recreated on site here."

WE MEET CUSTOMERS' NEEDS

"Customers have demands, and expect the best possible solutions. Through comprehensive testing, we are able to prove for our customers, as well as for ourselves, that our devices meet the given criteria, for example in sound levels or energy efficiency. The increasing demands for quality also require better quality assurance. It is always possible to find better ways, for example, of assuring the air-tightness of the equipment.

We decided to test the air-tightness of the equipment by using helium as a detection gas, as it is lighter than nitrogen and air. The molecular weight of helium is just 4.0 g/mol, and it escapes from a device more easily. It therefore constitutes a very reliable method for detecting leakage. The use of helium also speeds up the testing process. Chiller's leak tests are carried out in semi-finished product cells, prior to assembly.

It saves unnecessary work. Faults in the cells must be found before final assembly, and not in the final testing. Final testing is intended for verification of the modules' compatibility and functionalities." •



BOX VARI™ - SUPERIOR ENERGY EFFICIENCY

BOX Vari™
All-in-One Air-conditioner

The new BOX VARI™ -cassette fan coil combines style, practicality and high quality. It is very energy efficient and consumes less than a LED-lamp. The revolutionary upward directed air control of the EC-lattice guarantees a pleasant and draft free interior environment.

BOX VARI™ -cassette fan coil integrates seamlessly with a variety of interior solutions. The technology is safe and the service requirements are considerably small. The unit is manufactured in Finland and is thoroughly pre-tested.

BOX VARI™ represents a highly convenient installation, use, service- operational concept.

- ▶ The new EC-grille allows significant energy savings
- ▶ A present indoor environment, draft free
- ▶ Fan and ventilator adjustment 0...100%
- ▶ 50% less service costs
- ▶ Modbus-connection as standard
- ▶ Minimum service required for the filters
- ▶ Plug-in connection

▶ **Additional information and retailers:**
Chiller Oy, Louhostie 2, 04300 Tuusula, Finland
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GRAND Vari™

A new concept for air-conditioning
in hotel rooms and villas



The new EC motor technology and the solution of the unit constitute a technological combination the like of which has never been introduced to the marketplace. The grille of the unit consists of two sections, which enable an unprecedented logarithmic temperature difference for a heat exchanger coil.

- ▶ **Control of valves and EC motor in the range of 0...100 %**
- ▶ **The new EC grille enables minimal energy consumption (in the range of 3...11 W)**
- ▶ **The new EC grille enables blowing that is completely free from draught**
- ▶ **The filter is conveniently located behind the hinged grille and easy to clean**



Chillquick Thermo™

Efficient & Flexible Heating & Cooling

Chillquick Thermo™ is a revolutionary range of heat pumps that provide for more flexible and energy-efficient solutions. These double-acting units offer both heating and cooling.

One heat pump range is enough to cover the needs of all buildings, up to 2 000 kW capacity. Chillquick Thermo™ heat pumps can be connected to the Service Next™ overall-service.

- ▶ **Read more: www.chiller.fi/heat-pumps**

VARIABLE ENERGY EFFICIENCY

- CHILL QUICK THERMO™ - HEAT PUMPS FOR BUILDINGS

- ▶ **More information:**
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