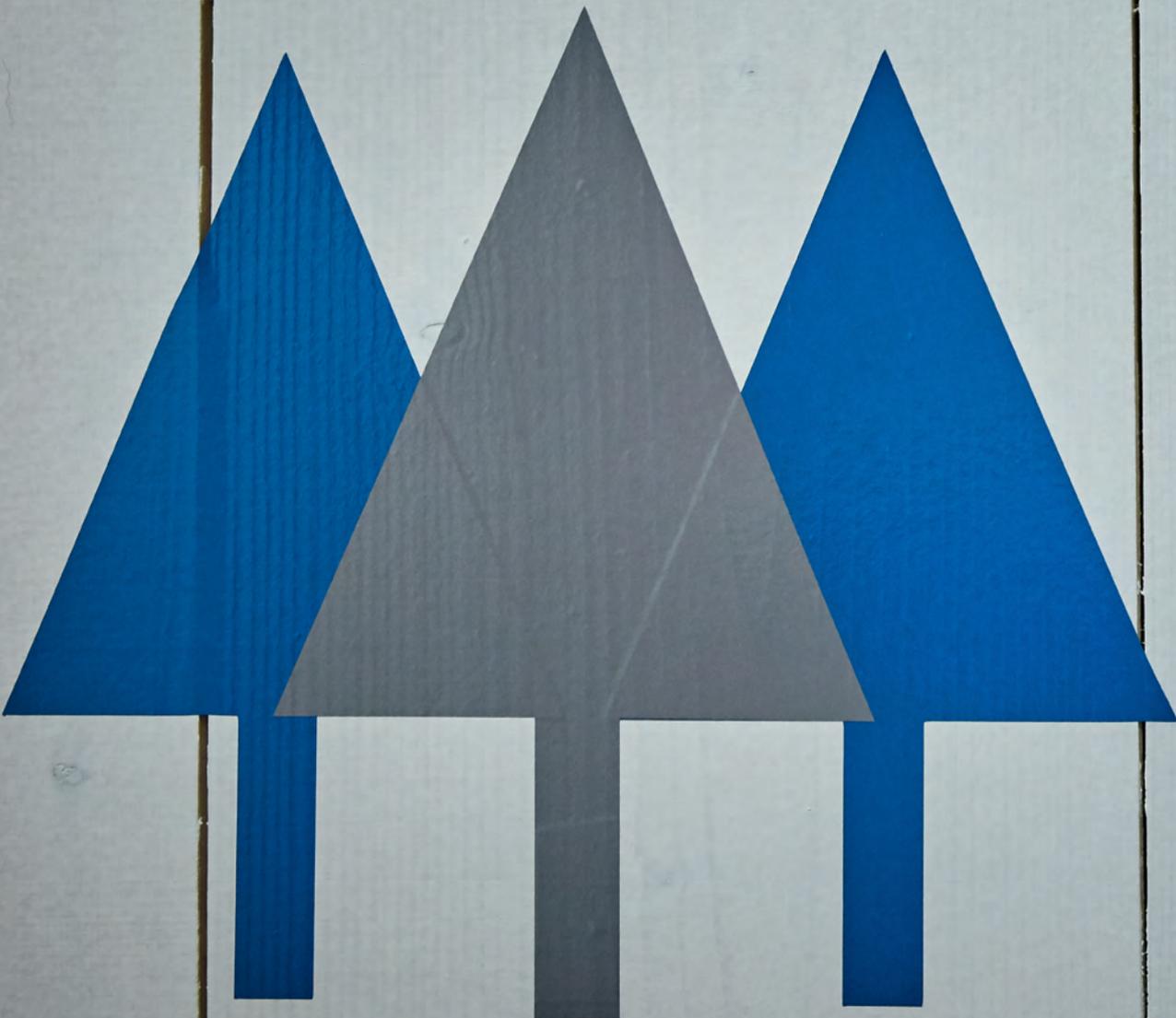


# NORTHBOUND

The Norwegians are setting an example for how it's done. The country is a trailblazer – not only in terms of energy generation, but also in the conversion of households to renewable energies. The Norwegian government aims to supply almost all households with greener energy and is using subsidies to promote the transition. All oil boilers have to be changed to other energy sources by 2020. That's good news for the environment – and also for the Vaillant Group.





In order to supply the care centre in Brumunddal with heat ecologically and sustainably, a system consisting of heat pumps and solar thermal collectors is used.



The student dormitories in Halden are often shrouded in fog. Also here, Vaillant heat pumps ensure pleasant temperatures. This is done by means of a completely carbon-neutral process, as the electricity for the heat pumps comes from hydropower.



Halden



Vaillant Country Manager Benny Simonsen supervised the project in Halden himself. He's built up the Vaillant sales organisation in Norway since 2009. Heat pumps account for most of his sales.



Norway – the country of elks, salmon, vast natural landscapes, and a good social, education and healthcare system. That's probably what comes to mind first when you think of the thinly-populated state in Europe's far north, which has more fjords than inhabitants. The Norwegians enjoy an above-average high standard of living, even compared to other rich European countries. Wages and salaries are correspondingly high. Matching that, a beer may well cost the equivalent of €10. But people can afford it. For Norway is rich, especially in oil deposits, which the country possesses as well as gas fields in the North Sea. The only thing is, hardly anyone here uses gas and oil.

Unlike the vast majority of European countries, when it comes to its energy

supply, Norway is largely independent. Only in the coldest winter months must electricity be bought in addition, currently from Poland. Otherwise, the country covers its needs itself and in fact completely CO<sub>2</sub>-neutrally and environmentally sparing with water power. In all, there are more than 1,000 hydropower stations nationwide. Based on the population, that's the top figure worldwide.

“Norway offers very special prerequisites and opportunities. We're expanding our business and presence here step-by-step,” says Vaillant Country Manager Benny Simonsen. It all began in 2008. In the meantime, the 42 year-old has put together a small, highly motivated team of at present ten employees, and aims to grow this further. The head office is based in Vestby, about 50 kilometres south of the capital, Oslo. About half of the team works in the field force.

**Norway offers very special prerequisites and opportunities.**

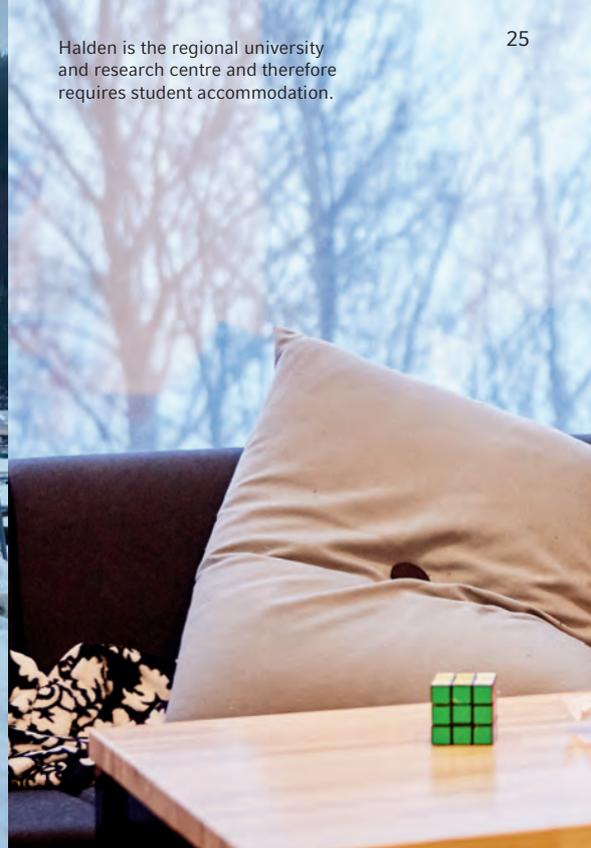
Simonsen knows the market and his customers like the back of his hand, for he comes from the industry. He used his good contacts in the beginning in order to target and recruit employees for Vaillant who could provide all-round customer care, from the sale of products to planning support. “My people are hand-



Halden is sleepy in the winter and gets a lot of visitors in the summer. A nationally well-known TV show is filmed here, and the town stages popular music festivals. Halden's nearness to the Swedish border is shown by its Fredriksten fortress of the 17th century. The eye-catcher in the town centre is the striking fjord.



Halden is the regional university and research centre and therefore requires student accommodation.



picked,” he says. Nearly all of his colleagues are still all-rounders and have a technical background. With only a few people they have to cover a large territory, stretching 1,800 kilometres from North to South.

“A special feature of Norway is that heat pumps account for about 90 per cent of our business. Only about 30 gas boilers are sold against a total of 600 heat pumps,” Simonsen adds. “This ratio is probably unique within the Vaillant Group. The focus here is quite clearly on renewable energies.” Previously, Scandinavian competitors in particular carved up the market. But Vaillant’s market share is now about 12 per cent in total, with an upward trend.

Geothermal heat pumps can be installed relatively simply in Norway. Due to the uniform rocky underground in the whole country, drilling is comparatively uncomplicated. The average temperature in the soil depths there is about 6 °C. Vertically inserted probes use this year-round stable temperature level as a heat source. Due to the climate targets and government directives, the demand for heat pumps in recent years has increased constantly. “However, here in Norway the systems – quite in contrast to many other countries – are preferably installed during the refurbishment of existing

buildings and new larger single family houses,” Simonsen explains. New buildings are now so well insulated that due to their low need for heat they often are heated solely with green electricity. In past decades, when oil was less expensive as an alternative fuel, houses were equipped mostly with oil stoves. But that’s now changing due to the government directives. For small houses with an area of less than 100 square metres, the state tolerates 100 per cent of the supply coming from electricity. However, for larger objects a regenerative energy concept must be developed. So the Norwegians are having a (politically induced) rethink and increasingly are opting for complete heating systems based on renewable energies.

### Green, greener, Halden

What that looks like in practice can be seen in Halden. The small town is located in Norway’s far southeast, hardly a stone’s throw from the border with Sweden. Somewhat hidden next to the entrance to the town, a building complex with a total of four student halls of residence has been put up. A small forest borders the rear part of the property and shields the residential units. On the transverse side of the building, there are wide windows that brightly light up the common rooms. Pale green and strong orange set colourful accents, otherwise the dormitories have been kept plain.

The dormitory complex belongs to Østfold University Colleges, whose main campus is located in Fredrikstad, about 40 minutes’ drive away. Some of the faculties are based in Halden, including economic and social sciences, various foreign-language faculties and computer science. For the students, besides the lecture halls and university buildings there is also a small library, modern fitness training rooms and an indoor swimming pool. Outdoors, they have barbecue areas for summertime enjoyment. Studying in Halden is certainly very pleasant.

The demand for heat pumps has increased due to climate targets and statutory requirements.

The university has met the legal requirements for the building energy efficiency of its student dormitories with a passive house concept. An apartment-type complex which adheres to the passive house standard is – except for some pilot projects – rather rare, even in Germany where this standard originated 25 years ago. The object has a showpiece character even for Norway. The four single buildings, which currently house more than 350 students, consist to a large extent of wood. In addition, the building ensemble has been equipped with a completely sustainable energy system.



Hamar

Thor-Ingar Synstad of the Vaillant sales team has a huge territory to care for. He drives up to 60,000 kilometres a year in order to meet his customers.



This contributes to the fact that the hall of residence is well-known in the community and beyond Halden. It has already won an award as the best regional new building of 2015.

### Completely environmentally neutral

The energy concept for the student hall of residence was drawn up by a trade partner, the locally-based installation company F. Jørgensen, in cooperation with Vaillant. Benny Simonsen himself accompanied the project intensively, and with the technology in mind he explains: "For the supply we decided on the use of two heat pumps in cascade connection. One pump is enough for normal needs in the spring and autumn season; the second is automatically switched on as required during very low winter temperatures." Additional directly heated storage cylinders ensure the coverage of peak loads. "All the system's components are operated solely with green electricity," adds Anders Furuvarp, the responsible installer. "This makes the building supply 100 per cent sustainable." Exemplary, even by Norwegian standards.

The combination of heat pumps and renewable electricity makes the energy supply 100 per cent sustainable.

Heat distribution in the single and common rooms is done by underfloor heating. In addition, the rooms are heated by inlet air, Furuvarp explains. Also, every resident has in their room a small radiator run by electricity. For the region

around Halden, although located in the South of the country, is often cool and rainy.

So it's all the more important that the students live in a healthy residential climate. The passive house standard, regulated ventilation system and uniform heat distribution helps to achieve this, as do the natural building materials used. The architectural design, based on a balanced ratio of common rooms and private quarters, also supports a comfortable learning and living environment. The university deliberately chose this integrated concept, and it is valued by the students. After all, the rents in the Halden hall of residence are no more expensive, despite all the extra comfort and the renewable energy supply.

"We're happy to have successfully realised the project," sums up Country Manager Simonsen. "We were able here to input our special system competence and our know-how of heat pump technologies in order to enable a completely environmentally neutral heat supply for more than 350 people."

### Feel-good oasis for children

Change of scene. About three hours' drive to the North of Oslo, in the municipality of Ringsaker, lies the idyllic village Brumunddal. The nearest town is Hamar, but there's no urban hustle and bustle there. The region belongs to the sales territory of Thor-Ingar Synstad. "This is the location of the Mørkved Avlastnings-senter, which can be translated as Relief Centre," he explains. Another reference project with Vaillant participation.



A special feature in view of the Norwegian climate: the solar collectors provide most of the heat needed in the spring, summer and autumn seasons. A total of 62.5 sqm of solar collectors are mounted on the roof areas.

→Sledging is a popular means of transport in winter. Everyone is on the move that way. With the long runners you can even sledge around curves.



The Relief Centre is well equipped with staff, providing one carer per child. The tasks for the day are assigned at the morning team meetings.



Thor-Ingar Synstad has been a member of the Norwegian Vaillant team since 2009 and talks excitedly about his work. His territory is four times the size of Denmark. So he spends considerable time in his car and drives up to 60,000 kilometres a year to care for his customers. "You have to be very flexible and familiar with all the technical particularities of the appliances," he says. "The work includes acquiring new customers, caring for existing ones, and giving technical advice right through to planning support. The demands are high." Because the country is so large, Synstad can't be everywhere at the same time. So the back-office colleagues in Vestby provide support.

The Relief Centre that Thor-Ingar Synstad is talking about is located in a housing development directly opposite a primary school. Disabled children are cared for in the centre, living there the whole week or for just a few days at a time. Many of them come from the surround-

ing area and go to school regularly with the other kids. It's only when the families need a break (a relief) from caring for them that Hege Terese Granstrøm and her team help out. Twelve female employees take care of the children day and night, with at least one carer per child. For the families, the care is free-of-charge. The Norwegian healthcare system enables this, meaning that everyone can make use of the Mørkved Avlastningscenter.

**You have to be very flexible and familiar with all the technical particularities of the appliances.**

Hege Terese Granstrøm is a trained nurse and head of the Relief Centre. She's worked there for 10 years and knows many of the local people. So when the time came to move the centre into a new building, it was important for her to focus on the people for whom it was constructed. The basic principle right from the start was to create a home for chil-



The rooms are open and spacious. Floor-to-ceiling windows let in a lot of daylight.

→ Many statutory regulations had to be taken into account in the planning. In general, attention was paid to a sustainable design and natural materials.



dren, but not an institution with the charm of a hospital. To achieve more comfort and privacy, the building was divided into individual living areas. There's also a small room for parents who want to stay overnight. The single flats are arranged in such a way that from outside they look like small, contiguous houses. Due to that and the cladding with a wood façade, the complex appears small and inviting and it fits well and attractively in the housing area.

### Good things come to those who wait

Inside the building, modern living areas with a lot of colour invite the children to play and relax. The rooms are open and spacious, and floor-to-ceiling windows let a lot of daylight in. Dimmable artificial light helps against "winter blues" in the dark months. "It should be colourful and lively here and radiate a positive atmosphere," says Hege Terese Granstrøm. She's happy that the architects implemented her vision so well. During the lengthy planning not only the wishes of the staff but also many statutory regulations had to be taken account of. In general, attention was paid to a sustainable design and natural materials. In return for this, the project received public funds. In all, the building project took several

years – a long time. But everyone today is happy with the result. The centre is a big enrichment for the entire region.

### A sophisticated system

"The building is a low-energy house," Thor-Ingar Synstad explains. "We were able to install an elaborate geothermal and solar heating system that generates up to 90 per cent of the heat needed." An electric boiler covers the remaining need. Like the halls of residence, two Vaillant heat pumps in cascade connection are used here too. "However, the lion's share of the heating output of the system isn't provided by the heat pumps, but by the solar collectors on the roof,"

### A sophisticated geothermal and solar heating system provides the centre with up to 90 per cent of the heat it needs.

adds Synstad. "Installing the collectors wasn't that easy," says Jonas Busk, the responsible technician. Namely, the collectors don't lie flat on the roof as usual, or are set up slanted – they hang vertically on the façade. "Finding the right angle for the incidence of the sun's radiation gave us a challenge in the beginning." As well as the underfloor heating, the solar collectors also supply the storage cylin-

ders with water for daily use. Two cylinders, each with a capacity of 2,000 litres, are located in the centre's technical room.

It's unusual for Norway that the solar collectors do the main job in providing heat. In order to optimise the project further during the ongoing operation, the planning team consisting of the centre's management, the municipal building supervision body and the installers meet once a month. "I find it great that many members of the planning team here approach things with so much commitment. That helps us incredibly in everyday life," Hege Terese Granstrøm says. Petter Granum of the Ringsaker building supervision body is confident and looking forward to realising further systems in the community. "I still find it admirable that the team has pitched in so much over the years." The project also remains something special for Thor-Ingar Synstad, as he emphasises. It's an outstanding example of highly efficient heat supply based on renewable energies. "We've done a good job together and the result is impressive," he says. He's right.