



EXPERT NEWS 4/2014

# SWEDEN'S MOST SUSTAINABLE NURSERY SCHOOL?

## First vocational college

FOR HEAT PUMP ENGINEERS

## SPEED CONTROL BECOMES STANDARD

MARTIN FORSÉN EUROPEAN HEAT PUMP CHAIRMAN

# New step forward in North America and Europe

THE DUST HAS STILL NOT settled since the acquisition of the North American company WaterFurnace in August, when NIBE welcomed this listed, heat pump manufacturer into its family. A few months later, on 7 November, we issued a press release about our acquisition of the American heat pump manufacturer Enertech Global LLC. This significantly expands our presence in the markets of the USA and Canada. The steady improvement in the North American economy and the production, products and expertise of our committed employees on the other side of the Atlantic create a promising foundation for our business area in the future.

Cutting-edge, Swedish technologies coupled with local international organisations help us to continue our mission of breaking the global dominance of fossil-fuelled products. Unlike renewable energy sources, fossil fuels are less environmentally friendly and one day they will run out.

THE FACT THAT SWEDEN is best at energy efficiency and using state-of-the-art products, like heat pumps, is very encouraging. The Swedish Energy Agency reports that we are using less and less oil to provide

hot water and heating in residential and commercial premises. Oil accounted for just three per cent of our energy use in 2013. Only eleven years ago, the figure was nearly 25 per cent.

An important point to take on board is that in Sweden, which is a relatively small country, there are no less than 1 138,000 heat pumps in residential and commercial premises providing hot water and heating.

World class again!

THANK YOU MARTIN for helping us to bring it to the attention of politicians that there is a much better world than the world of oil and gas. We've come part of the way but, really, the journey has just begun.

THE HEAT PUMP MARKET IN SWEDEN WAS SHOWING fairly stable growth up to and through September, after which the number of installations declined dramatically. Nevertheless, our joint marketing efforts resulted in a large market share and we are pleased with the positive reception that all our new products have been receiving. It is especially gratifying to have had the lowest number of complaints ever. It means that

our targeted, structured and increasingly prioritised quality-assurance efforts are paying dividends.

Our efficient customer support and sales departments will continue to be available to provide you with the support you need.

Advent has already arrived and 2014 will soon be at an end. It has been an interesting year with regard to the economy, politics and energy. We are clearly working in the right sector with products that increase comfort and cut costs and which are fully in line with the global targets for the future.

THANK YOU FOR EVERYTHING THAT we have been able to accomplish together over the year! A Merry Christmas and a successful and happy 2015 to all readers of NIBE's Expert News magazine!



<p><b>NIBE ENERGY SYSTEMS</b> Sales Customer support Marketing communication Tel: +46 (0)433-73 000</p>	<p><b>SOUTHERN NORRLAND</b> Tommy Landin HUDIKSVALL Tel: +46 (0)433-27 34 65 Text: +46 (0)70-213 69 19</p>	<p><b>WEST</b> Mikael Albo FALKÖPING Tel: +46 (0)433-27 34 60 Text: +46 (0)70-699 55 80</p>	<p><b>SOUTHWEST</b> Arne Gustafsson HALMSTAD Tel: +46 (0)433-27 34 55 Text: +46 (0)70-942 91 50</p>	<p><b>SOUTH</b> Fredrik Steiner HÖLLVIKEN Tel: +46 (0)433-27 34 58 Text: +46 (0)70-516 39 86</p>
<p><b>NORTHERN NORRLAND</b> Lars-Göran Andersson UMEÅ Tel: +46 (0)433-27 34 54 Text: +46 (0)70-209 73 02</p>	<p><b>STOCKHOLM</b> Peter Eriksson* SOLLENTUNA Tel: +46 (0)433-27 34 64 Text: +46 (0)70-655 45 05</p>	<p>Christer Svensson* GOTHENBURG Tel: +46 (0)433-27 34 56 Text: +46 (0)70-209 06 11</p>	<p><b>EAST</b> Magnus Lindberg* KUMLA Tel: +46 (0)433-27 34 91 Text: +46 (0)70-590 11 91</p>	<p>Fredrik Snygg* VITTSJÖ Tel: +46 (0)433-27 34 57 Text: +46 (0)70-190 03 16</p>
<p><b>CENTRAL NORRLAND</b> Patrik Åhman DOMSJÖ Tel: +46 (0)433-27 34 62 Text: +46 (0)70-190 04 79</p>	<p>Per Johansson SOLLENTUNA Tel: +46 (0)433-27 34 63 Text: +46 (0)70-751 74 09</p>	<p>Magnus Ström KUNGÄLV Tel: +46 (0)433-27 35 06 Text: +46 (0)70-590 35 06</p>	<p>Tord Beurling MJÖLBY Tel: +46 (0)433-27 35 20 Text: +46 (0)72-239 03 90</p>	<p>Fredrik Bäckman MARKARYD Tel: +46 (0)433-27 35 29 Text: +46 (0)730-58 00 98</p>

\* Regional Manager commercial buildings.



# GETTING TO GRIPS WITH EUROPE

Martin Forsén joined NIBE in October last year to strengthen the company's international profile. He now takes over the prestigious role as Chairman of the European Heat Pump Association (EHPA).

**MARTIN FORSÉN HAS** been active in the European Heat Pump Association since 2005. He now takes over as chairman and becomes one of the public faces of the organisation.

This gives NIBE an even more visible presence in Europe and adds greater force to the message about the excellence of heat pumps.

Martin Forsén was CEO of the Swedish Heat Pump Association (SVEP) for ten years before his appointment at NIBE, largely thanks to his extensive network of contacts from his years with SVEP. It is the very essence of the work he does.

We have already seen the effects of his work in Europe and he is now entering the very interior of energy policy with access to Europe's most influential decision makers and researchers in the private and public spheres.

"Energy is a large lobbying world, but it mainly revolves around the electrical industry, gas and other fossil energy sources. We are not in the field of energy supply but energy use. It's a smaller world with lots of small players, which makes it even more important for us to be able to present the advantages of the technologies," says Martin Forsén.

The members of EHPA can be found throughout the industry, but previously only one of the other major companies has been involved in advocacy efforts on a larger scale. The fact that NIBE is now moving up to the same level and showing that it takes these issues very seriously is largely due to the right man having been found for the job.

"It is essential to have a very good network of contacts and that takes a long time to establish and build up," he says.

**AS AN ADVOCATE, YOU HAVE TO** learn to be straightforward and clear. Martin Forsén therefore has a mantra, as he calls it, which

sums up the advantages of NIBE's products in a powerful way: They help to enhance energy efficiency, reduce greenhouse gas emissions and increase the use of renewable energy.

It doesn't need to be any harder than that.

His job often involves dealing with far more complex issues and considerations however. For example, Martin often acts in an advisory role when research centres and universities are starting up studies on thermal efficiency and heat pumps. With his extensive knowledge, it is easy to contribute unique perspectives that make such studies even more useful.

He then uses the findings and statistics from these reliable studies when communicating information, as part of his job, to the politicians and others he meets from all over Europe. This is usually at large conferences in Brussels and occasionally at face-to-face meetings



**Name:** Martin Forsén.  
**Title:** Manager of International Affairs.  
**Age:** 47.  
**Number of days spent travelling each year:** 60-80.  
**Career before NIBE:** CEO of SVEP. Before that, a researcher at KTH.

with individual decision makers.

The details of the future energy labelling scheme for heat pumps is currently under discussion. Time is short because everything has to be decided well before the end of September next year. There is an unbelievable number of products that have to be tested and labelled. Although this labelling directive has not yet been fully implemented, the regulatory framework is under scrutiny and the preliminary discussions for the coming review have already begun.

"In this matter, it's important that we stand united in the industry and try now to persuade the Commission to create a framework of regulations to reward heat pumps that can be adapted for our future "smart grid" and not introduce any general market barriers for electricity-consuming products."

**ANOTHER TOP-PRIORITY** issue for EHPA is to bring about a harmonised, European product-certification system for heat pumps.

"Subsidy schemes for heat pumps vary from country to country. The products have to meet a certain performance standard in order to qualify for these and the requirements differ greatly in the different countries. This is an area we are trying to harmonise. The situation is completely absurd today. It means we have very expensive and extensive testing activities that run completely contrary to the entire basic idea of the European Union, which is to have a common market where goods and services can freely cross national borders."

Looking ahead, he is concerned about the new environmental targets that were set earlier in the autumn. The targets are to be met by 2030 and the wording of the directive was much weaker than the industry had hoped for.

These targets regulate how legislation is developed and this affects the entire energy consumption industry. If the targets are too low, it means a slower phasing-out of fossil fuels and it decelerates the development of the heat pump market.

"It is vital that we keep a close eye on this process and try to provide suggestions for future or stricter legislation. We know that our products are highly beneficial to the environment and can therefore be part of the solution to the problems we face today and in the future," says Martin Forsén. ■



Foto: William Lavesson

## THE MOST SUSTAINABLE BUILDING IS HEATED WITH NIBE GROUND-SOURCE HEATING

Bacsippan is a unique nursery school near the Swedish town of Ronneby. It is so unique that it was presented as one of Sweden's prime examples of sustainability at the SB14 in Barcelona, the world's largest conference for sustainable construction. The heating system, based on the NIBE F1345 ground source heat pumps, is key to its sustainability.

Its consumption is down to as little as 23 kWh/m<sup>2</sup>.

**B** The Cradle-to-Cradle concept is increasingly gaining ground in today's discussions about sustainable development. To put it simply, it's about being able to recycle everything that is consumed in one way or another into new products, leaving behind no trace. This was the fundamental idea when Ronneby local authority built Bacsippan nursery school in Listerby.

William Lavesson, Building Project Manager and Investment Manager at the local authority's Technical Department, explains, "Sustainability has been our main goal.

It has included everything, from a non-toxic indoor environment to smart architecture and renewable energy."

Bacsippan does not look like a traditional passive house. Quite

the opposite, it has large windows that allow plenty of light to flood in. One interesting feature is the two-metre roof overhang that shades the building from the high summer sun and does away with the need for cooling. In the winter, the low sun enters the windows to provide light and heat during the dark and cold months.

**THE BUILDING HAS A FLOOR SPACE** of 1,200 m<sup>2</sup> and is divided into six sections for the 100 children who attend the school.

Since its inauguration last summer, the building has attracted considerable attention and has been named one of Sweden's ten most sustainable buildings by the Sweden Green Building Council.

The Swedish Minister for the Environment is one of many people who have visited it.

A large amount of the electricity used in the building comes from the 130 m<sup>2</sup> solar panels that produce almost 22,000 kWh a year. Some of this electricity goes to the two NIBE F1345 40 kW units with nine, 200-metre-deep boreholes, which are the basis of the heating system. What's so special about this system, however, is that heat is recovered from the central cooling unit in the kitchen, which preheats the water before it reaches the heat pumps. This represents a higher efficiency for the heat pumps. According to BBR building performance calculations, Backsippan nursery school consumes just 43kWh per m<sup>2</sup>, which is 50% below the recommended level of the Swedish National Board of Housing (Boverket). But the real figures are even better.

"These calculations do not take into account the heat recovered from fridges and freezers," says William. When we look at actual consumption, we're down to just

23 kWh per m<sup>2</sup>, which is simply fantastic.

"Ground-source heating is also extremely renewable energy because, in practice, it's about extracting stored solar energy from the ground," William explains. We also have the option of extracting cooling from the borehole. I'm interested in trying to use it for cold rooms in the summer. The principle is the same as for a root cellar, but you bring the cold up instead of taking fruits and vegetables down!



Lena Ek, the Minister for the environment in the previous government, visiting Backsippan.

**BACKSIPPAN** nursery school is producing such outstanding results that two more projects are already under way. One is the construction of a new nursery school and the other is the conversion of a school, using the same principles.

"According to our calculations, we should be able to reduce the amount of energy we purchase for heating by two-thirds and get rid of an old pellet boiler!" ■

## UNIQUE BECOMES STANDARD

– when the NIBE F1255 takes over

The first inverter-driven heat pump, the NIBE Fighter 1250, was launched on the market in 2006. The concept of variable speed control in compressors was brand new and completely unique. This technology is now fully matured and the inverter-driven NIBE F1255 is the company's best-seller.

"Things have really moved quickly," remarks Per Törnkvist, Ground Source Heat Pump Manager for Sweden at NIBE.

"The technology was so unique when it first appeared that it was almost only chosen by those who were extremely interested in technology. Although the technology provided additional savings, it cost quite a lot more to purchase so it wasn't expected to pay off in the short term.

A conventional heat pump uses "on/off" technology. The compressor comes on when heat is needed and delivers as much output as it has the capacity for. It then shuts off until it is "time again". An inverter-driven compressor is more like the accelerator pedal in a car, working with as much output as is required each time. This means that although it might be operating for longer periods, it's at lower revs.

Since 2006, inverter-driven technology has been incorporated into more and more

of NIBE's pumps, including its air/water and exhaust air heat pumps. The NIBE F1255, an inverter-driven ground source heat pump, is currently the company's best-selling product.

"It's a revolution," Per states.

"It's just strange that not all the other manufacturers have followed suit to the same extent. It's rather like selling cars without a gearbox..."

### PRODUCT FOR EVERYONE

Over the past few years, inverter-driven heat pumps have become a product for the



average home and are no longer just for technology freaks. This is particularly because the price has plummeted. Even after the price increase in the New Year, it will be possible to purchase a speed-controlled ground source heat pump at a significantly lower price than before. This also reduces the pay-off time and it's the inverter-driven units that are winning the match these days.

"More or less the only reason for choosing a different solution nowadays is if you have an upper limit on the amount you can invest."

### FASTER DELIVERIES AND LESS STOCK

Another advantage of inverter-driven heat pumps is the smaller quantity of parts. Instead of having one unit for each output, the entire range is now covered by one or two models.

"Installers no longer have the problem of choosing a size when it's time to replace a customer's ground-source heat pump. With a smaller but more efficient pump, the immersion heater comes on earlier to the annoyance of the customer and with a larger one, the borehole can freeze. If you switch to a NIBE F1255, it can be programmed to a minimum permissible temperature for the borehole and the compressor is limited to variable speed operation. This optimises the unit without the installer taking any risks.

"Having fewer models also reduces our stock, and that of our wholesalers, and makes it easier to provide fast deliveries. And obviously it also has an impact on the cost... all the way to the customer. And all the way to your electricity bill!"

# SWEDEN'S FIRST VOCATIONAL COLLEGE FOR HEAT PUMP ENGINEERS

There has been a shortage of qualified heat pump engineers for many years. NIBE and Markaryd Local Authority therefore decided last year to launch Sweden's first vocational training course for heat pump engineers. The programme is now in its second year and, just like the first year, all the places are full.

**EACH YEAR SEES A STEADILY GROWING DEMAND** for skilled heat pump engineers, yet no training courses for the profession have been available until now.

Roland Andreasson at NIBE, who is the "father" of the college, says "This was one of my greatest problems during my years as Service Manager at NIBE.

"There were several courses in cooling technology that taught some of the skills required in our industry. But there was nothing covering the skills and expertise required to work with heat pumps that the entire building services sector is calling for."

Roland contacted Benny Söderblom, the principal of KCM college in Markaryd. Together they planned a programme and submitted an application to start a vocational college.

"Our application was granted on 3rd May 2013 and we were up and running on 28th August!" says Benny.

"We had 16 places but accepted 18 students because we thought some would drop out of the programme. But all 18 of them completed the course!"

**THE PROGRAMME** combines theoretical elements and practical training to provide the student with extensive, in-depth knowledge and skills.

"We cover the entire process – from borehole to radiator – and also study cooling. When the students have passed their exam,



Sefika Karlsson, former student at KCM. She now works at NIBE in its customer support department.

they are certified to work with cooling technology. Successful graduates definitely know what they are doing when they step into the workplace.

**NIBE SUPPORTS** a large part of the college and has provided it with lab equipment and heat pumps. Roland has also been very involved in the

appointment of teaching staff.

"In some practical technical subjects, it is very difficult to be a teacher who is "nothing but" a teacher. For that reason, some of the teachers we have appointed are skilled, professional engineers who bring their knowledge and experience of today's products into the classroom.

The world is evolving so quickly that if you're not working with these technologies every day it becomes difficult to keep up with the changes."

**The course runs for 40 weeks and gives 200 vocational credit points.**

Details about the course at, <http://kcm.se/yrkeshogskola/varmepumpsteknik/>

## COURSE STRUCTURE

Vocational Programme for Heat Pump Engineers

- Foundation course in Cooling and Heat Pump Technology **20 points**
- Foundation course in Electrical Engineering **20 points**
- Environmental Engineering **10 points**
- Automatic Control Engineering **30 points**
- Heat Pump Technology advanced **80 points**
- Work-based courses **30 points**
- Business skills and Customer relationships **10 points**

# Full speed for **NIBE's** air/water heat pumps

It's a couple of years since NIBE launched its new range of air/water heat pumps and the results were not long in coming.

"Things are going extremely well," says Jonas Thörnqvist, who is responsible for the product family in Sweden at NIBE.

"Our sales are climbing steadily and our market share keeps on growing."

There was a significant amount of product development behind the new product launch the other year. But he believes that is only part of the secret.

"We've been heating Swedish homes for so many years that we know how different they are and what the most appropriate heating system is for a certain house. As a result, we have created a really extensive range with several indoor units. There must always be a perfect solution."

**THE MOST RECENT PROOF OF THIS** is the new NIBE VVM 325 indoor unit. It basically incorporates the same technology and performance as the VVM 320, but with base connectors instead of top connectors.

"A lot of houses built in the 70s and 80s have old electric boilers, often connected to the heating system via pipes cemented in the floor. These connectors can be used with the VVM 325 which significantly reduces the number of pipes, cuts the cost for the customer and the end result is much neater."



## *Spring brings training opportunities.*

**NIBE** is investing more in training. A communication section has now been added to the well-equipped product training lab. In the new section, it's possible to test and learn the workings of Uplink, Modbus and SMS 40. A new course this spring covers NIBE's new Aria air-air heat pumps.

The refrigerant certification course category II and EU Certification course will continue to be run in collaboration with Kiwa/swedcert, Karlskrona and Mid Sweden University in Härnösand.

**TO FIND OUT MORE ABOUT** our programme of courses, please visit [nibe.se/training](http://nibe.se/training) or contact **Elin Hagnestam** at [elin.hagnestam@nibe.se](mailto:elin.hagnestam@nibe.se) or call +46 (0)433-73 000.

## *Elin & Jennie takes over.*

**FOR MANY OF US**, Elin Hagnestam and Jennie Ahlqvist are two new faces. Elin has taken over the role as Training Manager after Staffan Fritiofsson and Jennie is now in charge of all our visitor activities.



# 5

## **FIVE ADVANTAGES OF HAVING SPEED CONTROL AS STANDARD**

- 1. CONSUMPTION.** Consumption is reduced by always delivering the right output.
- 2. SIZING.** Installers no longer have to worry about recommending a heat pump that is too small or too large.
- 3. ADJUSTMENT.** Thanks to speed control, the heat pump adjusts to the capacity of the borehole.
- 4. LONG SERVICE LIFE.** The compressor will have fewer start-ups and run more at low revs, which creates less wear than shorter periods at high revs.
- 5. COMPREHENSIVE.** A speed-controlled compressor gives you full coverage, making it unnecessary to use additional heat from the immersion heater.



# THERE'S SO MUCH HEAT OUT THERE...

– Just waiting to be collected

Some 30 years ago the Swedish company NIBE started to manufacture ground source heat pumps. What was then seen as a novelty is today the primary source of heating in new houses in large parts of Scandinavia. Heat pumps has also played a major part in Sweden reducing its dependency of fossil fuels for heating by close to 80%.

And as someone said – if it can heat a house in Scandinavia, it can heat a house anywhere!

**TODAY NIBE IS A MAJOR** player in the heating industry with an annual turnover of some € 900 million and more than 6,000 employees on three continents.

A large part of this is the result of the success of ground source heat pumps. With the aid of a ground source heat pump, solar energy stored in the ground can be collected and used to heat homes and commercial buildings.

Warmth builds up underground from

the first days of spring when the surface of the earth starts to thaw, to high summer, when the rays of the midday sun penetrate deep down into the ground. By the time the autumn leaves are falling, there's enough energy stored in the ground to heat up any house throughout the coldest winter. A heat pump collects and upgrades this naturally occurring warmth.

Even a wet and cool summer can still provide enough energy to maintain a

comfortable indoor temperature in the coming winter.

If at any point it gets too hot inside the house, the same system can be used for cooling.

Drawing on the lower temperature underground (between 4 and 12 C° ) passive cooling also exploits nature's own resources – simply for cooling instead of heating.

It's amazing, but true.

## THREE KINDS OF HEAT PUMPS

Heat pumps is a word with many different meanings. Today NIBE produces three kinds of heat pumps.

### Exhaust air heat pumps

An exhaust air heat pump ventilates the building and recovers the energy in the warm air, reusing it to warm up your sanitary water and fuel a central heating system. Ideal for heating domestic premises and tap water.

### Ground source heat pumps.

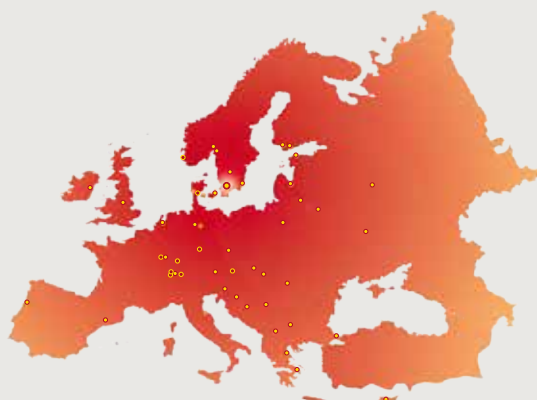
Drawing heat from surface soil, bedrock or the water in a nearby lake, this is a great option for heating houses, multiple-unit properties and other larger buildings. Available with or without an integrated water heater.

### Air/water heat pumps

These pumps extract heat from the ambient outside air. In contrast to simpler types of air-to-air heat pumps, they are connected to the building's heating system and are able to produce both heat and hot water.

## HEAT PUMPS MEAN RENEWABLE ENERGY!

The 20/20/20 European directive imposes compulsory targets on the EU's 27 member states, specifying that 20% of energy consumption must be met by renewable sources by 2020. Since ground source heat pumps are now classified as a renewable energy source their installation will help member states reach this ambitious target. And in many cases, local or regional authorities are offering home owners subsidies to switch their existing.



● NIBE Energy Systems  
● Schulthess Group AG



NIBE ENERGY SYSTEMS  
BOX 14, 285 21 MARKARYD, SWEDEN  
Tel: +46 433 - 73 000  
www.nibe.eu