

# SetraNews

NOVEMBER 2020



SETRA'S  
WOOD SCHOOL  
*Strength  
grading  
explained*

## Cederhusen construction begins

Crosslam from Långshyttan building Sweden's largest mass timber neighbourhood

NEW WOOD BUILDING PROJECT  
FOCUSES ON SUSTAINABILITY

WOOD ON THE  
UP IN THE UK

TALKING ABOUT TIMBER: *Municipalities working to expand wood construction*

»MAYBE ALL THE EXTRA TIME WE HAVE SPENT AT HOME HAS MADE US SEE OUR RESIDENCES WITH NEW EYES«



## Holding on and building up

**IT IS WONDERFUL** to see Stockholm's first modern wooden neighborhood take shape. In a cityscape full of steel and concrete, Cederhusen is now emerging as the first high-rise built with a crosslam frame.

**OF COURSE**, this is a particularly proud moment for us at Setra, as we know where the trees grew and have followed the whole process from log to finished carcass. Wood is in our hearts and we want the world to know what a fantastic material it is. Because with wood we can promote Grönsamhet\*. We can erect buildings that are good for the environment, the people who live in them, the people building them and the local community. Read all about Cederhusen and the start-up of our crosslam factory on pages 5–9.

**IN A TIME** when we are being encouraged to stay home and stay safe, it is interesting to see how important our homes have become. Maybe all the extra time we have spent at home has made us see our residences with new eyes? Many people have chosen to renovate, extend or build that decking they have been talking about for so long. And with more time to spare, it has become popular to grab a hammer and build something for yourself.

**LET US HOPE** that this newfound love of being at home is something that will stay with us even after the crisis. And that the fresh scent of wood will become a lasting feature of Stockholm's urban environment.

Enjoy the read!  
Katarina Levin, CEO Setra

\*Grönsamhet means creating green profit and is Setra's vision. Read about it at [setragroup.com/gronsamhet](http://setragroup.com/gronsamhet)



Illustration: Blair

## GROUNDBREAKING WOODEN BRIDGE

**A SECTION OF THE E6** motorway through Norway is set to include a four-lane bridge in wood and concrete. Work on constructing the bridge across the country's largest lake, Mjösa, will begin next autumn. Wood has been chosen to meet the demand from both politicians and industry for as sustainable a solution as possible. Stretching 1.3 kilometres, the bridge will be the longest of its kind in the world. The road deck will be supported by a network of wooden beams strung between slabs of concrete. The design is by Selberg Arkitekter, who report that the wooden structure will cut the weight of the bridge by 17% and climate emissions by 39%, compared with a standard concrete structure. The wooden bridge is costing marginally more than the concrete alternative, but is expected to take several months less to build.



## New padel hall – in glulam

**SETRA LÅNGSHYTAN** has developed an innovative new concept for padel tennis halls built with a strong and attractive glulam frame – in order to meet the surge in demand for padel courts in Sweden in a fast, sustainable and cost-effective way.

"It's clear that there is a huge interest in padel, not least from all the enquiries we've received for padel halls. We've therefore developed a new hall concept that includes both indoor and outdoor courts," explains Thomas Kling, Product Specialist Glulam.

Padel is a racket sport that is easy to learn and fun for all the family. Many of those who try it soon become hooked on the fast-paced game. Padel has spread around the globe and in recent years has cemented its position as one of the world's fastest growing and most popular sports. In Sweden alone there will soon be as many as 1,000 padel courts.

**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:** Jakob Tengvald, Veidekke, Anna Ervast Öberg, Folkhem and Emil Öbrink, Setra at the site of the Cederhusen development in Stockholm's Hagastaden. Photo Emil Nordin. Mass timber is a category of engineered wood products, such as crosslam and glulam.

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Photo: David Thunander



## Chapel for pandemic times

**NYRÉNS ARCHITECTURE** has worked with the church in Lagunda, Uppland Sweden, to develop a movable outdoor chapel that is specially adapted for ceremonies in the age of Covid-19. The result is a stylish building with portable modules in wood that are both light and robust, with a simple and elegant structure in a material that can be sourced just about everywhere. The design makes it possible to hold dignified funerals with the distancing required during the pandemic. The ambition is to put the chapel into production, so that more places of worship, whatever their religion, can offer safe gatherings outdoors.

Photo: Peab Asfalt



## Asphalt with the forest's own binder

**THE SWEDISH COMPANY** Peab Asfalt has begun its first trials of laying asphalt on a stretch of road in Sundsvall using the forest's very own binder, lignin, to partially replace oil-based bitumen. The trial is part of the EU-funded project REWOFUEL, which has 11 companies from eight countries working together to develop new bio-based products from forestry residues. Lignin in asphalt has been tested in other countries, including the Netherlands, where large-scale trials have been running for several years.



## Smart data from the forest

**DID YOU KNOW THAT** large amounts of data are generated for each log even when it's still in the forest? In the new DIVISI project, researchers will be examining how to improve the collaboration between forestry, logistics companies and sawmills by sharing more information. The study is being run by the forestry research body Skogforsk in the hope of achieving greater efficiency and profitability. Setra and the wood supplier Sveaskog are two of the project's participants, along with RISE and Linköping University.

## NEW FACES



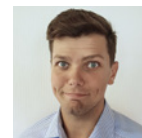
### Sales Manager in Japan

**KENSHIN SATO** is Setra's new Sales Manager in Japan. He previously worked in sales of industrial machinery and replaces Yoshiyuki Takahashi, who is retiring at the end of the year.



### Sales Manager Glulam

**ANNA CARLSSON** joins the sales team for glulam in Långshyttan. Anna previously worked in customer service for glulam customers and is well versed in Setra's products.



### Customer service

**RICKARD KOKKONEN** joins the customer service team for glulam in Långshyttan. Rickard recently obtained an economics degree from the University of Gävle and is a former industrial electrician at Setra.



### Three new Mill Managers

**TOMMY OSCARSSON** is the new Mill Manager in Färila, having held the same position at Norrskog Wood Products' Östavall sawmill.

**JONAS GUSTAVSSON** is Nyby's Mill Manager and joins Setra from Sandvik, where he has held leadership roles in areas including research and development.

**MIKAEL ROMLIN** is the new Mill Manager at the sawmill in Skinnkatteberg. Mikael's previous role was Production Manager for Components at Munters Europe in Tobo.

# PANDEMIC SPARKS NEW-FOUND LOVE OF WOODWORKING

All the extra time spent at home during the coronavirus pandemic has prompted us to do up our homes like never before. Olle Berg, Setra's EVP Market and Business Development, and David Hopkins, CEO of the British Timber Trade Federation, analyse the situation. TEXT: LINN TREIJS

**"TO START WITH** it was like pulling down the shutters. Some countries shut down completely. But after a couple of months something happened."

It is with some amazement that Olle Berg recalls the remarkable weeks in the spring when almost all commercial activity was affected by the coronavirus pandemic. Because when country after country began opening up again, something unexpected happened. We got into DIY.

"Our members started reporting incredible sales of decking and garden timbers at levels they had never seen before. The DIY sector has proved to be the saving grace of the timber industry during this period. Thankfully, the pandemic has therefore not had the devastating effect that many predicted," says David Hopkins.

Furloughs, months of working from home and cancelled holiday plans basically led to people deciding to spend money on home improvements. The effect has been particularly strong in Sweden and the UK.

## Shortage of wood products

"We went from a rather bleak outlook to a much more positive one. Since the wood industry had cut its production in March and April, we gradually entered a state of imbalance that continued over the summer and now wood products are in short supply," says Olle Berg.

The situation is also being affected by a major upswing in wood product consumption in the US, driven by low interest rates. At the same time, the Canadian sawmills have reduced their production, prompting a steep rise in exports across the Atlantic from Europe.

"The seasonal effect that we usually see for wood products in the fourth quarter is likely to be offset by the strong US market and a return to growth in demand from China. This is a development that none of us could have imagined just a few months ago," comments Olle Berg.

David Hopkins is also cautiously optimistic about the coming months.

"The boom has dropped off slightly, but we're still seeing very long lead times and



Home improvements are up during the pandemic, which is good news for the wood industry.

shortages of certain products. For example, carcassing timber is hard to come by, just as the mainstream construction projects begins to return to work.

## Construction has slowed down

Looking ahead, a crucial factor for the wood products market is the pace at which large-scale construction gets going again. The construction industry has relatively long lead times and projects already in progress have often been able to continue even during the pandemic, thanks to the fact that most of the work is outdoors.

"This is why the downturn wasn't noticed straight away. But orders from the construction industry are not as strong as they were and that is going to have a negative impact on the wood products market if the situation doesn't change. Most commentators believe that we'll see better GDP growth in 2021, but that is from a low base level," says Olle Berg.

In the UK, there is considerable demand for new housing and the government is pushing the issue hard.

"They want to get a controversial bill through that would force more homes to be built all over the country. We'll have to see how things go, but it is at least a clear indication that the politicians are serious about boosting construction," says David Hopkins.

He has high hopes of a new policy that has been introduced to kickstart renovations and measures to improve energy performance in British homes.

"Coupled with the general COVID trend of home improvements it could mean a real boom in timber sales. A lot of houses in UK are very poor quality and need improvements."

## Good prospects despite Brexit

Alongside the pandemic, the UK and the EU are locked in negotiations on a free trade deal.

"A no deal Brexit would of course be a tough blow to the UK and the wood industry here. But in practical terms, there is little difference between that and the agreement our prime minister wants to achieve. Whatever the outcome, the UK will remain a good market for timber. We and Swedish Wood are working hard to continue promoting and developing the wood products market and I don't think Brexit is going to affect it much, although, generally speaking, moving goods is going to become more complicated," concludes David Hopkins.



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



David Hopkins, CEO of the Timber Trade Federation.

# Building the wood city of the future

Veidekke has now begun to assemble the frames for Cederhusen in Stockholm. This will be Sweden's largest mass-timber housing development and Setra's first large scale delivery of cross-laminated timber from the new factory in Långshyttan, just two hours from the capital. TEXT: KATARINA BRANDT PHOTO: EMIL NORDIN AND OLA HÖGBERG

**IT IS EARLY MORNING** in Hagastaden. One of those crisp autumn mornings when the air is clear and fresh. The sun is wending its way between the tall buildings in the new district connecting Stockholm with Solna. New development land has been created by building over the road tunnels for the E4/E20 and the rail tunnel for the Värtabanan line. The first residents moved

into Hagastaden back in 2017, but the area is not expected to be fully completed until 2030. The latest project to get off the ground is Cederhusen by Folkhem – four large blocks, 10 to 13 storeys high, housing a total of 234 apartments, with the very bones of the buildings made of wood. With the exception of the foundations, the apartment blocks are being built entirely

in wood – everything from the stylish façade in cedar wood that has given the development its name to the load-bearing elements and structural frames in cross-laminated timber, crosslam.

On this particular September morning, the first delivery of crosslam is arriving from Setra's factory in Långshyttan.

This marks the start of one of the world's →



The first delivery of crosslam from Långshyttan arrived in Hagastaden on 21 September.

→ largest wood construction projects and Stockholm's first inner-city neighbourhood built in wood. Over the autumn, Setra will be producing almost 2,000 cubic metres of crosslam, which is what it will take to complete the first building.

### Manufacturing with a small climate footprint

When Veidekke, the sole contractor for the first of the Cederhusen blocks, was looking for a crosslam frame supplier, they chose Setra based on a combination of low environmental impact and high service level. Building using locally produced crosslam from Långshyttan makes the project's overall impact on the climate and the environment significantly lower than would be the case with concrete carcasses. This is because, as a building material, wood has a smaller carbon footprint. In addition, production in the modern factory is highly energy-efficient and the short distance to Stockholm means fewer trucks spending

less time on the roads. Once the various parts of the structure are ready, they are transported to the construction site in just two hours. Overall, the whole process from harvesting the trees to completing the structure of the building will be highly efficient, with a very small climate footprint.

"The wood for the crosslam production comes primarily from our own sawmill in Heby, which is almost exactly 100 km south of Långshyttan. Since Setra doesn't own its own forests, all the timber raw material is purchased from nearby forests within a radius of around 100 km from the sawmills. This means the raw material that we turn into crosslam in Långshyttan may well originate from forests just around the corner," explains Cate Carlbom, salesperson for Building solutions at Setra.

### Support from start to finish

Having the honour of supplying a project as large and exciting as Cederhusen has meant a hectic start to the autumn for Setra.



The crosslam is unloaded and lifted directly to the place where it will be installed.

*“We’ve fully embraced the soft values and believe in personal contact”*

KURT ENGLUND, SETRA



Jakob Tengvald, Project Manager Veidekke, Anna Ervast Öberg, Project Developer Folkhem and Emil Öbrink, Project Manager Setra are on site in Hagastaden, where Cederhusen's first building is now going up.

There were many pieces that needed to fall into place before it was time to press the start button.

The team in Långshyttan operates according to a project model, which means that each project is dealt with by a tailor-made working group with a dedicated project manager who runs the operation.

“We’ve fully embraced the soft values and believe in personal contact. Building in crosslam is new to many people, so it’s important to have a supplier that can offer support throughout the process from start to finish, or from concept to topping-out ceremony, as we usually describe the work in our project model,” says Kurt Englund, Project Manager for Building solutions at Setra.

### More climate-smart and efficient deliveries

One of the challenges of the project is that Cederhusen is being built in central Stockholm, where people and vehicles are busily moving around. Several construction projects are going on at the same time and both storage space and unloading zones are practically non-existent. In addition to a cost-effective construction process, carefully planned logistics are important for the environmental and sustainability work that is such a key part of the project. The City of Stockholm has therefore set up its own logistics system for the whole of Hagastaden, which means that all deliveries need to be booked in.

“The fact that Setra’s crosslam factory in southern Dalarna is just two hours from the construction site brings many benefits. For one thing, it makes it easier to plan for climate-smart and efficient deliveries,” says Anna Ervast Öberg, Project Developer for Cederhusen at construction operator Folkhem.

Building with cross-laminated timber is an entirely different approach that gives complete control from idea to completion. Logistics, delivery and installation are all planned in advance, resulting in fewer decisions and thus fewer errors. Emil Öbrink is Project Manager for Building solutions and runs Setra’s side of the Cederhusen work. This means that he has complete responsibility for the implementation of the project all the way up until the final documents are signed off and handed over.

“Our responsibilities include planning the deliveries correctly so that they make the work on site easier and more efficient. Before the factory begins producing the crosslam elements, they receive a drawing



The deliveries are planned even before the factory begins producing the crosslam elements, so everything arrives in the right order.

on which all the elements are numbered, with details of how they are to be loaded onto the truck. Veidekke receives a similar drawing where they can see what the packs contain and how the truck is loaded when it arrives. This means the elements can be lifted into place in the right order,” says Emil Öbrink.

### Flexible production reduces waste

The production of crosslam is in many respects similar to traditional glulam manufacture, although on a slightly larger scale. The two products are also almost always used together. Having the production and planning of glulam and crosslam in the same place yields several commercial synergies, not least when it comes to transport.

The crosslam factory in Långshyttan has a smart conveyor system that maintains the production flow. First the individual boards are finger-jointed to form long boards. Once the adhesive in the finger-joints has cured, the flat sides are planed and then the boards move on to the next section, where they are glued together to form sheets.

In the fully automated high-bay warehouse, the sheets wait until their time comes to hit the glue press, where adhesive is applied and they are bonded together under high pressure to form larger sheets, known as mother panels. The glue press in Långshyttan is one of the largest in the world, with a press table



There is a carefully designed flow to production at Setra’s crosslam factory.



With its enormous 6 x 20 metre press table, the glue press in Långshyttan is one of the largest in the world.

***“Our flexible widths enable us to achieve extremely cost-effective production”*** CATE CARLBOM, SETRA

measuring an immense 6 x 20 metres, allowing two large crosslam sheets to be pressed side-by-side.

“The size is a real strength and it means that we don’t have any set panel widths. This flexibility enables us to achieve extremely cost-effective production. Producing project-specific structural elements in an optimal way, also means we reduce

waste, which is good for us and our customers,” says Cate Carlbom.

**Four hours from raw material to finished crosslam**

After bonding and curing comes the final machining of the components in the CNC machine, which is the real heart of the production. This is where the mother

panel is transformed into custom crosslam elements, a process that might involve sawing off edges, cutting out channels for installations, drilling holes and forming joints. The CNC machine is fitted with a range of tools for everything from precision work to rougher cuts in the sheets. Having two milling heads reduces the machining time considerably.

“It takes around four hours to get from raw material to finished crosslam element. The time depends on how long the sheets spend in the glue press and the amount of machining required in the CNC machine,” says Sven Börjesson, Production Manager at Långshyttan.

**New equipment store was good practice**

The factory in Långshyttan sponsors the local sports club and has provided the club with an equipment store in crosslam. The initiative was much appreciated by Setra’s project team, who were involved in the whole process from design to assembly.

“We wanted to challenge ourselves, so we decided to make everything as complicated as possible. It was a great learning process for all of us, although we ended up making the most convoluted little shed you could imagine,” says Cate Carlbom.



The computer numerical control (CNC) machine handles everything from precision work to rougher cuts in the crosslam sheets.





Sven Börjesson is Production Manager at Setra's crosslam factory in Långshyttan.

She appreciates the fact that Setra has taken a long-term view in its crosslam investment – not just investing in the hard values, in the form of a modern and well-equipped factory, but also in the employees, who have been allowed time to gel as a team and understand both the production and the needs and wishes of the market.

“Those of us who work with crosslam have been just as crucial as the machinery. Many of us have been in the business a long time and those who work in production have received invaluable training in the glulam factory. This has resulted in a good start-up phase that means we feel confident about finally getting properly up and running,” she adds.

### Buyers drawn to wood

Folkhem is pleased and a little surprised to see how much interest Cederhusen has generated. When the first apartments were released, they sold much faster than expected.

“When you ask people what made them register their interest and proceed with their purchase, the answer is usually price and location. But with Cederhusen it was different. This time, people talked about the architecture and the fact that the buildings are made of wood. It's great that more and more people are beginning to see the attraction of wood and all its benefits, not only as a construction material, but as part of a climate-smart and pleasant living environment,” states Anna Ervast Öberg at Folkhem, that has taken a stand to build exclusively with wood.

The assembly of Cederhusen's first building began in September and is scheduled to be completed in early 2021. The project's first apartments are expected to be ready for occupation in the first quarter of 2022.

## Smart choices optimise Cederhusen's climate footprint

**We already know that wood is a renewable construction material with a positive impact on the climate. What is new is that we are beginning to be able to measure the benefits of a wooden building through automated life cycle analyses (LCA), which are produced with the help of new digital calculation tools.** TEXT: KATARINA BRANDT

**BEFORE BUILDING WORK** on Cederhusen began, Veidekke and consultancy firm Bjerking's climate fund conducted a joint development project in which they performed a life cycle assessment to compare the climate impact of the structural frames from four potential suppliers. The aim was to provide data that Veidekke could use during the procurement phase. The life cycle assessment was done digitally in One Click LCA, a calculation tool that makes it easy to generate data over the course of the project.

“We have extremely high ambitions and when it comes to the climate footprint, we want to establish how we can make early decisions that reduce emissions. It's also about finding systems and methods to prepare us for the upcoming legal requirement that buildings must carry a climate declaration, but it's at least as important to produce

accurate climate data as a basis for decision-making in our processes,” says Anna Ervast Öberg, Project Developer for Cederhusen.

An interdisciplinary group has now been set up with members from the industry body Swedish Wood, Folkhem/Veidekke, Zynka BIM, Bjerking and more. The goal is to use a real-life ongoing project to make advances in the development of quality-assured and active climate work. The next step is to bring on board the three main material suppliers for the project, one of which is Setra.

“As part of our participation, we want to see what impact we have on the climate and how we can reduce it. We look forward to helping drive progress in achieving even more climate-smart ways of building,” says Emil Öbrink, Project Manager for Building solutions at Setra.



“We look forward to helping drive progress in achieving even more climate-smart ways of building,” says Emil Öbrink, Project Manager for Building solutions at Setra.

Photo: Emil Nordin

Strandängen is a new suburb that is emerging just outside the centre of Jönköping. The area has a strong focus on sustainability, which includes the buildings. One example is the hybrid carcass in crosslam and concrete that Prefabsystem Syd has assembled for one of the three residential blocks that form the Ängshusen project – a smart and sustainable choice that halves the frame’s carbon emissions.

TEXT: KATARINA BRANDT



Illustration: Tosito

## SUSTAINABLE LIVING ON LAKE VÄTTERN

**PROPERTY COMPANY TOSITO** has a long-held ambition to move another step forward in its sustainability work, particularly when it comes to the housing that the company is building in and around Jönköping. In Ängshusen, words have been put into action with the choice to build one of the three blocks in the project with a hybrid carcass in crosslam and concrete.

### Support throughout the construction process

The job of procuring and assembling the structural frame went to Prefabsystem Syd, which specialises in prefabricated carcass solutions. The building on Strandängen is the company’s first project with a hybrid frame, so they were keen to find a frame supplier that could provide support for the whole of the construction process.

“We chose Setra because the price was right, but also because we needed structural engineering expertise on the wood front. Setra already has a close partnership with glulam consultancy Limträteknik in Falun, which we saw as a strength,” says Marcus Lindfors, Project Manager at Prefabsystem Syd.

The fact that Setra is a new player in the crosslam market made Ängshusen a pilot project for both parties, a project that they are now evaluating together to see what lessons can be learned.

“The factory in Långshyttan hasn’t just churned out the material. We’ve had the project team as a resource along the entire

journey. They’ve often been on site in Jönköping, not least for the first delivery to ensure that the loading order on the truck was correct. When our assembly manager requested delivery a day earlier than planned, this was sorted out at short notice, which demonstrates impressive flexibility,” continues Marcus Lindfors.

### Smooth assembly with precision-machined elements

Since Prefabsystem Syd has none of their own production, they are flexible about the choice of frame material. With good

experience of assembling the hybrid carcass in Ängshusen, Marcus Lindfors now hopes that crosslam frames can give the company an extra string to their bow.

“I’m generally incredibly impressed with crosslam and how well the collaboration with Setra has worked. The assembly went smoothly and the elements were machined with superb precision in order to fit like a glove. Plus wood is so light and forgiving a material to work with. Our installers and I have found this exciting project a real education,” concludes Marcus Lindfors.

***“We’ve had the project team as a resource along the entire journey”***

MARCUS LINDFORS, PREFABSYSTEM SYD

### Ängshusen’s hybrid carcass

The hybrid carcass in Ängshusen uses solid concrete for the walls around the stairwell and for the party walls between the apartments. The load-bearing outer walls are made from 100 mm crosslam, while the floor structure is a composite of 180 mm crosslam in concert with a 100 mm cast concrete slab. The concrete balconies are supported by glulam posts. The balcony roofs and the building’s main roof structure are made from 240 mm crosslam and the stairs are steel.



# Planed timber finding a home in the UK

With a housing shortage, home DIY growth and a greater demand for wood, the future looks bright for the UK's wood industry. Swedish raw material has an excellent reputation and construction timber from Setra's new planing mill in Hasselfors is a welcome addition to the market.

TEXT: LINN TREIJS PHOTO: CHARLIE URMSTON



Timber from the new planing mill in Hasselfors is unpacked at Harlow Timber Systems in the UK.

**IT IS THE END** of September and a load of roof truss timber is rolling into the yard at Harlow Timber Systems in Bardon, East Midlands. Within a couple of days this has been transformed into quality roof trusses which are then shipped off to a construction site somewhere else in the UK.

“We’re back on track with the upward curve that we saw before the coronavirus pandemic. The demand is there and, looking ahead, we expect to see growing

demand for the materials to build new housing,” says the company’s Managing Director David Stockill.

**Driven by a housing shortage**

Harlow Timber Systems’ wooden roof trusses and joists are used for everything from single private homes to large-scale commercial projects. Customers include several national builders who are now beginning to step up the pace of produc-



***“In Setra we’ve found a dedicated partner who shows an interest in our needs”***

DAVID STOCKILL, HARLOW TIMBER SYSTEMS



Harlow Timber Systems has six production sites in the East Midlands and is led by David Stockill (right) with Gary Jarvis as Operations and Production Director. The company is part of Harlow Bros, a family business with wide-ranging operations in the wood and construction industries and a long-standing relationship with Setra.

tion again. The UK has a housing shortage and there is a pent-up demand that has certainly not receded over the past six months. There is also a growing interest in the use of wood in new designs. Stockill reports receiving regular enquiries from architects and developers who are working on new concepts with a lower climate footprint.

“It feels good to be part of this trend. And now we can also use Setra’s excellent material in our roof trusses.

### Spike in home improvements

Ninety miles to the north, G Empson & Sons takes delivery of planed timber in class C24, which is intended for load-bearing structures. The company offers bespoke specialized joinery products like windows and doors as well as a quality range of sawn and machined products. Head of Sales Sean Jones has seen customers flood in over the past few months.

“Public customers are up tenfold. In the summer we sold a lot of decking and exterior cladding, and now people seem to be gearing up for more home improvement projects if we enter another lockdown. There is also a rush of orders from professional trade customers, wanting to finish off current projects.”

### Range serves customers well

G Empson uses both planed timber from Setra Wood Products in King’s Lynn and sawn timber from Setra’s sawmills in Sweden. They were quick to order planed construction timber as soon as it started rolling off the production line in Hasselfors.

“We like the idea of a one-stop shop that can deliver many different products at the same time. It saves time that we can then devote to our customers. And we already knew that Setra has good control over the grading of its material,” says Sean Jones, adding that the close relations and trust in Setra also carried a lot of weight.

“I like the consistent quality of the material and the reliably good service. Our contact Vic Young always gives me accurate information. He has years of experience and knows what qualities will work for our business.”

### Top-class timber

Quality is also important to Harlow Timber Systems. They almost exclusively use roof truss timber in class Tr26 (trussed rafters). This is a higher strength grade than C24 and is only used in the UK. It is



Photo: Jason Dodd

Sean Jones at G Empson & Sons likes the convenience of being able to order a wide range of products from the same supplier.

***“We like the idea of a one-stop shop that can deliver many different products at the same time”*** SEAN JONES, G EMPSON & SONS

also part of the new range from Setra’s planing mill in Hasselfors.

“We choose our suppliers based on quality and service and we believe in building lasting relationships. In Setra we’ve found a dedicated partner who shows an interest in our needs, for example by supplying custom widths. What’s more, the first deliveries have been exceptionally good,” says David Stockill.

Much of the timber supplied to Harlow is turned into trusses and other exposed components that are built to catch the eye. It is also not uncommon for customers to compete for local and regional awards recognising quality construction, which puts the building material under extra close scrutiny.

“The quality has to always be impeccable. When we get a damaged pack, it slows

down our whole production chain, so consistently high quality really is critical,” says David Stockill.

### Flexible deliveries

Another important factor is fast and flexible deliveries. Harlow Timber Systems wants to be able to deliver customer orders within a week. They don’t keep huge volumes of stock, preferring instead to receive regular deliveries, with the wood products often put to use within 48 hours. And this is where Setra’s landed stocks in King’s Lynn and Hull come in.

David Stockill is looking forward to a long partnership with Setra.

“Next year, when the pandemic is hopefully over, I look forward to visiting the planing mill in Hasselfors,” he says.

## Hasselfors broadens its range

The new planing mill in Hasselfors opened in the summer and will be ramping up production during autumn 2020. Its portfolio includes planed, mechanically sorted construction timber that is classified according to the strength grading standards in Europe, the USA and Australia. Read more about construction timber and strength grading in the Wood School on pages 14–15.

## WOOD SCHOOL

# Strong, stronger, strongest

## – how strength grading works

As building in wood becomes an increasingly popular choice, demand for strength graded construction timber is also on the rise. This is timber that is graded on the basis of its specific properties and therefore can be used in load-bearing structures. For this issue's Wood School, we talk more about strength grading, what affects load-bearing capacity and what the most common classes mean. TEXT: KATARINA BRANDT

**SINCE WOOD IS** a material created by mother nature, it is not possible to control its properties by adjusting the production process. Instead, the properties of the wood have to be assessed and the material graded accordingly. Strength grading involves picking out the timber that meets the requirements for load-bearing structures.

### What is construction timber?

There are currently two techniques for strength grading – visual grading and mechanical grading, with the latter being the most common. Construction timber for structural use is produced in the strength classes C14, C18, C24, C30 and C35, which form the manufacturing standard for Swedish producers. The numbers represent the bending strength expressed in MPa (MegaPascal) and indicate how much force per square metre the wood can be subjected to without it breaking.

### How can I tell the strength class of the timber?

Construction timber must be labelled with the strength class, the company of manufacture, the time of production and the CE mark. Each plank should be marked individually, with the whole pack of timber also labelled, plus a performance declaration should accompany the products. The CE mark means that the performance values declared for the product were obtained in accordance with a common European standard and is mainly intended to facilitate trade within and to Europe.

### What should I use strength graded timber for?

Strength graded timber is used for load-bearing structures such as roof trusses, floor structures, external walls and some internal walls. C14 is the lowest strength class that can be used for

load-bearing parts of a structure, unless otherwise stated. C14-classified timber is mostly used for internal walls, simple floor structures and lightweight roofs, battens or as studs to create space for insulation and electricity, for example. C24 is the most common class and means that the



Photo: Charlie Urmston

Strength grading involves picking out the timber that meets the requirements for load-bearing structures.

## Sorting the material into different strength classes makes it possible to:

- Improve control over the wood's properties such as strength and stiffness
- Have a shared classification system within a single market
- Optimise the yield from the raw material

timber can take high loads and be used in load-bearing structures such as floors, roof trusses, external walls and ceilings.

**How does strength grading work?**

The most common technique for mechanical strength grading is called ‘tapping’, where a kind of hammer taps one end of a piece of wood as it passes along the production line. Next to the hammer is a microphone that captures the sound formed by the vibrations in the wood, while at the same time the length and, in some cases, the density of the plank are measured. For Setra’s new trimming and planing line in Hasselfors, a fully automated scanner solution has been chosen instead. With this system, the strength grading is performed using cameras and laser points to measure the grain of the timber, with the assessment then based on the images collected.

**What factors affect the strength?**

One of the factors that determines the strength of the wood is its density, which in this case means how tightly packed the material is. The higher the density, the greater the strength. The lower and outer parts of the trunk are denser. A greater proportion of summerwood increases the density and factors such as speed of growth, soil conditions and tree spacing also make a contribution.

Knots and cross grain push the fibres in the wood out of line, which reduces the strength. Splits and reaction wood are other defects that have an effect. Reaction wood is formed in conifers to straighten them up when they grow against some force or other, for example if they are on sloping ground.

**C24 MOST COMMON**  
 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. Setra’s assortment ranges from C24 to C40 for both planed and sawn products, with C24 in greatest demand.

**“Hasselfors is pushing the envelope”**

**What does it take to be certified and are there multiple standards to take into account? Mattias Rydh of RISE Wood Technical Assessment is currently working on the certification of Setra’s new products in Hasselfors. Here he reveals all.**

**SETRA HAS TURNED TO RISE** Research Institutes of Sweden for certification of its production and self-auditing. This is to obtain a certificate that allows CE marking of construction timber from the new trimming and planing line in Hasselfors for the European market. Setra also wishes to be certified for sales in Australia, which is quite an unusual move for a Swedish company.

**How does certification for the European market work?**

“Timber for Europe is graded according to a standard called EN 14081. This requires the sawmill to have a documented quality system that includes a description of the manufacturing process and of the production checks that are carried out. So it’s not the actual grading machine that is approved, but the sawmill’s self-auditing procedures,” explains Mattias Rydh.

The grading machine that Setra bought for Hasselfors has undergone extensive testing and calibration in line with EN 14081 to ensure that it works properly. At the time of installation a verification test is carried out to check that the machine has been installed correctly.

“For this, a small sample is taken in the highest strength grade for which you want the machine to be approved. In most cases this is C30, but Hasselfors is pushing the envelope and testing at C40, which is a higher strength grade than normal.”

**SETRA HASSELFORS ALSO** wants to obtain certification for the Australian market. The system is different in this case, with tougher demands placed on the individual sawmills, which are required to take out wood samples constantly during production and perform follow-up internal tests, irrespective of the strength grade.

“Setra has purchased a testing machine for the operation in Hasselfors so that it can conduct these rolling tests. The company can decide whether or not it wants a certificate and third-party inspection visits, but it’s recommended.”

**What do you make of the new trimming and planing line in Hasselfors?**

“It’s impressive and has one of Sweden’s largest grading facilities, which means it will be an interesting treat to come out and conduct inspections. I also look forward to carrying out the certification for Australia and future testing. There are only a few sawmills in this country who grade for that market, so it’s not every day we get a job like this,” concludes Mattias Rydh.

The construction timber from Hasselfors is already certified for the US market and now preparations are under way for the first deliveries. The USA has its own system for strength grading, which is not operated by RISE. It is more product-focused and is based on monthly visits by representatives from the US accreditation body Timber Products Inspection, Inc., which takes random samples from the packs of timber to ensure that they meet the requirements.



## TALKING ABOUT TIMBER

Of Sweden's 290 municipalities, a number of trailblazers have their own wood construction strategies aimed at developing and increasing building in wood. Here, three of them talk about what they are doing to realise their plans and what they have achieved so far. TEXT: KATARINA BRANDT

# How are Sweden's municipalities working to increase wood construction?



**MIKAEL WÄRNBRING**  
COMMUNITY DEVELOPMENT DIRECTOR,  
EKSJÖ MUNICIPALITY

***“Eksjö Municipality will always demand wood in public procurements”***

Eksjö is one of Sweden's best preserved wooden towns, with architecture and historical sites dating back more than four centuries. This makes wood a core element of the municipality's brand. We work in line with the vision set out in the Wood Construction Strategy that was adopted by the municipal council in 2018. Under the strategy, Eksjö Municipality will always demand wood in public procurements. The aim is to create a situation in which wood is the first choice even in buildings for purposes other than housing, such as sports halls, schools and industrial buildings. The latest example of wood construction in the municipality is the new Ciselören development in Eksjö's old town. It is a modern block that at the same time naturally merges in with the old wooden buildings.



**AGNETA SVENSSON**  
COMMUNITY PLANNER, SÖDERHAMN MUNICIPALITY

***“Söderhamn has a strong connection with wood and a long tradition of building in wood”***

We are working to implement our Wood Construction Strategy from 2018 in all our planning processes. Building in wood is not a requirement, but an option that is to be examined for all new building and infrastructure projects in the municipality. Söderhamn has a strong connection with wood as a material, and a long tradition of building in wood. We are a municipality with a lot of forest and many companies operating in the forestry and wood industry. We are currently in a developmental phase and have several land allocation agreements in the pipeline. Looking ahead, I am confident that we will have several new wooden properties in the future. The material has many advantages, not least on the environmental front, but being surrounded by wood also makes us humans feel good.



**ANDERS OLSSON**  
ACTING MUNICIPAL CHIEF EXECUTIVE,  
SUNNE MUNICIPALITY

***“The strategy forms the basis for a new vocational course in industrial wood construction”***

Sunne is situated in a county of forests, so we have plenty of raw material locally. This puts us in a good position to develop and plan for climate-adapted building using wood as a material. Our Wood Construction Strategy was adopted in 2016 and is to be taken into account in all construction projects for which land allocations and planning permission are granted. The strategy also forms the basis for a new vocational course in industrial wood construction that has been launched by the municipality. In addition, we have a local company that has built a new factory to produce modules for building housing in wood. One of the reasons for their investment is the municipality's stated desire to encourage wood construction. Around 40 apartments are currently being completed in central Sunne, with the blocks built using prefabricated modules.

At Setra we want to do business where everyone prospers – not just ourselves but also our customers, society and nature. When a business profits everyone, we call that Grönsamhet - green profit. We create green profit.

Setra is one of Sweden's largest wood industry companies. At our plants we transform forest raw material into climate-friendly, value-added products such as glulam, planed timber, wooden components and cross-laminated timber for the global housing and construction market. All our timber comes from responsibly managed forests in some of the world's best locations for conifers as a raw material. We also sell bioproducts such as bark, chips and sawdust to customers in the paper and pulp industry and for energy production. We have approximately 750 employees and annual sales of around SEK 4 billion. Exports to Europe, North Africa, the Middle East and Asia account for about 65% of sales. Read more at [setragroup.com](http://setragroup.com)