

SetraNews

//////////////////// JUNE 2020

CEDERHUSEN
ARE BUILT WITH
CROSSLAM FROM
SETRA

**Feel good
wood!**

Our wellbeing improves when
we have wood all around us

READY TO GO
AT NEW PLANING MILL
IN HASSELFORS

SETRA'S
WOOD SCHOOL

*Acoustics
in crosslam
high-rises*

TALKING ABOUT TIMBER: *The work environment when building in wood*

“WE CONTINUE
TO PROMOTE
GRÖNSAMHET”



Wood does us good

THE WORLD HAS BEEN THROUGH some major changes, and we are facing new challenges that require us to think differently and adapt. But it is also important to keep looking forward. In the spirit of Grönsamhet*, here at Setra we continue to do business that benefits our customers, society and the planet too. Our investments in cross-laminated timber and construction timber encourage more sustainable building and the upcoming factory for pyrolysis oil will help to cut emissions on our roads. Perhaps now more than ever, it is clear that the future is built on wood.

OVER RECENT months, the forest has also provided a place of refuge and reinvigoration for more people than ever. In Sweden, the number of visitors to national parks and nature reserves has shot up. The calming effect of the forest has long been known, so why not go hug a tree in these times of social distancing? Lean against a trunk that has stood firm for decades and let nature do its thing for a moment.

DID YOU KNOW that we also benefit from having wooden surfaces all around us? On pages 9–13, we report on research showing how interiors with plenty of wood affect concentration, blood pressure and heart rate. This new knowledge is now being applied to create better environments in hospitals, schools and offices. And it gives you yet another reason to build in wood.

Enjoy the read!
Katarina Levin, CEO Setra

*Grönsamhet is Setras vision. Read about it at setragroup.com/gronsamhet

BUILDING MADE EASY

INDUSTRY BODY Swedish Wood's free building guides have an added function. It is now possible to change the colour, cladding type and roofing material in all 28 external building guides on the website byggbeskrivningar.se. This makes the 3D renderings more realistic and allows you to experiment with the design.

“We're keen to make it easy for more people to build well in wood, which is why we've added material specifications to all our exterior building guides,” states Johan Fröbel, Head of Technology and Distribution at Swedish Wood.



Photo: Ninja Print

Get closer to the forest

THE FAMILY GAME SKOGEN (Forest), developed by experienced biologist Daniel Thorell, offers an ingenious shortcut to a wealth of information about the flora and fauna in our forests. Players put down different kinds of trees and habitats to fill the forest with life and learn what the various species need to thrive. Skogen is a challenging and fun game for adults and children that takes around an hour to play.



1.3 million tonnes CO₂

THAT IS HOW MUCH is stored in the wood products that Setra sold in 2019, equating to the greenhouse gas emissions of 150,000 Swedes. The Sustainability Report “Year of Grönsamhet 2019” sets out what Setra is doing to encourage building in wood and reduce its own climate footprint. You can read it at setragroup.com.

SETRANEWS is Setra's customer magazine. It is published in Swedish and English for customers and other stakeholders in Sweden and abroad. The purpose of the magazine is to spread knowledge and inspiration about wood and construction.

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COVER PHOTO: Jouko Mäkimattila in front of the new planing mill in Hasselfors. Photo: Kicki Nilsson.

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Photo: Sweco



*Relax
in World
Heritage*

Inspirational shelter

A CUBE floating in the treetops, a forest cradle and a den with stunning views. These are just some of the shelters waiting to be discovered among the natural beauty of the High Coast, a World Heritage site. Made entirely from wood, the shelters were designed and built by Scandinavian architecture students during the ARKNAT festival, a project run by Sweco and Friluftsbym to increase understanding of architecture and nature in harmony. Earlier this year, the project claimed the title Architecture of the Year at the RUM Swedish Design Awards and next year the festival will be moving down to Skåne, south Sweden.

BREAKING GROUND FOR UNIQUE FACTORY

THE END OF MARCH saw construction start on Pyrocell's plant next to Setra's Kastet sawmill in Gävle. Pyrocell is a joint venture by Preem and Setra that will produce non-fossil pyrolysis oil from sawdust. The oil will then be used as a raw material for making renewable fuel.

The ground-breaking plant will produce about 25,000 tonnes of pyrolysis oil per year, equivalent to the annual fuel consumption of 17,000 cars. The aim is to begin production in the fourth quarter of 2021.



BATHE IN WOOD WASTE

FINNISH COMPANY Woodio has developed a 100% watertight mass timber material that stores absorbed carbon dioxide and is much more ecofriendly to produce than ceramic materials. The material is used for washbasins, baths and toilet seats, and comes in a range of colours and models. The products, which are new to the Swedish market, were launched at the Stockholm Furniture Fair in February and are a welcome way to add a touch of wood to your bathroom.

NEW FACES



Production Manager for Pyrocell

ANDERS WIGSTEIN is the Production Manager for Pyrocell, the new company jointly owned by Setra and Preem. Anders was formerly COO of the cloud service Vocean.



Sales Manager for Building Solutions and Components

THOMAS KLING is Sales Manager for Setra's building solutions in crosslam and glulam, and since early May also for components. Thomas has long been Setra's Glulam Specialist and is highly experienced in the sale of glulam structures.



Components Salesman

FREDRIK HOLMSTRÖM joined Setra's sales organisation for components for the door and window industry in May. The component factory is part of the wood industry hub in Långshyttan. The sales team already includes **MAGNUS LINDQVIST** (right).

HOW THE CORONAVIRUS IS AFFECTING THE WOOD INDUSTRY

In the space of a few months, the coronavirus crisis has impacted on almost everything, and the trade in wood products is no exception. Setra's EVP Market and Business Development, Olle Berg, and the new Market Analyst for wood products at the Swedish Forest Industries Federation, Christian Nielsen, give a status report and highlight the issues to look out for going forward. TEXT: LINN TREJUS

INITIALLY, the coronavirus appeared to mainly affect trade with China, but as country after country shut down it became clear that a global crisis was developing. The mood was seriously subdued in March and April, but with hindsight Christian Nielsen believes it could have been worse.

"The first quarter went surprisingly well. Swedish sawmills have been good at spotting areas of the global market where demand continues and major upheavals have not yet been seen."

Olle Berg agrees.

"It has gone much better than we first thought. Some countries have actually remained quite stable, including Sweden, Germany, the Netherlands, Japan, China and Egypt. We'll be delivering substantial volumes to China in the coming months, and that will be a major factor in keeping us at full production. But navigating through the crisis has also taken a great deal of commitment and proactivity. If we had just passively watched events unfold, the situation would have been significantly worse."

Autumn progress key

Many ongoing construction projects continued as planned during the first months of the crisis. Even in countries with stricter lockdowns than Sweden, building has been able to continue to some extent.

"Construction is a priority activity in many countries and, since the work is usually outdoors, it's easier to maintain social distancing. We're also seeing positive news from builders' merchants and the DIY



Many ongoing construction projects have so far continued as planned.

market in many countries. This is directly linked to the coronavirus crisis and the fact that we're spending a lot of time at home," explains Olle Berg.

The Swedish Construction Federation is, however, warning of a potentially sharp downturn in newbuild projects.

"I believe we're entering a period when a great deal is going to happen from one month to the next. In April, we saw output falling but the outlook for May is all the more optimistic. The key question will be what happens in the autumn and over the next 12 months. Then we'll get an idea of the scale and duration of the impact," says Christian Nielsen.

What are the crucial issues for the wood industry?

"The overarching issue is, of course, whether or not the global economy restarts, and whether trade will be able to continue uninterrupted for the rest of the year. This is incredibly important for us here in Sweden, because 70% of our wood products are exported," says Christian Nielsen.

"It's vital that the housing market doesn't crash, because if it does, it takes a very long time for housebuilding to get back up to normal levels again. Unemployment may also affect construction over the long term if it becomes too high and prolonged. "We might need more stimulus packages and a government drive to increase public sector building projects,"

says Olle Berg.

New spruce bark beetle outbreaks in Sweden or Europe are also a potentially important issue.

"If we see lower economic growth and reduced demand due to the coronavirus crisis, and at the same time we have problems with bark beetle outbreaks that create an oversupply of raw material, that could have a serious impact. It's essential to make sure the demand is there, so that forest owners are kept active and are able to get their timber out from the risk areas," says Christian Nielsen.

Global trade must be kept open

One expected effect of the coronavirus pandemic is a rollback of globalisation. However, there is no sign of such a change in the wood industry.

"I would say it's important that we continue to advocate for open borders and global trade. In Sweden, we've been good at increasing our domestic demand over the past few months, and that has compensated to some extent for the shrinking of the export markets. But there is no getting away from the importance of global trade that works and is open," adds Christian Nielsen.

"I also don't expect any structural changes, although the crisis has really shown how crucial it is to have good logistics solutions and flexible production. That is the lesson many of us will be taking away from this spring," concludes Olle Berg.



Olle Berg is Setra's EVP Market and Business Development.



Christian Nielsen is a Wood Products Market Analyst for the Swedish Forest Industries Federation.

Photo: Björn Leijon



Illustration: General Architecture

Crosslam from Setra

for Sweden's largest timber-built neighbourhood

With Setra's new crosslam factory now up and running, Stockholm and Mälardalen will have access to locally produced building solutions in wood. Cederhusen, Sweden's largest mass-timber built residential neighbourhood, will be the first project to be built using crosslam from Setra. TEXT: LINN TREIJS, ANNA MATZINGER

CEDERHUSEN WILL RISE on top of the tunnels for the E4/E20 motorway as an oasis of wood in the concrete. However, it will also be Stockholm's first timber-built inner city neighbourhood. The project consists of four residential blocks of 10–13 floors, with a crosslam frame consisting of walls, shafts and beams. Veidekke Entreprenad is the sole contractor for the first neighbourhood in the project. It selected Setra

as the supplier of the frame for the first building, on the basis of a combination of price, low environmental impact and high service.

"It is incredibly satisfying to have been entrusted with such a large and interesting project with such a clear environmental profile.

The whole Cederhusen concept makes an excellent fit with our values, and it is

a good example of how the construction industry is starting to turn to timber.

We are proud to be on that journey," says Daniel Halvarsson, Business Area Manager, Building Solutions and Components, Setra.

Move our positions forward

The project is being managed by construction operator Folkhem. Folkhem, owned →

→ by Rikshem and Veidekke Eiendom, only builds in timber, as a clear statement on the climate issue.

“We want to be involved and move our positions forward with regard to the climate change adjustments that will be needed in the construction industry, and we’ve produced a portfolio of around ten ready-to-go projects to be built in and around Stockholm. The Cederhusen project is the first and largest of them. It is also the most complex, being located in the middle of the city and on a site with unusual basic conditions, on top of tunnel roofs. This means strict control of the weight of houses, relative to the structure of the tunnels”, says Anna Ervast Öberg, Project Developer, Folkhem.

Cederhusen have attracted considerable interest. The first apartments were sold in half the time anticipated. Buyers say that it is the architecture, the timber house aspect and the location that convinced them.



Daniel Halvarsson, Setra.

“They understand that this project represents something new. That it makes them part of something that matters more than just buying somewhere to live”, says Anna Ervast Öberg.

She herself believes that Cederhusen will be very important to Stockholm as a city.

“It will become a symbol for what the new expanding neighbourhood of Hagastaden stands for, an area with a clear life science profile bringing academia, science, business and housing together in one place.”

Minimisation of risk in the factory risk

Operations in the new crosslam factory in Långshyttan, two hours from Hagastaden, are now in full swing. Work on production of the first trial structural elements has begun and the control systems are being calibrated. At the same time, training of the employees who will be responsible for each machine is under way. Deliveries to Cederhusen will start in September.

“It will be a full-on summer. As we’re a brand new factory and this is our first project, we’ve focused extra resources on identifying, preventing and eliminating any potential risks. We have an extremely competent project team and most people



Anna Ervast Öberg, Folkhem.

Cederhusen

Cederhusen in Stockholm will be Sweden's largest mass-timber residential neighbourhood and Stockholm's first modern timber-built inner city neighbourhood.

The four buildings accommodate 234 apartments and are part of the new Hagastaden area linking Stockholm with Solna. The first apartments are projected to be ready for occupation in early 2022.

Frame, facade and much of the interior will be in wood. The buildings were designed by General Architecture.



Wood construction is also beginning to take off in Stockholm. One upcoming project is Cederhusen in Hagastaden.

Illustration: General Architecture



Photo: Ola Hagberg

»This makes transport distances to Stockholm even shorter, which is a positive factor in terms of the climate issue«



The wood industry hub in Långshyttan manufactures cross-laminated timber, glulam and components for doors and windows.

have been working for years to get to where we are today”, says Daniel Halvarsson.

It was back in 2017 that Setra took the decision to start producing crosslam. Demand for industrially-produced structural timber systems was growing noticeably even then, and it was clear that the market for crosslam had considerable potential. The structural elements are manufactured at the former Outokumpu site, where timber is now taking over from steel. The crosslam factory stands right next to Setra’s glulam facility, providing commercial synergies and simplifying the process for those looking to order building solutions, since they often use both crosslam and glulam.

“It’s a huge advantage to already have a wealth of expertise on hand at the glulam factory. By bringing some of our experienced employees over to the crosslam factory, we’ve created the best conditions for our new employees to learn, while also being able to maintain the excellent culture that we’ve built up at the site over many years,” states Daniel Halvarsson.

Being local matters

Anna Ervast Öberg at Folkhem believes that the factory in Långshyttan can play its part in an expansion of apartment block construction in timber in Stockholm.

“Because of the geographical proximity, you get a different relationship with the material as a product and building sys-

tem, and being able to go there and look makes it less abstract. Also, transport is an important factor that makes a big difference when comparing the environmental impact of different suppliers”.

Mathias Fridholm, Director at the trade association Swedish Wood, also sees benefits from a factory being located near the metropolitan area.

“This makes transport distances to Stockholm even shorter, which is a positive factor in terms of the climate issue. Another consideration is that prefabricating elements enables greater quality assurance, and we think that increasing the supply of such products is also going to encourage interest in building in wood”.



Mathias Fridholm, Director Swedish Wood.

The Setra timber manufacturing hub in Långshyttan

- Långshyttan is located in the Municipality of Hedemora, Dalarna. It has been manufacturing glulam since 1967.
- The hub comprises factories for glulam, crosslam and wood components for the door and window industry. This makes Setra a full-service supplier of crosslam projects, including glulam beams and the structural frame.
- Setra also assists with the structural calculations and drawings and has a partnership with Limträteknik in Dalarna for the planning and technical development of crosslam.
- At full capacity, the hub has an output of 150,000–200,000 m³ processed wood products per year, around half of which is crosslam.

HASSELFORS PLANES TIMBER FOR THE WHOLE WORLD

There is a growing interest in building in wood. To meet this trend, Setra is expanding its range of construction timber with a major investment in new planed products. Production will soon begin at the new planing mill in Hasselfors.

TEXT: LINN TREIJS PHOTO: KICKI NILSSON

“WOOD IS THE BUILDING material of the future and we are clear that wood construction will continue to grow despite the coronavirus crisis. We’re now able to offer a stronger product portfolio to customers in the global construction market, and thus also increase our contribution to sustainable building,” states Olle Berg, EVP Market and Business Development at Setra.

The new range comprises planed construction timber in various dimensions, for example for roof trusses and studs, complementing Setra’s selection of sawn construction timber. The timber is sorted mechanically and graded using the strength standards applicable for load-bearing structures in Europe, the USA and Australia. The products will be sold to builders’ merchants, wood product manufacturers and large-scale construction projects.

Flexible production

The construction timber will be produced at Setra’s new planing mill with integrated trim saw in Hasselfors. The new planing mill will begin production in summer 2020. The raw material is spruce sourced within a radius of around 100 km. Logs with the right length specifications are selected out in the forest, while integrating the sawing and planing process cuts out one step in the production.

“We’re working hard on getting the lead times down and being flexible with regard to customer needs. The new technology will be a big help in this respect. For example, we have the most modern sorting equipment around, and it’s incredibly efficient,” says Jouko Mäkimattila, Setra’s Product Manager, Planed Wood Products.

Sample deliveries already dispatched

The goal is to manufacture around 200,000 m³ of planed products per year in Hasselfors. The UK will be a key market, so Setra’s distribution warehouses in the ports of King’s Lynn, Rochester and Hull are likely to be well used.



Jouko Mäkimattila in front of the new planing mill in Hasselfors.

“The biggest volumes will go through King’s Lynn. We have huge potential in the UK and the first sample deliveries of truss timber, TR26, have actually already been received by customers,” explains Jouko.

The next step will be to CE mark the strength-graded timber for sale in Europe. Production is expected to properly get going in the autumn. The first products to

leave the planing mill will be timber in classes C24 and C30, which are often used for roof trusses and floor joists in Sweden and the rest of Europe. As soon as the planing mill is up and running, the process of getting the timber certified for sale in the USA will begin, followed by certification for Australia.

Timber for load-bearing structures

- Construction timber is used to build houses and other structures that demand particular levels of strength from the material. It is therefore important that the properties of the timber are well known and verified.
- Europe uses C classes from 14 to 50 to show how strong the timber is, but wood up to C30 is mostly used in practice. The higher the figure, the higher the bending strength of the timber. Setra’s assortment ranges from C24 to C40 for both planed and sawn products.
- The USA has its own system for strength grading, as does Australia.

Feelgood wood

Classrooms with wooden walls lower heart rates and boost student concentration. In healthcare and in office settings, blood pressure goes down and stress levels fall when we are surrounded by wood. Is this magic or only natural? Awareness is growing of the role of wood in wellbeing and how it makes us feel good and makes us healthier.

TEXT: KATARINA BRANDT



WOOD AS A CONSTRUCTION MATERIAL has a positive impact on the environment and on health. This is one of the conclusions of the European Research Project Wood2New, in which industrial companies and universities from six countries worked together to survey the effects of wood in indoor environments. Besides the purely technical properties, the researchers also measured people's emotional experiences of wood in schools and health settings, for example. The interesting thing is that wood is experienced similarly irrespective of culture, in other words as being natural, warm and comfortable.

Tomas Nord is a senior lecturer at the Division of Industrial Management at Linköping University and one of the researchers involved in Wood2New. He thinks that many of the results show things that we already had an idea of but were unable to measure.

"It seems as though we humans are affected positively by spending time in environments with exposed wood surfaces; studies have shown that we experience less stress for example. These results are interesting for people who build and are responsible for the interior design of schools, healthcare settings and workplaces," says Tomas Nord.

"It seems as though as humans we are affected positively by spending time in environments with exposed wood"

TOMAS NORD

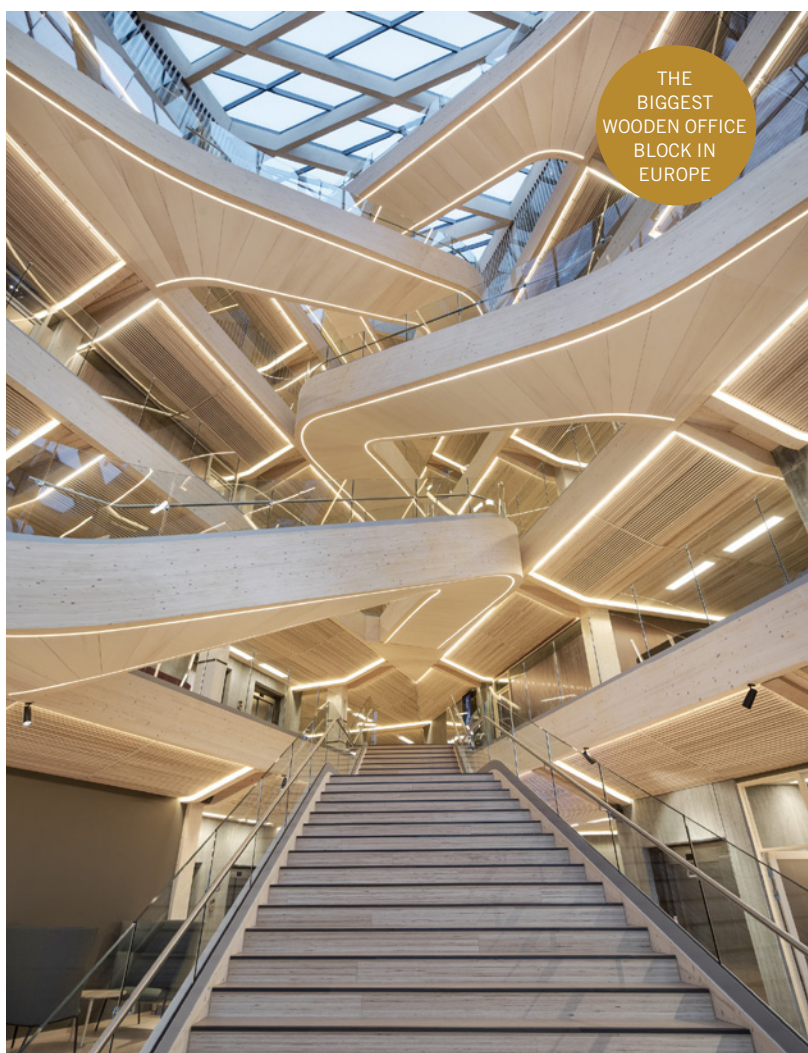


Photo: Sindre Ellingsen

FINANSARKEN, STAVANGER In Sparebank 1 SR-Bank's new head office wood helps to create a warm, functional and welcoming environment for the bank's staff and customers.

Enjoyment and growth in the office

Studies show that an organic material like wood can be similar to the effect of spending time outside in the natural world. The emotions that nature causes in us in turn have a positive effect on blood pressure, heart rate and stress levels.

These were factors that the Norwegian bank SpareBank 1 SR-Bank drew on when they chose to build their new head office in Stavanger. The future-oriented wooden building was completed in November last year and is the largest wooden office building in Europe. In many ways, the building reflects the bank's vision, where the focus is on enjoyment and growth.

"Wood is a good environmental choice that feels modern and future-oriented and is in tune with the bank's values. Wood also contributes to a warm, functional and pleasant environment that we want our customers and staff to be able to meet and spend time in," says Arne Austreid, CEO of Sparebank 1 SR-Bank.

Although Norway was quick off the mark on building office blocks out of wood, Sweden isn't far behind. One example is the office block and innovation arena A Working Lab on the Chalmers campus in Gothenburg, which was completed in autumn 2019. The construction project focused on sustainability, innovation and creative processes and 16 innovation projects acted as its engine. Among other things, it involved exploring how the strengths of building in wood can be exploited while limiting the weaknesses of the method. The new building has a wood frame and also has a great deal of wood on display in the interior.

Another example is the building in the pilot project "We give the power to the architect". This is an office block made entirely in wood, created by Utopia



Cristiana Caira splits her time as an architect at White with the role of Artistic Professor at Chalmers University of Technology and the Center for Health Design.

Arkitekter in partnership with Castellum, which is to be built in Örebro. The project's high climate ambitions have meant that the frame, the facade and practically everything in the building will be built out of wood.

Wood is natural to our origins.

So what is it that causes natural materials like wood to have so many positive effects on us?

Some researchers think that part of the explanation can be found in our genes. Humans come from nature. This is where our origins lie. Surrounding yourself with wood makes the environment more natural, so helping to produce calm and relaxation.

Cristiana Cairra is a partner at the firm White Arkitekter and is responsible for healthcare architecture at White's Gothenburg office. Since February she has been splitting her time at White with the role of Artistic Professor at Chalmers and the Centre for Healthcare Architecture. Here she acts as a link between the industry and academia and is involved in shaping the healthcare architecture of tomorrow.

"In the years ahead, the industry will also need to take new leaps forward when it comes to climate and resource efficiency. Building in wood, for example, can be an interesting area for research. I note that the industry is desperate for knowledge, at the same time as regions and politicians have an agenda that commits them to embracing climate-smart, and eventually climate-neutral, building. Unfortunately, we don't know enough about wood-framed hospitals and very few examples of them exist."

Karlstad Central Hospital could be a pilot project, depending on the decisions healthcare provider Region Värmland makes about its future expansion. Here Cristiana and her colleagues at White have chosen a wooden frame as the main feature of one of the three new buildings planned.

Another place that could be first to have a wood-built hospital is Växjö.

Before the building of a new emergency hospital, the organisation Smart Housing Småland conducted a pilot study looking at the technical challenges regarding fire, sound, vibrations and load-bearing capacity for hospitals in wood. Perhaps Växjö's Wood Building Strategy, aimed at becoming Europe's first modern wooden city, can be combined with the hospital plans.



Picture: Tengbom

A WORKING LAB, GOTHENBURG Designing a sustainable property was central in the construction of A Working Lab, which has the Swedish Green Building Council's Gold certification.

Healthcare premises designed with care

Cristiana says that there are many components to take into account when working in healthcare architecture. Above all, hospitals need to be functional and have a focus on wellbeing, with aspects such as daylight, ease of finding your way around, access to good outdoor environments, internal environments and art. Research shows that healthcare premises designed with care have an impact on how we feel and our healthcare experience. It might be the choice of furniture, a good view out of the window, or the choice of interior materials.

An exciting project is currently being completed in Borås where White has designed a new psychiatric clinic at Södra Älvsborg Hospital. Here each patient gets a room of their own, with their own balcony and window facing green space. The specially designed glazed balconies give patients the opportunity to enjoy the outdoor environment at the pace their health allows. Besides proximity to nature

Classrooms in wood lower pulse rates and stress levels

AN AUSTRIAN STUDY examined the impact of different building materials on students' pulse rates. The results showed that in some cases classrooms with solid timber walls reduced pulse rates and stress levels. Children who spent time in classrooms with walls in visible wood had a pulse rate that showed an average of 8,600 fewer heartbeats per day than children in classrooms with plastered walls. Stress levels are normally higher in the morning lessons, but stress also fell as soon as the students arrived at school, and the reduction lasted.

Source: Maximilian Moser, Gesundheitliche Auswirkungen einer Massivholzausstattung in der Hauptschule Haus im Ennstal.



Picture: White

SÖDRA ÄLVSBERG HOSPITAL, BORÅS White's experts in healing healthcare environments have designed a new psychiatric clinic at Södra Älvsborg Hospital in Borås.

“We’re convinced that the choices we’ve made will be vitally important for health and rehabilitation” CRISTIANA CAIRA

outside, nature has also been brought inside. The rooms are largely clad in wood, which is a unique and previously untried solution.

“We drew on relevant research and took the step of choosing solutions that have not been tried anywhere else. For

example, we have developed a surface treatment for wood that copes with the hygiene requirements and all the safety aspects associated with a psychiatric environment. The building will soon be ready and we’re convinced that the choices we’ve made will be vitally important

for health and rehabilitation,” says Christiana Cairra.

Creates good learning conditions

In January 2016 Herrestaskolan’s 400 students were able to move into their new school in Barkarbystaden north of

Wood2New

The research project had the subtitle: **Competitive wood-based interior materials and systems for modern wood construction.**

The project involved about fifteen partners from six countries, including researchers from the Building Research Establishment (BRE) in the UK, the Wood Research and Technology journal *Holzforschung* in Austria, the Norwegian Institute of Wood Technology, Aalto University, Finland and Linköping University, Sweden.



Photo: Setra

VALLASKOLAN, SALA Vallaskolan is planned so that the building and the teaching work in harmony.

Stockholm. This was the first school in Sweden to be built in cross-laminated timber and more have followed since. One example is Vallaskolan, which is currently being constructed in Sala. The building work is almost complete and the school is expected to be ready for students by the time the autumn term begins in August 2020. Under the attractive brick facade that links the new school building to the old one hides a mass timber frame, for which Setra delivered the glulam.

Sala municipality has ambitious environmental visions, which made the choice of building in wood even easier. Another important reason behind the choice of material was that wood creates good learning conditions. It has been shown that children find it easier to concentrate and sit still when they are surrounded by wood.

“A lot of visible wood combined with soft, calm colours produces an environment that’s calming and harmonious. You can feel it the minute you step into the building and it’s an important parameter that will encourage learning,” says Stefan Blomkvist, Project Manager at Sala municipality’s Property unit.

The new school in Sala is planned so that the building and the teaching work in harmony. The municipality has worked closely with school staff, who attended workshops with experts in learning environment and school building design.

“The teachers who have been inside the building are really positive about it and are looking forward to moving in soon. I think everyone involved feels that we are doing something really good, for education, the climate and society,” says Stefan Blomkvist.

Another positive aspect to using wood

The focus of research has previously been on how wood is going to gain ground as an alternative in building construction. Here people have looked at elements such as strength, sound, dimensions, fire safety and moisture, in line with industry standards. In Wood2New, the researchers looked at other things that affect opportunities for new materials to enter the market.

“We had the opportunity to take a holistic approach to wood as a material and look at the tactile experience, legislation and rules on the use of wood in interiors, the market and the opportunity to create new, sustainable business models. The results of the research can now be used in

“A lot of visible wood combined with soft, calm colours produces an environment that’s calming and harmonious” STEFAN BLOMKVIST



HERRESTASKOLAN, BARKARBY At Herrestaskolan, which opened in January 2016, all visible stairs and most walls have an exposed surface of solid wood.

Picture: Liljewall Arkitektur



Tomas Nord is one of the researchers in the Wood2New research project.

the industry, for the development, design and evaluation of sustainable and multi-functional wood-based interior materials and wood products and construction systems,” says Tomas Nord.

Great benefits for the climate, efficient construction methods and a high level of prefabrication that reduces assembly work on the construction site and makes it easier – we already know that wood adds value in many ways that will be important when choosing materials in the future. We can now add another aspect that opens up more business opportunities. Feelgood wood.

Wards in wood shorten hospital stays

A Norwegian research team that was part of Wood2New studied wooden materials and psychosocial effects, partly by looking in more detail at the enviro-psychological effects of being treated in different wards in an orthopaedic department at St. Olav’s Hospital in Trondheim. In one ward the walls were painted white and the decoration consisted of a lithograph, another had art depicting landscapes on the walls, while the two other wards had a wall clad in birch and oak panels respectively. The experiment, which covered 210 participants, showed that the patients who stayed in both the wooden environments never needed hospital stays of longer than five days following surgery, while those in the wards without wood took up to seven days before they could leave hospital.

Source: Nyrud, A.Q., Bysheim, K., Bringslimark, Do elements of nature have a healing effect? The impact of wooden materials and landscape pictures in patient rooms.

WOOD SCHOOL

Tall and quiet on the crosslam front

What are the acoustic challenges in the crosslam high-rises that are becoming increasingly common? We spoke to acoustics expert Klas Hagberg, who explains how to achieve a good sound environment in today's modern wooden buildings. TEXT: KATARINA BRANDT

WE HAVE LONG KNOWN that dealing with sound and acoustic issues is a little more complicated in tall wooden buildings than in those with a concrete carcass. The reason is that the wooden frame and building system weighs less and has a more complex structure than a building system in concrete. This means that a little more thought has to go into the design of a wooden building so that it also works acoustically. One of the factors that affects the building's acoustics is how the structure is put together.

“So many advances have been made in construction technology in recent years. There is now a growing understanding that we have to build on the material's own terms. This is how we've become so adept at developing wooden elements that meet today's sound insulation standards,” says Klas Hagberg.

Rapid developments require closer collaborations

Klas is a dedicated acoustician who has spent his working life grappling with

acoustics in buildings with light structural frames, particularly those made of wood. He currently runs Acouwood, an acoustics consultancy firm serving the wood and furniture industry. He was also Project Manager on the research projects AkuLite, Acuwood and Silent Timber Build, which conducted extensive surveys of performance and residents' feelings about living in a wooden building.

“The explosion in the use of crosslam creates new opportunities for construction, but also challenges – not least because we're pushing the boundaries height-wise compared with before. So it's a good thing that we have so many excellent reference projects showcasing a range of solutions that work extremely well from an acoustic perspective.”

The rapid pace of development creates a need for closer collaboration between everyone involved in the construction process, as well as a mutual understanding of the needs in the various technical areas when it comes to building with crosslam. This applies not least to the building's acoustics, in combination with factors such as dimensioning, fire safety properties and the aesthetic values associated with good architecture.

Setra is ready for the acoustic challenges

According to Klas, the challenges that occur in high-rise crosslam apartment blocks mainly involve reconciling the building's stability with its acoustic solutions, which need to work hand-in-hand with the structure itself. It is largely a question of getting things right from the outset and not believing you can operate in the same way as you would when building in concrete.

“We've become adept at developing wooden elements that meet today's sound insulation standards” KLAS HAGBERG

The illustration shows an example of how a connection between a floor structure and a wall can be designed to achieve good sound insulation.

1. Crosslam panel
2. Insulation
3. Wind protection
4. Battens
5. Exterior cladding
6. Steel ball bearings that reduce flanking transmission
7. Drywall
8. Crosslam slab

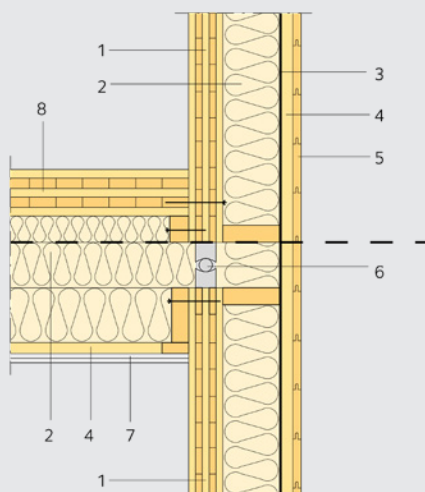


Illustration: Swedish Wood, CLT Handbook



Photo: iStock

Wooden buildings have good indoor acoustics, as long as they are built correctly. It is the structural design that is key, not the material.

“As such, we need to take a new approach to planning and develop solutions that function from every perspective. It’s particularly important to understand how the nodes in different building systems should be designed and how floor structures and walls affect the function of these nodes, but also how they will be built and connected in reality. Ensuring that the buildings perform as planned is a careful balancing act.”

How can crosslam suppliers like Setra help with acoustics? It seems to be a parameter that needs to be addressed early in the construction process, preferably back in the factory.

“Setra is well prepared and has produced a range of solutions for resolving the acoustic issues. I also think it’s important that Setra and the industry as a whole explore various models in order to develop new calculation tools. As wood construction increases, there should be a broad interest in making things even more predictable, not least when it comes to working on sound and acoustics.”

Different types of sound and how to get rid of them

DISTURBING SOUND Like air, sound can travel through joins between walls and floors. To minimise the risk of disturbing sound transmission, you need to ensure that the structural element in question is properly dimensioned, nodes are correctly designed and everything is generally airtight.

AIRBORNE AND IMPACT SOUND Since walls and ceilings transmit sound via vibrations from room to room, including footsteps from the neighbour above, the vibrations need to be reduced. This can be achieved through insulation with multiple layers of drywall, minimising contact between the materials in walls and ceilings and using soundproofing insulation in the structural elements. The insulation could be wood wool or more traditional fibreglass or mineral wool insulation.

REVERBERATION When the sound that occurs in a room bounces off the walls and ceiling, this creates what is known as reverberation. Furnishings such as carpets, pictures and textiles play a major role in reducing this effect. Furniture also works well and there is even special acoustic wall art that is designed to reduce reverberation.

TALKING ABOUT TIMBER

Many of us are familiar with the environmental and financial benefits of building in wood. But did you know that it also improves the work environment? Here, three construction workers share their thoughts on sites where the scent of wood dominates. TEXT: KATARINA BRANDT

How would you describe the work environment on a wood construction project?



LINN GERGI
APPRENTICE CARPENTER AT HOUSING
DEVELOPER JM

“Wood smells much nicer than concrete and I love it when you saw into it”

I'm currently working on the carcass of a 22-storey apartment block in Lidingö, which in simple terms involves lining up prefabricated concrete walls, following a line on the ground. The nearest I've come to large-scale wood construction so far is when we built a low-rise residential development in Åkersberga, north of Stockholm. In terms of health and safety, I can't help but feeling that dust from concrete is probably more harmful than dust particles from wood. Wood smells much nicer and I love it when you saw into it. Wood also doesn't generate as much noise as concrete. It's a living material that comes in many different variants, which means you have to give things a bit of thought. For the sake of the environment and the future, I hope wood construction is going to increase.



JAN-ERIK NATTSSON
SITE MANAGER AT CONSTRUCTION
COMPANY PEAB

“Some aspects are very different when you build in wood instead of concrete”

For almost a year now, I've been working on the construction of Frostaliden in Skövde, which is Sweden's largest residential development of tall buildings with a wooden structural frame. The project has been both enjoyable and challenging, not least in design terms, with both the project planning and production involving methods and practices that are new to us. Some aspects are very different when you build in wood instead of concrete. Above all, I've noticed a huge difference in the work environment. During construction of Frostaliden the site has remained easy to keep clean and tidy, and we've avoided many of the damp problems that can occur on a site that involves the use of concrete. The noise level is also much lower on a wood construction project.



MIKAEL BJÖRKUND
CARPENTER AT HOUSING DEVELOPER JM

“Wood creates a better sound environment, with less noise”

I've had many jobs over the years, including as a concrete and rebar worker. Now I just focus on carpentry, and at the moment I'm doing roofing work on a newbuild project just outside Uppsala. As I see it, building in wood is entirely positive, not least in terms of health and safety at work. The quartz dust in concrete can damage the lungs, and drilling and cutting into hard concrete can cause vibration injuries, which I've had myself. Wood also creates a better sound environment, with less noise, and then there's the actual feel of wood and how good it smells. Concrete is still needed because wood has its limitations. But wood is clearly more pleasant to work with.