CONNECTIONS

Peikko guides you towards a faster, safer and more efficient way to design and build.

1*2018

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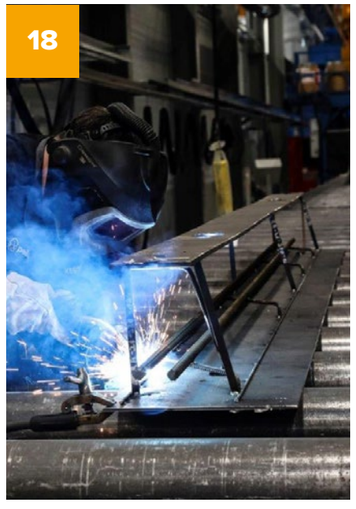

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A custom-shaped DELTABEAM® formwork was used to make up the rounded, fluid corners of the new Ramboll Finland headquarters.
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PREPARING FOR THE GREAT OPPORTUNITIES AHEAD

It's a well-known fact that your outlook on the future can either be optimistic or pessimistic. But typically, only the optimistic, forward-thinking companies can change the world for the better. We at Peikko aim to be one of them.

In order to be prepared for these future challenges, we have committed ourselves to several investments.

To meet the needs of our customers, we currently have an ongoing 20 M€ investment program for manufacturing and logistics, the largest ever in Peikko's history. The program includes, for example, a new DELTABEAM® factory in Lithuania, a new factory in St. Petersburg, Russia as well as new machinery in other factories. We need to be more and more clever and flexible with our manufacturing towards our customers.

In addition to relying on reliable software partners, in 2017 we have recruited a core team of our own in-house software programmers. Peikko Designer® updates and new modules will be launched faster to support our structural designer partners.

We are also planning to launch several new products, product localizations and product revisions during 2018. In this issue of CONNECTIONS you can already read about WELDA® Strong Anchor Plates, our new product for heavy load applications that will be officially launched in Q1, 2018.

And finally, we have recruited more than 40 new white-collar employees during the last 12 months, mostly for technical customer support and sales functions. This is our biggest contribution to increase customer satisfaction. We want to ensure that you will have capable, well-trained personnel to assist you.

After all these preparations, we believe that we are ready for the great opportunities ahead. And we are very willing to to contribute to your building project success.

TOPI PAANANEN
CEO, Peikko Group Corporation

THE NEW RAMBOLL FINLAND HEAD OFFICE

A CHESSBOARD FAÇADE DEFIES SHARP CORNERS

At a total area of 19,000 m² (22,700 sq yd), the new Ramboll Finland headquarters isn't one of your normal box-like office buildings. Instead, it was designed to be an environmentally friendly, inspiring and flexible work space.

Located adjacent to the Helsinki-Turku motorway, the new Ramboll Finland Head Office boasts a striking green chessboard façade that defies sharp corners. The building complex was designed as an open and flexible space for 1,200 people.

"The façade is very important to us. We wanted to create a plastic form that combines the four separate masses," said **Leena Brooke** of Cederqvist & Jäntti Architects.

The four building masses are joined together with a large glass roof that extends to the fifth floor. This airy central lobby is the heart of the complex. A custom-shaped DELTABEAM® formwork was used to make up the rounded, fluid corners that give the building it's easy-to-approach air.

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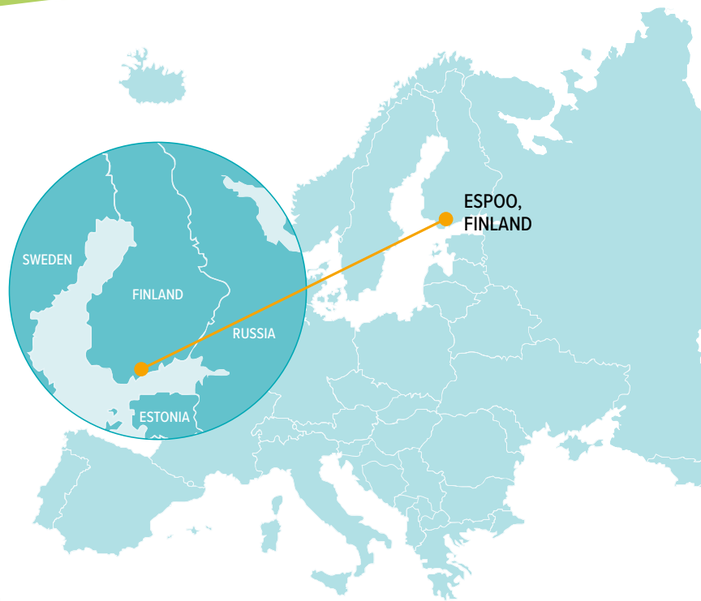
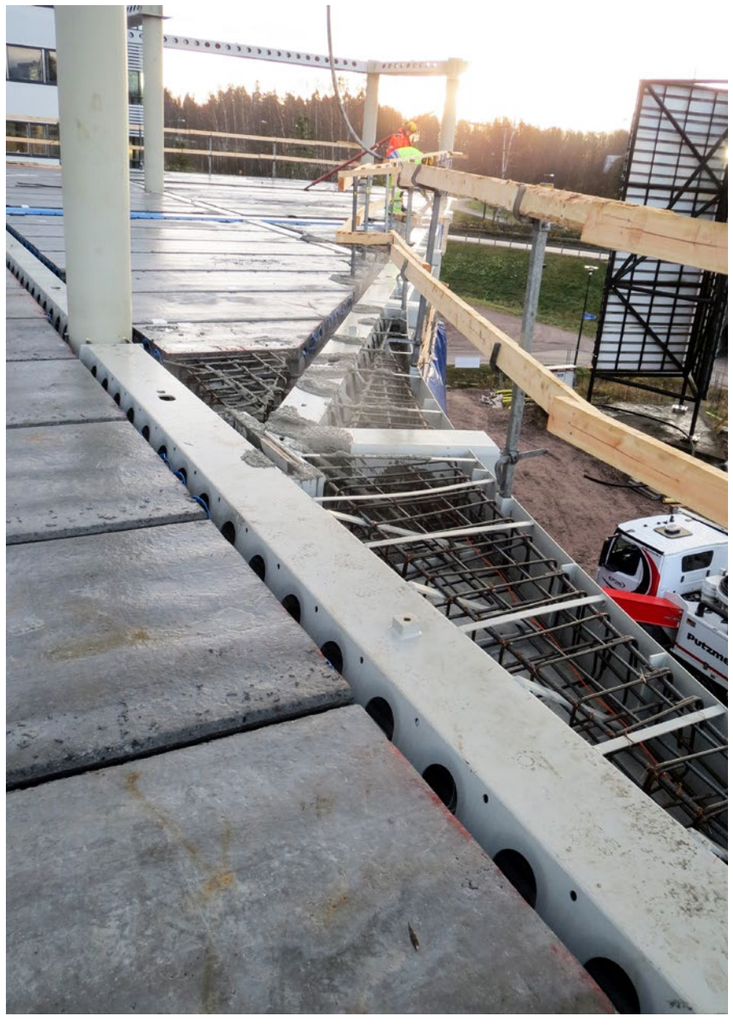
"DELTABEAM® Frame allows for long spans and open spaces, which enable flexible layout changes during the whole lifecycle of the building



The inbuilt formwork of DELTABEAM® helped to realize the architects' idea and also ensured an economically viable project



"The basic grid of 8.1 meters (27 ft) would have been feasible also with pre-fabricated concrete beams, but we preferred DELTABEAM® as the beams do not extend downwards from the slab," Brooke concluded.

Making great architecture real is often about balancing costs with creativity.

"The inbuilt formwork of DELTABEAM® helped to realize the architects' idea and also ensured an economically viable project," stated Peikko Project Manager **Jarno Backman**.

4.8 KILOMETERS (3 MILES) OF ON-SITE EFFICIENCY

Built in Espoo, Finland, the frame comprises 4.8 kilometers (3 miles) of DELTABEAM® in addition to 250 tons (275 US t) of Composite Columns and other steel structures.

"From the constructor's point of view, DELTABEAM® works very well. And why shouldn't it? That's what it's designed for," said **Ari Kammonen**, the site manager of Hartela.

According to Kammonen, the beam deliveries have been punctual with one or two trucks at a time.

"The delivered beams are often installed already on the same day. Using them is pretty easy, although you need to be careful with the tolerances," Kammonen pointed out.

Choosing a DELTABEAM® Frame meant one less stage during the erection of the frame.

"Every DELTABEAM® and composite column has integrated fireproofing. While freeing the workers to do other tasks, it also reduces bureaucracy because there are no toxic fireproofing paints", Ari Kammonen added.

Deliveries started mid-September 2017 and the whole frame will be erected by the end of March 2018.

TEKLA MODEL SHARING KEPT EVERYONE IN THE LOOP

As is always with DELTABEAM®, Peikko designed the beams in seamless co-operation with structural designers.

"This simplified our job as one part of the design came from the frame supplier. Tekla Model Sharing allowed us to work simultaneously on the same model. Being on a shared platform meant that all parties were kept perfectly in the loop regarding the frame", said **Antti Pekkala** of Ramboll Finland.

"Our in-house design team utilized Tekla Model Sharing to constantly check component compatibility and make sure that each DELTABEAM® fits perfectly together with the other frame parts", Backman noted.

A FLEXIBLE STRUCTURE FOR THE WHOLE LIFECYCLE

DELTABEAM® Frame allows for long spans and open spaces, which enable flexible layout changes during the whole lifecycle of the building. Being a slim floor structure, investors can use the vertical space saved for an additional floor or alternatively, benefit from less cubic meters to heat.

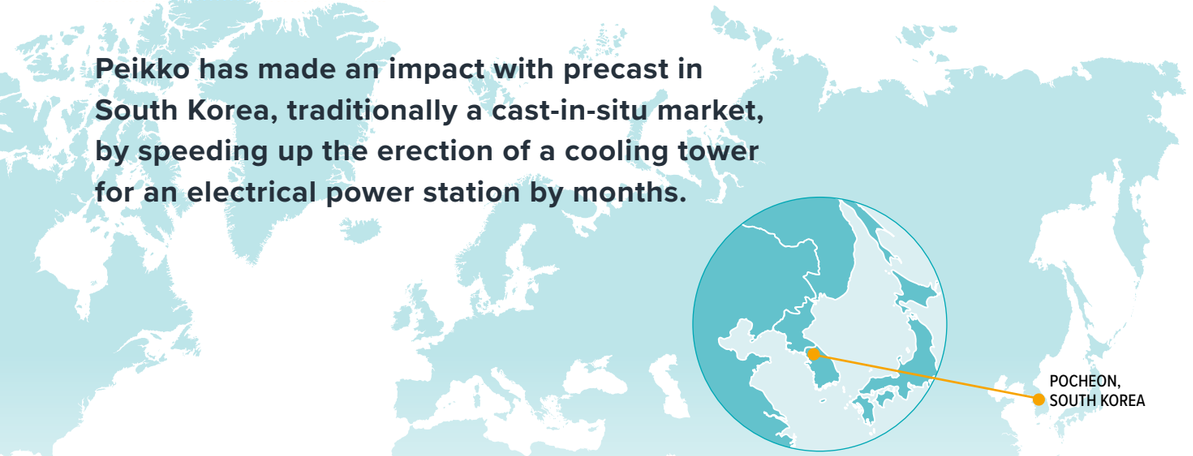
PROJECT FACTS

- Project size: 19,000 m² (22,700 sq yr)
- Developer: Keva
- Architect: Cederqvist & Jäntti Architects
- Structural designer: Ramboll Finland Oy
- Contractor: Hartela Etelä-Suomi Oy

> **We were really happy that we went for a precast solution as it allowed us to save 2 months of time. In a project that lasted only 8 months altogether, it was a significant speedup.**
>
> Lee Sunk Ki, Project Manager, GS Engineering and Contraction

PRECAST OFFERS MORE SPEED AND ON-SITE SAFETY IN SOUTH KOREA

Peikko has made an impact with precast in South Korea, traditionally a cast-in-situ market, by speeding up the erection of a cooling tower for an electrical power station by months.



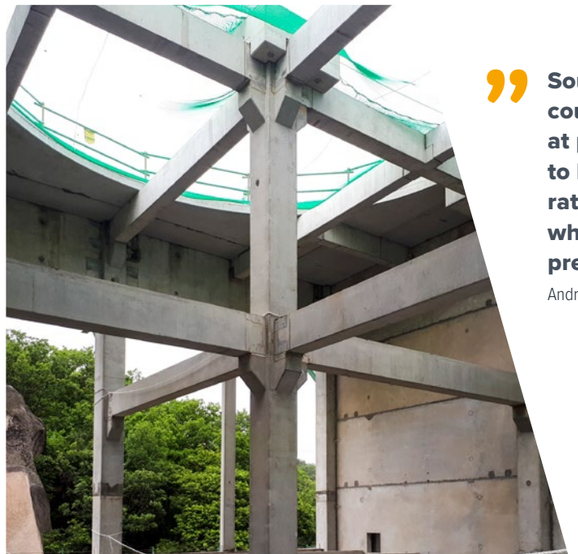
> **Using Peikko's connection and lifting items was really easy for us. Simply put, if you can thread a nut to a bolt, you are perfectly able to erect a precast frame. What's most important, we had no accidents at all during the project.**
>
> Oh Jong Han, Representative Director, Taehwa Construction Industry ltd

Before, precast has been shunned on in South Korea. This has been in part due to strong cast-in-situ tradition and the low quality of precast of the past. Now this is about to change – Peikko has delivered concrete connection items to a precast cooling tower of a new electric power plant built in Pocheon.

The order comprised a notable amount of HPM® Rebar Anchor Bolts, HPKM® Column Shoes and COPRA® Anchoring Couplers for column connections, as well as SUMO® Wall Shoes and PVL® Connecting Loops for wall connections for the project. Peikko's COLIFT Mounting System was used in the erection stage.

Altogether, the project consisted of 84 precast columns and 1,608 precast beams. Including the solid walls, the total amount of precast elements was about 3,000 m^3 (3,500 sq yd). Peikko's deliveries started in February 2017 and continued until the middle of summer.

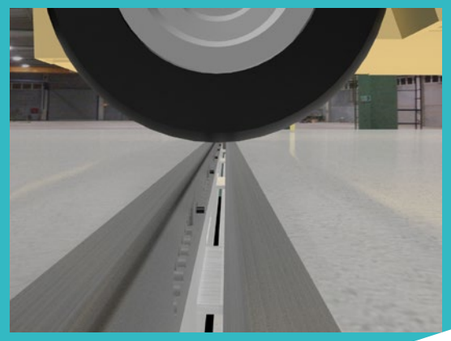
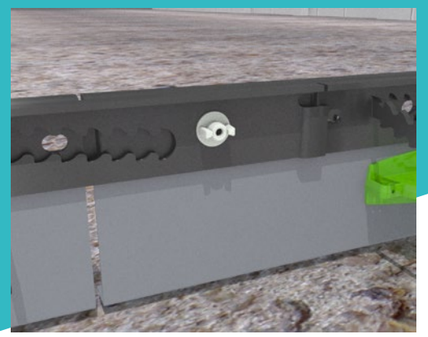
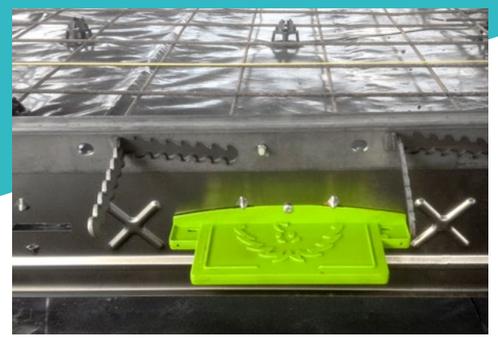
> **Column shoes were surprisingly simple to install to the formwork. No problems, whatsoever. We used templates to secure the shoes in exactly the right position.**
>
> Noh Kyung Tae, Deputy general manager, SEAN Ltd – precast factory



> **South Korea is a country where land is at premium. This leads to building upwards rather than horizontally, which is a perfect fit for precast technology.**
>
> Andrei Naumovich, Peikko

PROJECT FACTS

- Project size: 6 cooling towers
- Developer: GS Engineering and Contraction
- Contractor: Taehwa Construction Industry ltd
- Structural Designer: Esen Design&Tech
- Precaster: Sean precast factory
- Delivery year: 2016–2017
- Completion year: 2017


COMPLICATED FACTORY FLOOR DESIGN

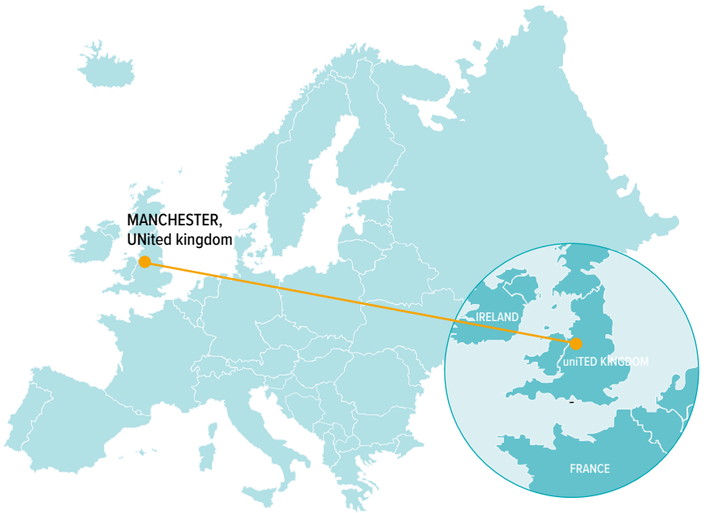
A CHALLENGE SOLVED WITH OPTIMAJOINT®

Polyflor is a leading international supplier of floor coverings. As such they needed to select the optimum joint for the high specification concrete floor in their new manufacturing facility being built at their Manchester works. And that's what they did!

The floor design of the new plant was particularly awkward with various machine bases and plinths incorporated in the floor. This meant that the chosen free movement joint system had to be versatile enough to cope with the design challenges and the long strip installation method used. Simultaneously, it had to provide the required flatness and level category.

NEW OPTIMAJOINT® WAS SUCCESSFULLY SPECIFIED

"Surprisingly simple and quick to install, it more than met our floor design specifications and requirements," stated **Simon Nutter**, project engineer of Polyflor.



OPTIMAJOINT® gives steel armoured protection to the joint arrises to extend the operational life of the floor.

"It also makes for a smoother transition of the joint for wheeled vehicular traffic. We expect this to have a positive impact on the durability of the MHE wheels," Nutter added.

OPTIMAJOINT® was considered to be a winner by the engineers, the customer and the concrete contractor – so much so that it was immediately specified for the next project the engineers and contractors are working together on.

For further information on this innovative new product, please visit **www.peikko.com/optimajoint**

PROJECT FACTS

- **Project size: 2,000 m² (21,500 ft²)**
- **Developer: Polyflor Estates Dept.**
- **Contractor: S. N. Contracting**
- **Delivery year: April 2016**
- **Completion: May 2016 (Flooring only)**
- **Project completed: September 2016**

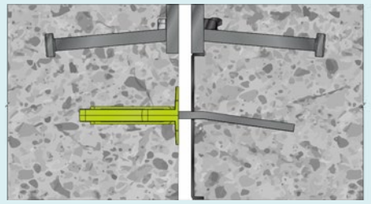
IN SEARCH OF AN OPTIMAL JOINT

Over the years, various improvements have been made to the basic Free Movement Joint design. Steel content has been reduced, straightness tolerances improved, robustness and anchoring increased. But none can offer as many benefits, or solve as many of the known initial design problems as OPTIMAJOINT®.

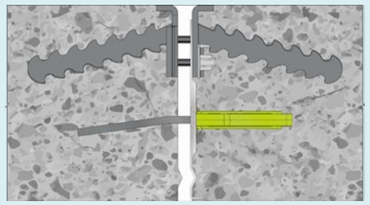
OPTIMAJOINT® – the ultimate prefabricated Free Movement Joint system – is suitable for heavy duty usage on the majority of industrial concrete ground floor slab applications.

Compared to other pre-fabricated Free Movement Joint systems, it provides a host of improvements and benefits:

- OPTIMAJOINT® saves 47.5 % of steel when compared to conventional 40 mm x 10 mm (1 37/64 in x 25/64 in) steel bars and studs.
- Anchors are produced from the parent steel – which means no welded studs that may detach in transit or handling.
- Radiused inner edges displace impact forces from the vehicles and reduce tyre damage.
- Less than ± 1 mm (3/64 in) tolerance per lineal metre.
- Height adjustable divider plate means that one joint can be adjusted 150 to 250 mm (5 29/32 to 9 27/32 in) deep slabs.
- Supplied either in flat pack for easy assembly or fully assembled and ready to use.



In a conventional 150 mm (5 29/32 in) deep slab with a 40 mm x 10 mm (1 37/64 in x 25/64 in) steel bar, there is only 110 mm (4 21/64 in) of slab to support against compressive loads.



With an OPTIMAJOINT®, only 4 mm (5/32 in) of the 150 mm (5 29/32 in) depth of the slab is being replaced by steel. This leaves 146 mm (5 3/4 in) of the slab to support against compression.

WELL PLANNED IS HALF DONE – SAFETY ON SITE

Tripla – in the Pasila district in Helsinki – is one of the biggest and most challenging construction projects currently ongoing in Finland. Working as the safety manager of the Tripla urban development project, **Erno Martin** knows what safety on site actually requires.

Visualizations: YIT

Tripla is an area of three blocks that will include a hotel, residential and office buildings, and a shopping mall. Leading a safety team of 18 members for the main contractor YIT Rakennus Oy, Martin is responsible for safety on site, as well as fire safety and of offering basic safety training for new workers.

"The work of the team includes planning, monitoring, guidance and reporting. Training plays a vital role as all the workers need to be aware of the rules on the site. All the site protection and guide signs are designed by my team. I am also responsible for safety communication, reporting to different stakeholders, and all safety related information issues," Martin described his daily work.

PLANNING FIRST, EXECUTION SECOND

According to Martin, the most important thing regarding site safety is thorough planning prior to work.

"Everything on the site needs to be clear, functional and easy to understand for all parties. Guidance and continuous monitoring of the site is important, and whenever there are deviations from the rules, corrections must be made immediately," Erno Martin pointed out.

FULLY OPERATIONAL RAILWAY STATION IS A CHALLENGE

"The railway station area in Pasila continues to be open for the public even when the demolition work is ongoing. As there are third parties involved continuously, the instructions and signs on the site play a very important role. Most of the work is done during the night when there is less traffic and the high-voltage is turned off," Martin said.

Continuous communication is also needed with all the participating units and parties. For improving communication there are several information meetings, such as weekly safety quarters, reporting and measuring.

"The workers on the site have a crucial role in reporting any safety concerns and giving improvement suggestions," Martin pointed out.

PEIKKO'S SOLUTIONS ENHANCE SAFETY

Martin is familiar with many of Peikko's solutions.

"I find them well-designed and developed. Even if the price might first appear high, Peikko is able to create long-term cost savings for the project. Using COLIFT Mounting System in the demolition work of the Pasila station was new to me, but our team received very good instructions and hands-on guidance from Peikko," Martin explained.

Erno Martin applauds solutions that enable doing a big part of the work off-site as it means saving time and increasing security on site.

"For instance, additional propping is not needed which reduces safety risks. As the schedule of the project is very tight, timing is crucial. Well-designed solutions that are thoroughly planned prior to work reduce risks when the work needs to be completed quickly and there is no room for errors. Thus, the work can be done safely and the end product is of high-quality," Martin said.

WIND HAS ALWAYS BEEN CLEAN, BUT NOW IT'S ALSO ECONOMICAL

A SOLID FOUNDATION IS STILL CALLED FOR

With the interest in wind energy on the rise, foundation suppliers are hard pressed to meet the developers' demands in terms of design, delivery and installation.

Wind has been named as the most profitable way of producing energy.

According to the American Wind Energy Association, “wind prices are extremely competitive right now, offering lower costs than other possible resources”, while Bloomberg New Energy Finance has noted that “onshore wind is fully competitive against gas and coal”.

This has created a wind energy boom with some 30,000 new turbines built every year to add to a tally of around 500,000 wind power plants in use around the world.

A QUANTUM LEAP OF TURBINE TECHNOLOGY

Wind energy is in the middle of a similar technology leap that revolutionised the cell phone performance and use a decade ago. We have seen a significant increase in the turbine size and power generation figures.

“If you take the situation three years ago as a baseline and give that an index of 100, we are now at 250”, **Kari Tuominen**, Business Director of Peikko’s wind turbine foundation business, described the leap.

This has led to a decrease in cost per kWh produced.

“It also means that many foundation suppliers are struggling to come up with economical solutions that can support ever increasing mast and turbine sizes. That’s where we at Peikko have the upper hand”, said Tuominen.

FORERUNNER IN FOUNDATION TECHNOLOGY

Having been at the forefront of turbine foundation development since 2012, Peikko has been able to do the same leap in foundation technology.

“Seeing the rise of wind energy early enough, we invested heavily in creating a foundation that is easy and fast to install. With our industrial scale experience on concrete connections, we were able to come up with a gravity foundation that ticked all the boxes, also the economical”, Tuominen pointed out.

The investment for the first generation gravity foundation was up to 1.5 M€, so the people at Peikko were taking wind very seriously indeed.

ROCK TO ROUND UP THE OFFERING

Having mastered the gravity foundation, Peikko R&D tackled the next challenge – many prime locations for wind farms are located in rocky areas, which means that a gravity foundation is a less than perfect solution. In order to use gravity, bedrock needs to be blasted away to create a pocket for a gravity foundation.

“We came up with a rock foundation, which actually is the most competitive foundation there is for a kWh generated. Of course all other things, especially wind conditions, being equal. The rock foundation technology will save both time and money as the price of concrete and transportation is very high”, Tuominen emphasised.

A gravity foundation uses easily around 70 tons (77 US t) of steel and 700 m^2 (840 sq yd) of concrete. Lower in its raw material requirements, a rock foundation makes do with only 30 steel tons (33 US t) and 20 m^2 (25 sq yd) of concrete.

Now in its fourth generation, Peikko has been able to fine-tune the foundation design, production and installation processes to lower the foundation price and boost the performance to meet the demands of bigger masts and turbines.

TWO FOUNDATION TYPES ALLOW OPTIMIZATION

“Our approach works particularly well in areas with heterogeneous soil as you can have both gravity and rock foundations in the same wind park. With our swift design and manufacturing process, every foundation can be optimized to the exact location,” Tuominen said.

Thanks to Peikko’s experience in designing connection details on an industrial scale, a preliminary foundation design can be done within a day.

“Industrial operating model of Peikko means that the wind turbine foundation design is seamlessly integrated with production. We can have the components – anchor cage and reinforcement – ready for shipping starting from 3 weeks. Global warehousing of standard components further adds flexibility of delivery,” added Tuominen.

In Lehtirova, Sweden, 41 gravity foundations have been built with a rate of 3 foundations a week during the 2017 season.

Built in 2017, the Roan site with its 71 rock foundations is a part of the 1,000 MW Fosen Vind project in Norway.

THE NORDIC EXAMPLE

The wind energy market is on a steady 5 to 10 percent annual rise globally. Some areas, like the Nordic countries, are experiencing even more rapid growth.

For instance, Norway seeks to increase their wind power generation to balance the fluctuations in their otherwise dominant hydropower supply.

“Currently we deliver 130 foundations to Norway each year, but the figure is expected to rise to 300 in the very near future”, said Kari Tuominen.

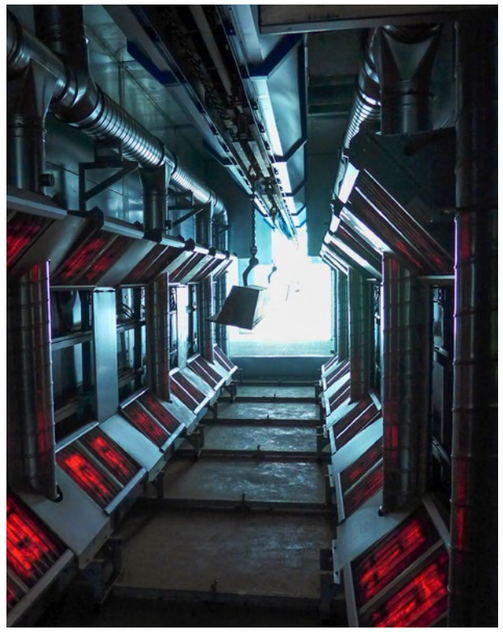
Another Nordic example, Denmark aims to get 100 percent of its total energy from renewables by 2050.

“At the moment the Danes generate around 50 percent of their energy with onshore wind power, although it’s necessary to keep in mind that Denmark is not that energy-intensive as a country compared to the other Nordic states, such as Finland”, Kari Tuominen concluded. ●

> **Seeing the rise of wind energy early enough, we invested heavily in creating a foundation that is easy and fast to install.**

ONE STOP FRAME SUPPLIER CONCEPT PROVING SUCCESSFUL MORE DELTABEAM® CAPACITY TO MEET GROWING DEMAND

To meet the market demand, Peikko has opened a new 6,000 m² (7,200 sq yd) production facility in Kaunas, Lithuania. The new factory raises Peikko's European DELTABEAM® production capacity by 30 percent.



DELTABEAM® Frame has been gaining popularity – it's no wonder, as it offers easier project management and, compared to traditional frame solutions, exceptional flexibility when building open spaces.

"Sourcing all frame components from us means that our professionals take responsibility for the compatibility of components. This eases the pressure that is otherwise put on purchasers and site managers," **Kim Salvén**, Vice President, Sales & Marketing said.

A vital element in the overall process, the new facility boasts a strong in-house engineering team.

"We typically do frame design of the building according to customer specifications. In order to find the optimal solution for your project, the design is always done in close co-operation with your local structural engineers and architects," noted **Andrius Surantas**, Vice President, Operations.

Peikko operates strictly by LEAN manufacturing principles.

"Going LEAN helps us keep our internal processes as efficient as ever, but also allows us to deliver just in time. Delivery trucks are loaded to contain all the necessary components for the next construction phase, so our customers get only what is needed to the building site when it is needed," Andrius Surantas said.

The opening ceremony was held on the 7th of September and the factory was officially opened by the Economy Minister of Lithuania, Mr. Mindaugas Sinkevičius and the Finnish Ambassador to Lithuania, Mr. Christer Michelsson.

The factory investment amounts close to 10 M€ and has created 75 new job positions in Lithuania both on the factory floor as well as in project handling and DELTABEAM® Frame modelling. Other European DELTABEAM® production facilities are located in Finland and Slovakia.

"Our streamlined design and production process means that DELTABEAM® components can be delivered on site very quickly – the typical case scenario being around six weeks, including structural design and modelling," Surantas stated.

CE MARKING – 5 BASIC QUESTIONS ANSWERED

CE marking can be found in all kinds of products ranging from home electronics to bolted column connections and anchor plates.

As of 1st July 2013, CE marking became mandatory for all construction products which are covered by harmonised European standards (hEN) or conform to European Technical Assessment (ETA).

1. WHAT DOES AN ETA BASED CE MARKING MEAN FOR YOU?

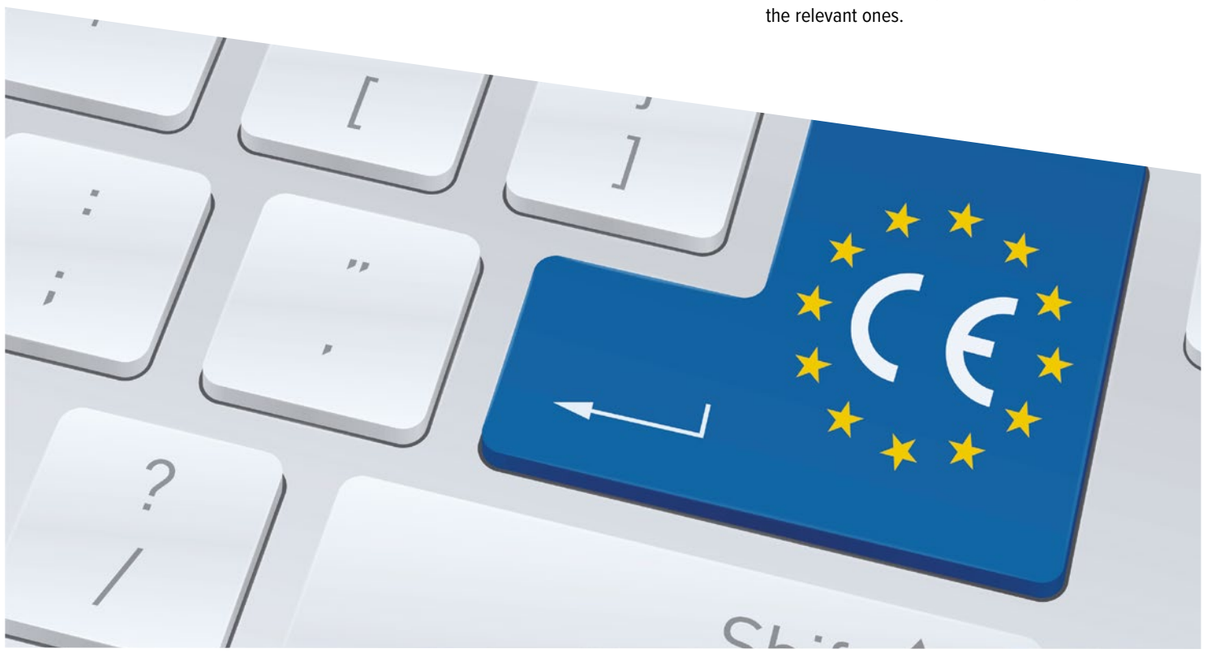
With a CE marking based on ETA, a manufacturer guarantees that the product meets the specified basic requirements. In Peikko's case, CE marking means that the product is well manufactured, safe to use, meets performance requirements and includes complete technical user instructions.

2. WHAT ARE THE BASIC REQUIREMENTS?

- Mechanical resistance and stability
- Safety in case of fire
- Hygiene, health and the environment
- Safety and accessibility in use
- Protection against noise
- Energy economy and heat retention
- Sustainable use of natural resources

It's worth noting that a manufacturer can decide which are the assessed characteristics that are essential for product performance. If you are a structural designer for instance, you really need to make sure that the product is assessed according to the requirements that are relevant to your specific project.

In Peikko's case, we most often choose mechanical resistance and stability for obvious reasons. But of course, in some cases, safety, fire safety and others might be relevant, too. The products are not intended to meet every requirement, only the relevant ones.



3. WHAT IS A DOP?

DoP stands for Declaration of Performance and has all the vital information you need. In other words, it defines which requirements a certain CE marked product meets.

4. ARE ALL CE MARKINGS EQUAL?

No, they are not. Some products are CE marked according to EN 1090 standard, which defines only the execution quality in production. An ETA based CE marking, however, specifies product performance and behavior in construction.

COMPARE CE MARKING BASED ON ETA TO EN 1090:

CE based on ETA	CE based on EN 1090
Aimed for final state, design and application	Aimed only for temporary state, mainly manufacturing, production and assembly phases
Aimed for building products	Aimed only for steel structures
Covers all essential requirements of CPR – mechanical resistance, fire resistance and durability	Covers only very limited characteristics such as manufacturing and execution
Can be used as a product passport in the EU	Cannot be used as a product passport in the EU

COMPARE DECLARATION OF PERFORMANCES BASED ON ETA TO EN 1090:

CE based on ETA	CE based on EN 1090
Aimed for final state, design and application	Aimed only for temporary state, mainly manufacturing, production and assembly phases
Valid and covers design	Not valid and does not cover design
Valid and covers load bearing capacity	Not valid and does not cover load bearing capacity
Valid and covers resistance to fire	Not valid and does not cover resistance to fire

5. WHAT IS THE EVALUATION PROCESS FOR A CE MARKING LIKE?

First, the product must meet the ETA criteria. A manufacturer can decide on which basic requirements the ETA is based. Because Peikko has many products that are not covered by harmonized European standards, they are assessed as innovative products and CE marking is suitable only via ETA.

Next, a Technical Assessment Body (TAB) such as VTT in Finland or DIBt in Germany composes a European Assessment Document (EAD), which evaluates whether the product meets the chosen criteria or not.

After getting the EAD, a third party notified body carries out the process of Assessment and Verification of Constancy of Performance so that the product meets the criteria also in real life.

The final phase is the certification of production facilities. When that certificate is granted, the manufacturer has the right to use a CE marking for the assessed product. The whole process takes one to three years.

WELDA® ANCHOR PLATES ARE CE MARKED BASED ON ETA – FOR A REASON

Safety should not be compromised by using shortcuts. Therefore, we have chosen to CE mark Peikko's WELDA® Anchor Plates based on European Technical Assessment (ETA).

Safety in design and installation of construction products is crucial, which is why we strive for safe design and use of our products. According to the European Commission, the European Committee for Standardization (CEN) and the European Organization for Technical Assessment (EOTA), the only way to CE mark anchor plates is through the ETA process.

Currently Peikko is the only European company in the industry that can deliver anchor plates based on ETA – ETA is the only way to specify product performance and proper behavior in construction during the whole product lifecycle.

WHAT DOES THIS MEAN IN PRACTICE?

Firstly, the intended use of anchor plates is described in the documentation needed to obtain ETA. These define the conditions of use and make sure the product fits the application.

Secondly, the design principles of an anchor plate are presented in the ETA document. These principles have been inspected and approved by the German Institute of Construction Technology (Deutsches Institut für Bautechnik, DIBt) to be applied specifically to anchor plates.

Additionally, the initial type testing and factory production control have been defined by EOTA and DIBt. The tests are specifically for anchor plates. Peikko's production units have been audited, certified and continuously followed-up by local authorities to fulfil these requirements.

Finally, the installation instructions have also been checked by authorities to ensure safe use of anchor plates.

RIGHT DESIGN AND CORRECT INSTALLATION ESSENTIAL

Proper performance of construction products is a combination of right design and correct installation. Only by using CE marked WELDA® Anchor Plates designers and contractors can be sure that both design and performance in concrete fulfil the demands set by the authorities for anchor plates. ●

NEW, CE MARKED WELDA® STRONG ANCHOR PLATES FOR EASIER DESIGN AND INSTALLATION

The amount of reinforcement can be staggering in heavy load applications. Sometimes the anchor plate studs are too big to fit in.

During the CE marking application process for WELDA® products, Peikko came up with an Eurocode-optimized stud for heavy load applications. In this case, optimization means that the stud is significantly smaller than before.

In addition to being lighter in weight, WELDA® Strong Anchor Plates also transfer heavy loads from steel structures to concrete as effectively as JPL Fastening Plates.

If the structure depth allows, WELDA® Strong can be specified with longer anchors for more capacity. In many applications this makes supplementary reinforcement unnecessary and lightens both structural engineers' and constructors' work load.

The new WELDA® Strong Anchor Plates are lighter to handle, while smaller studs and possibility to save supplementary reinforcement make construction work more effective.

CE marked WELDA® Strong will be officially launched and available in Q1, 2018. Stay tuned! ●

SPEED UP THE CONSTRUCTION OF HEAVY INDUSTRIAL CONCRETE STRUCTURES WITH NEW BEAM TO COLUMN CONNECTION

New Peikko BECO®-COPRA® connection is designed for safe and efficient moment-resisting precast beam to column connections.

Representing a new generation of bolted connections, BECO® Beam Shoe and COPRA® Anchoring Coupler simplify heavy industrial structures, such as pipe racks for oil or gas pipes and large factory halls, where extra stiffening is needed. A range of different COPRA® Anchoring Couplers makes sure that there is always a right solution at hand for different column shapes and sizes. Beam shoes and anchoring couplers are cast to the elements in a precast factory, which speeds up the installation on site.

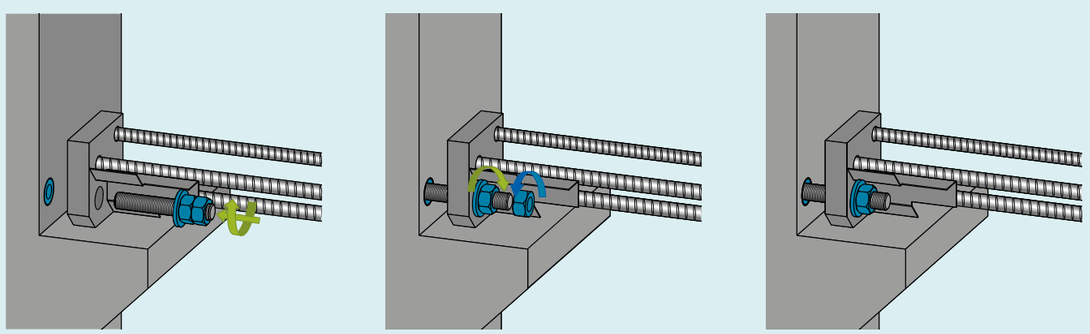
MOMENT-RESISTING CONNECTION INSTANTLY

On site, BECO®-COPRA® is all about fast installation – a moment-resisting connection is created quickly between precast columns and precast beams. After erecting the beam on a corbel, the beam is connected to COPRA® Anchoring Couplers with threaded bars and nuts, which are included in delivery. COPRA® anchors the axial forces from the beam shoe to the precast column.

TENSILE LOAD TRANSFER

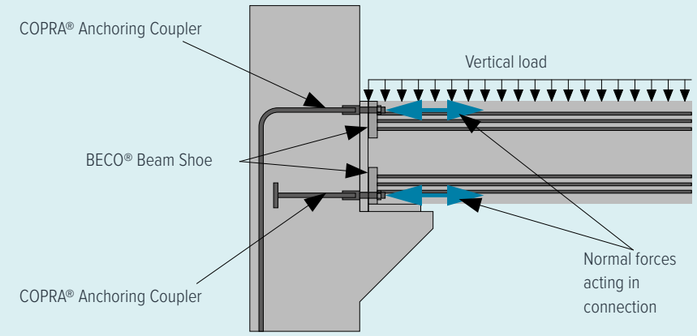
Designed to carry tensile forces, the BECO®-COPRA® connection offers full load transfer capacity as soon as the nuts are tight. The vertical reactions of the beam are usually transferred to the column through separate supporting systems, such as steel or concrete corbels. Non-shrink grout transfers compression from beam to column. For aesthetic reasons in large cross sections, also hidden PCs® Corbel connections can be used.

Use threaded bars and nuts to connect



> **Tensile load transfer capacity right after the nuts are tightened**

Structural behaviour of the connection



Types of BECO® Beam Shoes.

Types of COPRA® Anchoring Couplers

BENEFITS FOR PRECAST FACTORIES AND CONSTRUCTORS

Edge connections done with Peikko bolted connections stand for simple-shape precast components and small volume grouting sections for savings both in the precast factory and on site. Site managers will appreciate the low risk of damaging the connection as the threaded bars are installed only after erecting the beam.

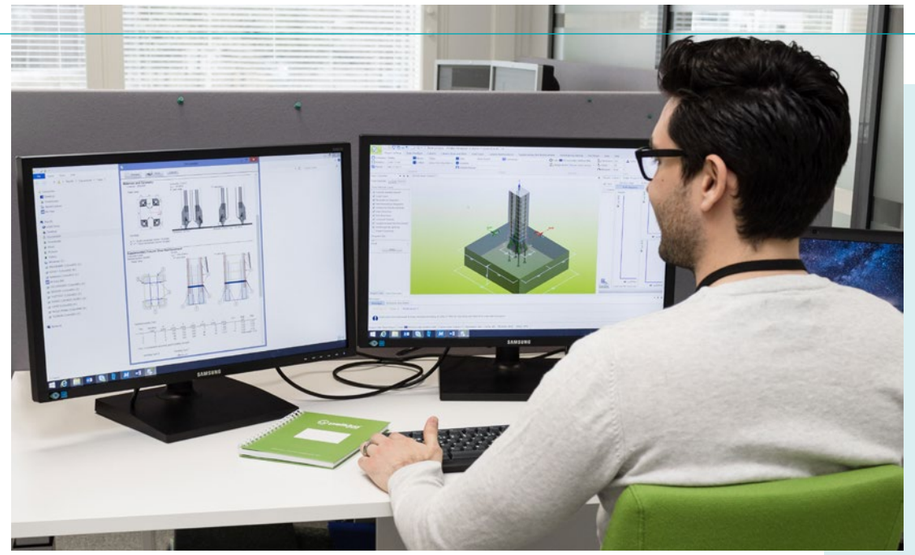
BECO® Beam Shoes and COPRA® Anchoring Couplers are designed to comply with harmonized European Standards (such as EN 1990-1-1; EN 1992-1-1; EN 1993-1-1). Note that the new products replace widely used RBC Beam Shoes and MHPM/MPPM Anchors.

Design values of resistances of individual BECO® Beam Shoes for concrete grade C30/37

Beam Shoe	Anchoring Coupler	NRd [kN]	Color Code
BECO 16H*	COPRA 16H	62	Yellow
BECO 20H*	COPRA 20H	96	Blue
BECO 24H*	COPRA 24H	139	Grey
BECO 30H*	COPRA 30H	220	Green
BECO 39H*	COPRA 39H	383	Orange
BECO 30P*	COPRA 30P	299	Black
BECO 36P*	COPRA 36P	436	Red
BECO 39P*	COPRA 39P	521	Brown
BECO 45P*	COPRA 45P	697	Purple
BECO 52P*	COPRA 52P	938	White

MODELING TOOLS FOR TEKLA STRUCTURES, REVIT AND AUTOCAD ARE AVAILABLE AT WWW.PEIKKO.COM/DESIGNTOOLS

PEIKKO DESIGN TOOLS UPDATES



Free design tools to optimize structural designs

Use our powerful software every day to make your work faster, easier and more reliable. Peikko Design Tools include design software, 3D components for several modeling software, installation instructions, technical manuals and product approvals of Peikko's products. All Peikko Design Tools can be accessed online at **www.peikko.com/designtools**.

LATEST IMPROVEMENTS IN PEIKKO DESIGNER®

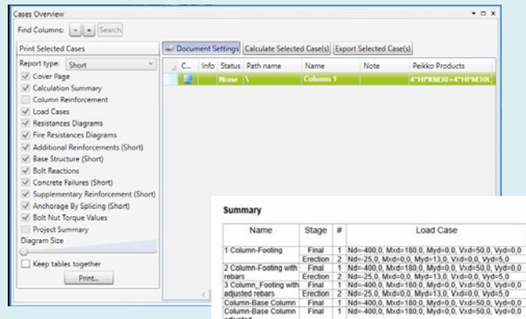
COLUMN CONNECTION MODULE

- Three new optional chapters: cover page, calculation summary, and bolt nut torque values
- Added the option "keep tables together", which ensures that tables aren't split into parts due to page break
- Possibility to print short, long or custom reports, where short and long reports have predefined content, and the content for the custom report can be selected by the user.

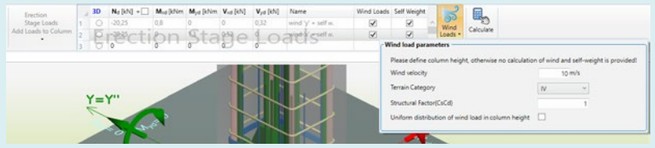
Wind load calculation has also been added to erection stage loads with self-weight of the column. These calculations are made based on plain Eurocode (EN 1991-1-4) and available with plain Eurocode design and with German National Annex.

FASTENING PLATE MODULE

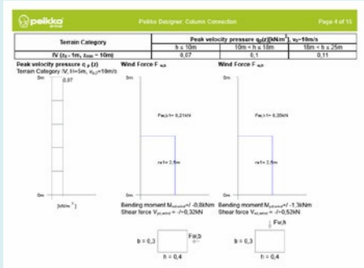
Design according to ETA-16/0430 for WELDA® Anchor Plates can be done in the Fastening Plate module. We have also marked stock sizes of smooth studs to selection of stud in case of designing special WELDA® Anchor Plates.



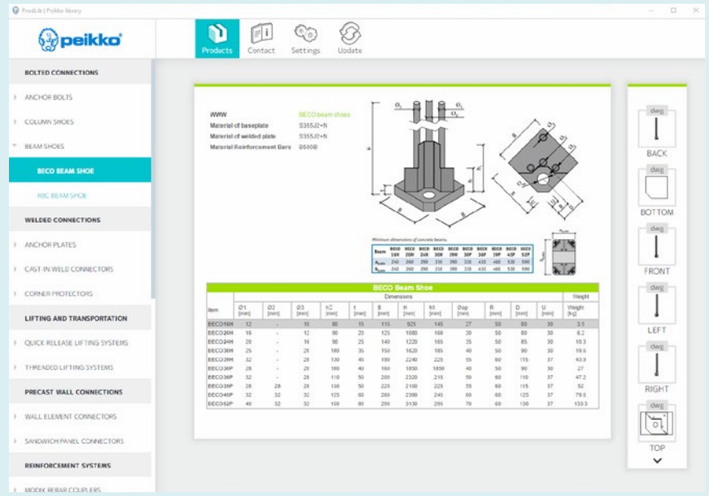
Column Connection report Options and summary table



Wind load INPUT AND REPORTS

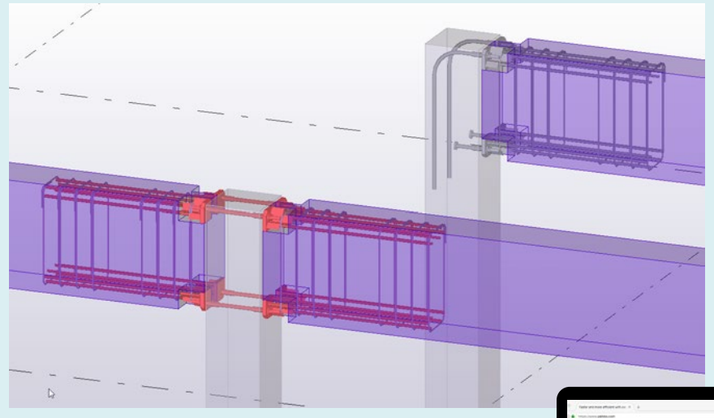


NEW LOOK IN PEIKKO TOOLBOX FOR REVIT AND AUTOCAD



3D DWG'S AND STRUSOFT IMPACT COMPONENTS COMING SOON FOR PRECAST PRODUCTS

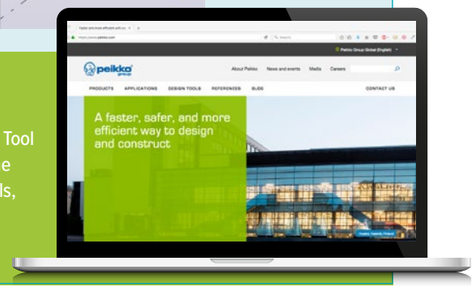
BECO® BEAM SHOES AND COPRA® ANCHORING COUPLERS AVAILABLE FOR TEKLA



NEW DESIGN TOOL SECTION ON OUR WEBSITE

When our Group website at www.peikko.com was renewed late last year, also the Design Tool section was completely revamped. Now it is easier to search and find documents using the search panel. You can, for instance, access all the information on the available design tools, view their release notes, watch tutorial videos on the design tools, and download tools.

www.peikko.com/designtools



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