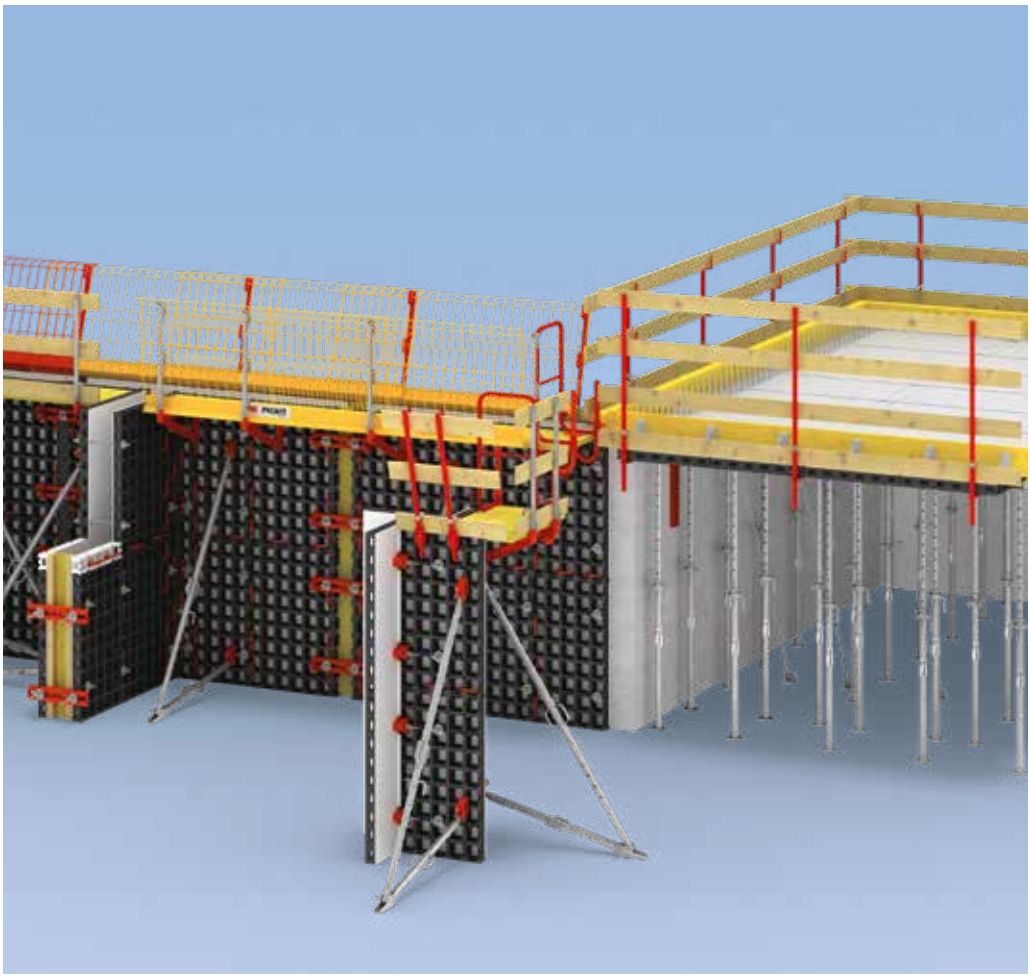
DUO

Lightweight universal formwork for walls, slabs, columns and foundations

Product Brochure – Issue 09/2026









Content

4 Lightweight DUO universal formwork
4 Overview
6 Technopolymers in formwork and scaffolding technology

9 Benefits of the DUO system
10 Universally applicable
14 Easy, fast and quiet to assemble
16 Crane-free installation process
18 Additional benefits

22 DUO as wall, column and foundation formwork
24 Shuttering of corners between 75 and 165 degrees, T-junctions and wall connections
26 Adjustments to the length of the wall formwork to suit the geometry of the building
28 Adjustments to the height of the wall formwork, assembly of push-pull props
30 Safe working conditions in all situations
32 Shuttering of connecting walls
34 Shuttering of columns and shear walls
36 Shuttering of foundations

Issue 09/2026

Publisher

PERI SE
Formwork Scaffolding Engineering
Rudolf-Diesel-Strasse 19
89264 Weissenhorn
Germany
info@peri.com
www.peri.com

38 DUO as slab formwork
40 Systematic shuttering from a safe and secure position with a minimum of components
43 Shuttering and early striking using backpropping
44 Geometrical adaptations in front of walls and columns under construction
45 Execution of cantilevers as well as guardrails on slab edges

46 Project examples
46 LuLu Mall, Lucknow, India
48 Volkstheater, Munich, Germany
49 Infrastructure construction, Pilbara region, Australia
49 Choa Chu Kang Grove, Singapore
50 Aspen Residence, George Town, Penang, Malaysia
50 Los Ramones II Pipeline, San Luis Potosi, Mexico
51 Tonson Park View, Bangkok, Thailand
51 Umbau Villa Thuja, Boppelsen, Switzerland

Important notes

All current safety regulations and guidelines applicable in those countries where our products are used must be observed.

The photos shown in this brochure feature construction sites in progress. For this reason, safety and anchor details in particular cannot always be considered conclusive or final. These are subject to the risk assessment carried out by the contractor.

In addition, the computer graphics used are to be regarded as system representations. To facilitate understanding, these and the detailed illustrations shown have been partially reduced to certain aspects. The safety installations that are not shown in these detailed descriptions must nevertheless be available. The systems or items shown might not be available in every country.

Safety instructions and load specifications are to be strictly observed at all times. Separate structural calculations are required for any deviations from the standard design data.

The information contained herein is subject to technical changes in the interests of progress. Errors and typographical mistakes reserved.

DUO – the lightweight universal formwork

Wall + slab = one system

You can use the lightweight DUO universal formwork in a number of different ways:

For forming walls
- up to 5.40 m high
- with wall thicknesses from 15 cm to 40 cm
- for a maximum fresh concrete pressure of 50 kN/m²

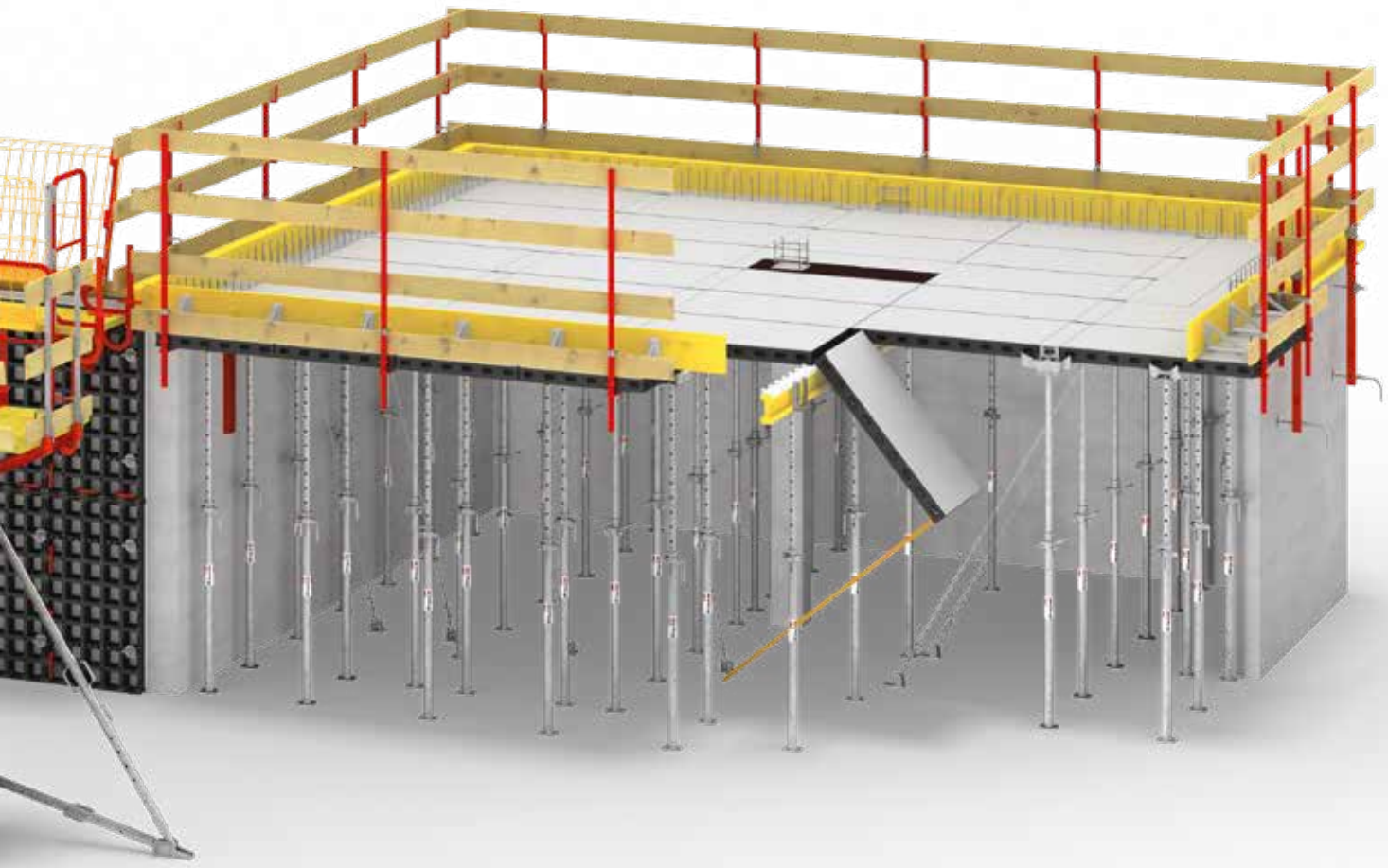
For forming slabs
- up to 30 cm thick

For forming columns
- with cross-sections from 15 cm to 55 cm in 5 cm increments
- for a maximum fresh concrete pressure of 80 kN/m²

For forming foundations
- up to 90 cm high




+
=DUO



The latest in materials science

Technopolymers in formwork and scaffolding technology



Polymer-coated fibres are the source material for the production of DUO components.

For many years now, PERI has been carrying out research and development in the field of polymer products. Throughout this process, the company has focused on the practical application of these materials in construction engineering. This has resulted in the creation of a composite material that is based on a polymer matrix.

PERI material research focuses on technopolymers that are particularly robust and durable. All development activities are aimed at the specific use of these polymers in formwork and scaffolding technology. This has resulted in, for example, the development of simple stopend angles for slab edges and other items.

PERI took an important additional step in the application of such polymers with the development of the DUO – a new, complete formwork system consisting of this material. PERI optimised the material properties of the DUO system components by incorporating additives.



The PERI Stopend Angle is made of a composite material and weighs less than 500 g.

The benefits of technopolymers

Low weight
The material is very light compared to steel or wood. This allows for faster, more ergonomic work processes and saves on crane time requirements.

High durability against moisture
Technopolymers are shrink-free, do not exhibit moisture expansion and do not rust. This makes their use in formwork and scaffolding applications incredibly advantageous compared to wood or steel.

High flexibility with regard to product design
The injection moulding production process allows the components to be formed in an extremely flexible way. This opens up new possibilities for the design of components, e.g. for various sophisticated functions.

Optimum transport weights
Products made of the polymer-based composite are very light. This minimises the transport weight and the transport costs and thus also exhaust gases.

Independent bodies have verified the special innovative strength of the DUO formwork. The formwork system has been awarded several prizes after being launched in a number of different countries.

In France, this new product from PERI was awarded the MAT D'OR. For this, communications specialist SAGERET, one of the most important providers of construction industry information in France, surveyed around 700,000 users of the digital platform about new products that are worthy of praise. Our new product won the "Best Innovation Product Award" at an exhibition in Angola where the system was presented to the North African market for the first time. During the bauma exhibition CONEXPO INDIA 2016, the system impressed two juries and, in addition to winning the Best Innovation Machine Award, was awarded the Construction Opportunity Excellence Award as part of the Conference on Maximizing CE Sector Opportunities. What's more, DUO also won the 2019 BAKA Prize for Product Innovation, which is awarded each year by the Federal Association of Old Building Renovation (BAKA) and the Munich Exhibition Centre.




PERI
PEP 20-300
Wienerberger
Porotherm

DUO

Lightweight universal formwork for walls, slabs, columns and foundations

DUO universal formwork is characterised by its low weight and the fact that it is particularly easy to handle. As such, DUO is the optimal solution for small construction sites with lower surface requirements as well as for restoration work where no crane can be used.

Only a small number of different system components are required in order to form walls, slabs, columns and foundations with the DUO system. This increases the productivity and costefficiency of the construction site significantly.

What's more, you will be able to carry out virtually every work task without the need for tools. Not only does this simplify procedures, it is also means that work can be carried out with a minimum of noise, which is becoming increasingly relevant, especially at inner-city construction sites. The ease of handling and the easily comprehensible work steps even make it possible for less experienced employees to work with the DUO system quickly and efficiently.

Besides the panels and the formlining, most DUO accessories are made of the new innovative composite material with a polymer basis. This material is extremely light yet has a high load-bearing capacity.

Universally applicable

High component utilisation rate due to flexible forming of walls, slabs, columns and foundations using only one system

Easy, fast and quiet to assemble

Work processes are quick due to simple formwork rules and quiet, straightforward applications without a hammer

Crane-free installation process

High level of productivity and ergonomic handling due to low weight

Additional benefits of DUO universal formwork

- The formwork can be maintained efficiently at the construction site
- Minor damage can be repaired using the DUO repairs case
- Formlining can be changed quickly and easily
- DUO system components take up very little space during storage and transportation

Universally applicable

Flexible forming process using a single system and only a few different components

Versatility is the key advantage of DUO universal formwork. On a consistent basis, the DUO concept reduces the number of different system components that are required, allowing you to apply the concept universally to your project. This applies not only to the frame elements but also to the accessories.

The components have multifunctional characteristics due to their sophisticated design. This enables you to use the panels flexibly for both vertical and horizontal applications. As such, it is possible to form walls, slabs, columns and foundations with a single system and only a few different components.



With its small panel sizes and ease of use, DUO is the ideal system for forming foundations.

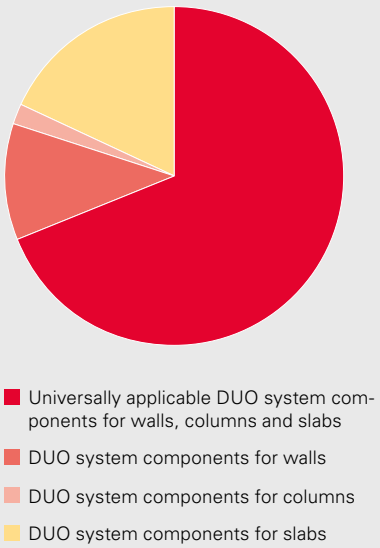
The fundamental principle of the DUO concept is the ability to use as many of the system components as possible for wall, slab and column formwork in a universal manner. This will reduce the scale of the investment you make.

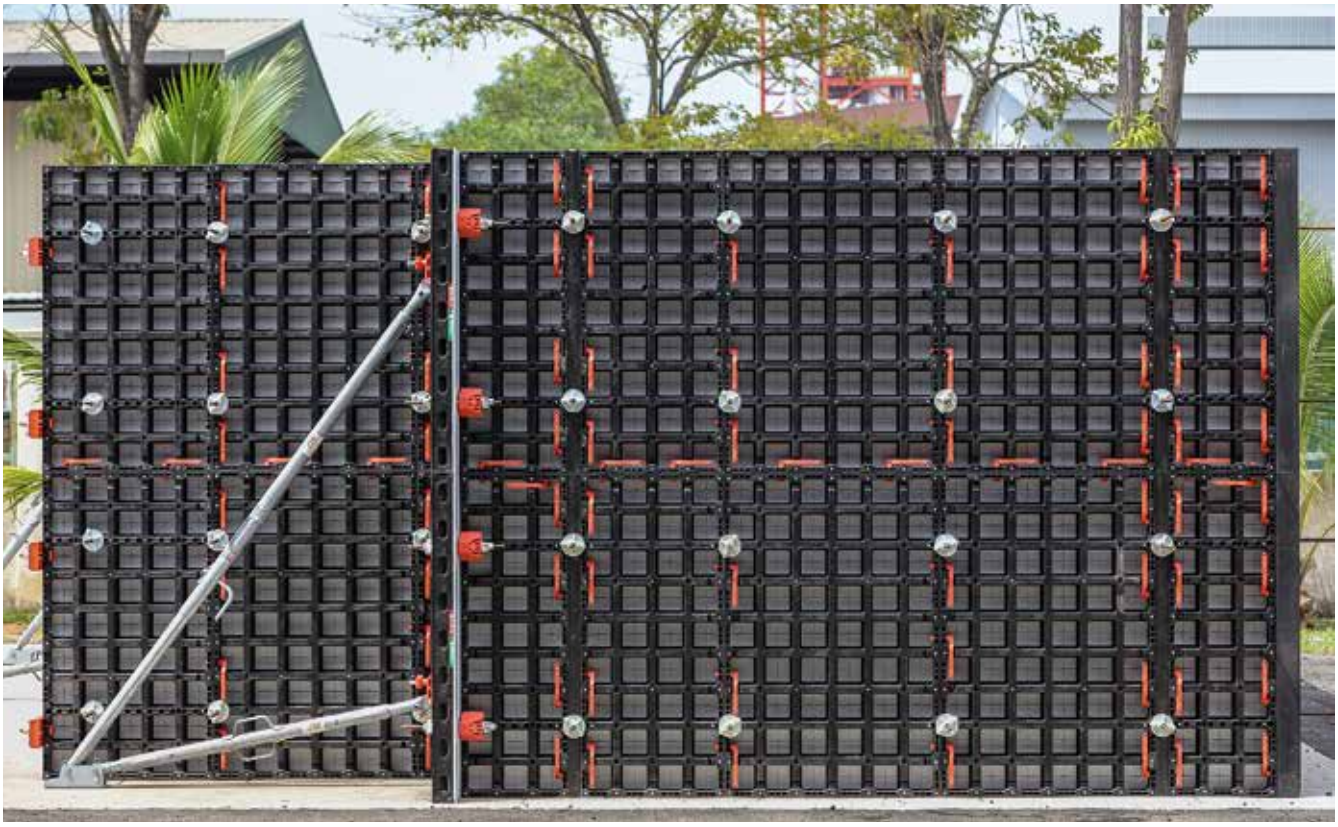
Based on the on-site material requirements for a 200 m² wall area and four 2.70-m-high columns, your investment costs will only increase by around 20 percent if the DUO system is also used as slab formwork. In this case, more than two thirds of the DUO system components are used in all applications.*

Consequently, the investment costs are far lower than they would be if three different systems were used.

Reduced transport weights mean fewer shipments and lower energy consumption throughout your logistics chain.

* This example calculation relates to the DUO system components (including anchoring technology, push-pull props and slab props, brackets and side protection, excluding wooden planks and boards).





DUO has been optimised for a room height of 2.70 m. To achieve this room height, you install two standard panels one above the other. The ability to add panels horizontally and the availability of 60-cm-high panels will provides you with a wide range of options.



With DUO multi panels, it is possible to form square and rectangular columns from 15 cm x 15 cm up to 55 cm x 55 cm in 5 cm increments.



In gardening and landscaping operations, DUO is ideally suited to the construction of retaining walls and similar structural components.



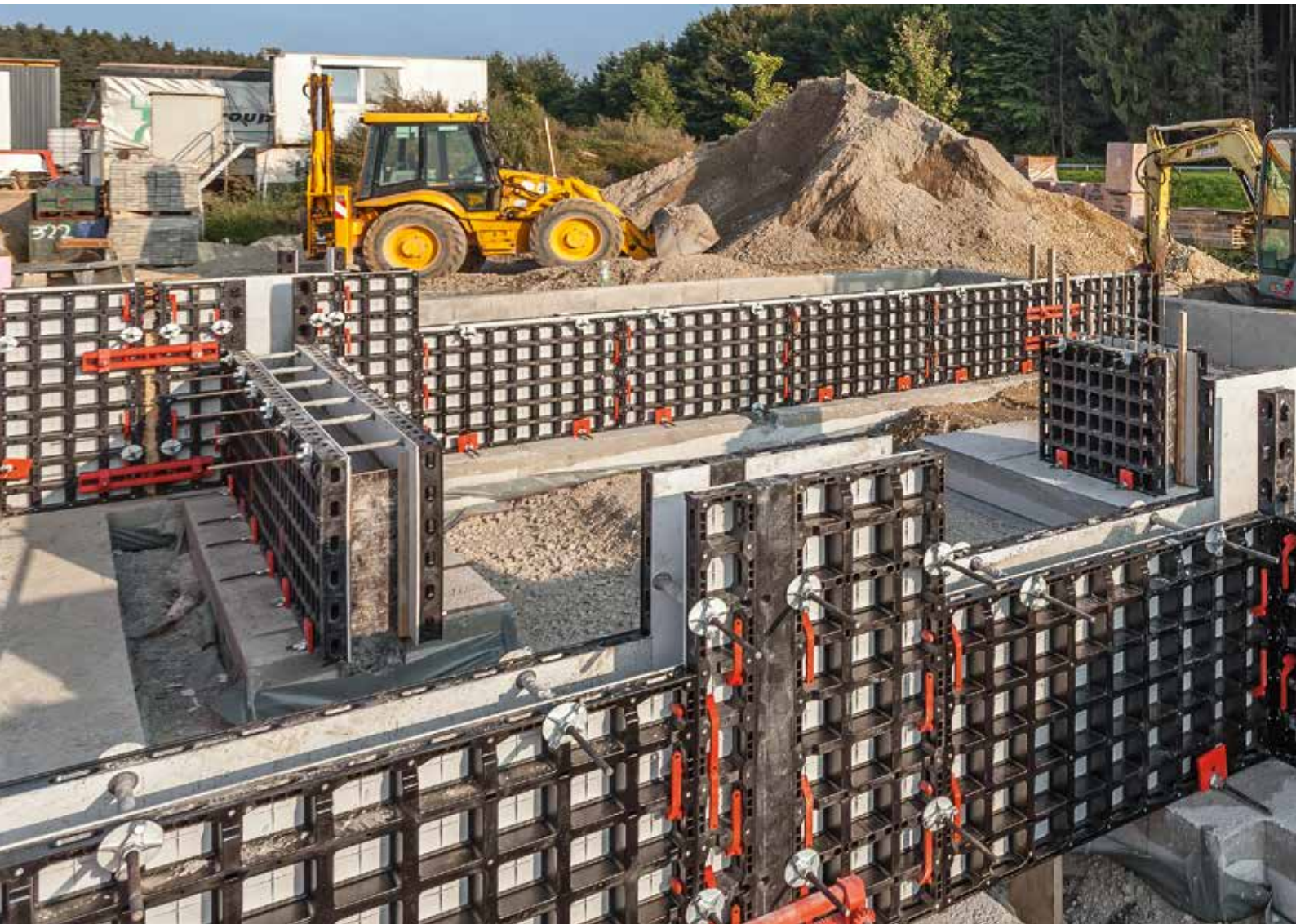
DUO has been optimised for slabs that are up to 30 cm thick. The universal DUO Fix Head (DFH) fits onto all standard tubular steel props.

Low number of different components

All accessories such as couplers and corner posts have been designed to be as versatile as possible. In addition to reducing the number of system components required on site, the scope of planning requirements and the on-site material requirements are also reduced. Consequently, you will require less storage space and you will benefit from a considerable reduction in transportation costs.

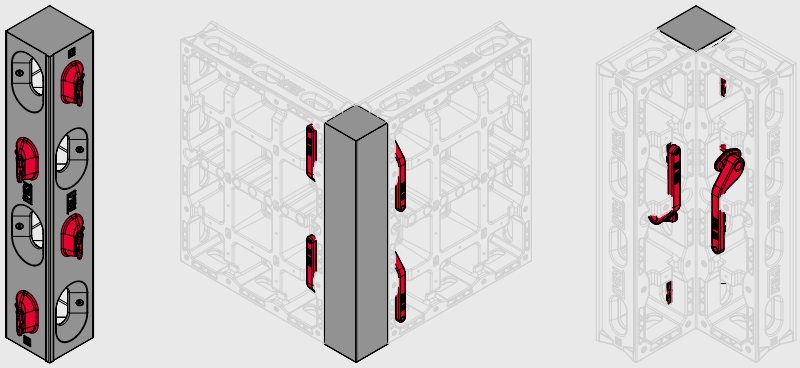
What's more, there will be a reduction in expenditure for the training of site personnel. Employees are able to work more efficiently as the installation procedure remains consistent throughout.





DUO corner posts

DUO corner posts can be used for a wide range of applications. You can use them for right-angled internal and external corners and, consequently, for any necessary wall offsets as well. For example, you can make use of corner posts to form beams within the system when forming slabs. With dimensions of only 10 cm x 10 cm, they are also very compact.



Corner posts can be joined together easily with the DUO coupler and used, for example, to form internal and external corners.



Easy, fast and quiet to assemble

Swift work processes due to simple formwork rules and quiet applications without a hammer

Ease of use is the key aspect of the DUO system. The low number of different system components simplifies and speeds up the assembly process, which is only subject to a few formwork rules.

The system components, which are often the same, are easy to install. This makes the assembly process easy to follow. Only a few additional tools are required to complete the process. This speeds up the shuttering process and ensures a high degree of productivity. It also reduces the amount of training that the site personnel require.



Efficient assembly thanks to DUO couplers

The DUO coupler is a universal tool that is easy to operate and can only be installed in one way. It allows for an efficient and quiet shuttering process that does not involve a hammer.

The DUO coupler can be used for many different applications: It enables you to connect DUO panels to each other, to connect corner posts and panels and to establish connections with wall thickness compensators and filler supports. In addition, you can use it on standard joints, corners, T-junctions and wall offsets, length compensations, columns and shear walls, as well as with the DUO stacking aid.

The absence of hammers during the assembly process improves the level of safety at the construction site. Particularly in the case of inner-city projects, you will reap the benefits of these quiet work processes that do not involve hammers.



The DUO coupler is simply inserted through the elongated frame openings and then turned through 90° to secure it in place.



This connection allows you to position the panels in a flat and even manner. Once assembled, the couplers sit flush with the panel. This also allows



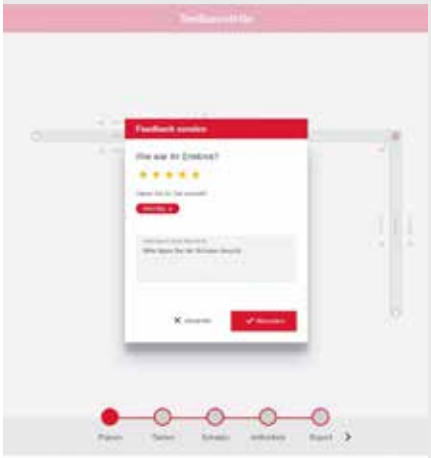
for flat stacking of pre-assembled, large-scale units.

Quick, straightforward floor plan design using an app

“QuickSolve” is a range of planning tools from PERI intended to simplify everyday construction work – the web-based “DUO Planner” is one of these tools. The application can be used to plan, form and synchronise floor plans quickly without the use of complex software.

Whether you are in the office or on site: You can access the DUO Planner 365 days a year. The software can be accessed easily online, from any location and without having to install anything.







PERI takes a proactive approach to optimising the planning tool on the basis of individual user feedback reports. This means that we will be able to provide you with additional functions in the future. You can send your feedback to PERI directly from the application.

The tool is self-explanatory and can be used intuitively: The first step is to create a new project using the required wall heights and thicknesses. You then enter the floor plan that is to be formed and determine the cycles. The application then creates a suitable formwork solution automatically based on this information. You then have the option of printing or emailing the easily comprehensible plans and parts lists in PDF format for material scheduling. In this way, simple floor plans can be designed in only a few minutes.

Crane-free installation process

High level of productivity and ergonomic handling due to low weight

By using polymers as a new construction material, it is possible to achieve particularly low component weights. Not only does this make components very easy to handle, it also allows work to be carried out in places where cranes cannot be used, for example, during refurbishment projects.

Our lightweight DUO panels will allow your employees to work in an ergonomic manner while conserving energy. All of our system components weigh less than 25 kg and are therefore particularly light and easy to handle.

This makes DUO a genuine hand-set formwork system which can be assembled without the use of a crane. Consequently, shuttering operations involving DUO are less strenuous and tedious. This increases the level of productivity and safety.







The DUO system has ergonomic openings in the frame elements that are designed for the installation of panel connectors. These openings simultaneously serve as handle strips for transporting the elements on the construction site. They make the elements easier to handle and more ergonomic.

Lightweight core components

The low weight of DUO core components makes them particularly impressive. The panels are available in two different heights, 135 cm and 60 cm, and in six different panel widths in 15 cm increments from 15 cm up to 90 cm. The heaviest panel weighs 24.90 kg and the lightest only 2.43 kg.



DUO panel	Weight
Panel DP 135 x 90	24.90 kg
Multi panel DMP 135 x 75	22.90 kg
Panel DP 135 x 30	9.37 kg
Panel DP 60 x 15	2.43 kg

You also have the option of moving the DUO system by crane – you will require a suitable crane eye to do so.

The DUO crane eye has a maximum load-bearing capacity of 200 kg. Thanks to the low weight of the DUO system components, the required crane hoisting capacity is significantly lower compared to conventional panel formwork. This will allow you to make both cost and energy savings.



Additional benefits of the system

Straightforward maintenance and space-saving storage and transportation

With the DUO system, you will reap the benefits of straightforward and cost-efficient formwork maintenance operations. Thanks to the DUO repairs case, you will be able to repair minor damage to the formlining on site. If necessary, the entire formlining can be replaced quickly and easily.

The DUO system components and the technopolymer formlining are very durable. If the system is used and maintained correctly, this will extend the service life of the components.



Cleaning the DUO formlining regularly will ensure good concreting results and a long service life.

The DUO system does not react with the concrete in any way during the concreting process. This keeps the amount of cleaning work that is required to a minimum. Nevertheless, we recommend that you use the release agent PERI Plasto Clean in order to remove any concrete adhesion with the DUO cleaning device.

It is easier to remove any impurities from the surface if cleaning is carried out as soon as the striking process is complete. This will keep the time required for cleaning to a minimum.

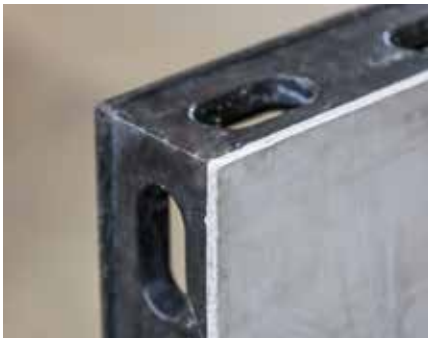


The release agent PERI Plasto Clean can be applied easily using the release agent pressure sprayer.

Long service life

By opting to use technopolymers for formwork applications, you will benefit from a long material service life when compared to timber solutions.





The DUO panel shown here has been used more than 130 times in over five years and is still fully functional.

Repairing minor damage

Damage to the formlining is part of everyday life at the construction site. Thanks to the DUO repairs case, you can repair scores, scratches and holes up to a diameter of around 20 mm quickly and cost-efficiently on site. In this way, you can avoid having to replace the entire formlining due to minor damage that can be repaired.



If necessary, you can repair damage to the formlining on site using the DUO repairs case.



The cleaning device simplifies the cleaning process after striking. You can use it to remove concrete residue quickly and easily.



Particularly clever: You can also use the cleaning device to tighten the wingnut counterplate.



As the concrete hardly sticks to the panels, these can easily be released from the concrete during striking. This produces high quality surfaces.

Additional benefits of the system

Straightforward maintenance and space-saving storage and transportation

Formlining is easy to replace

With the DUO system, the formlining replacement process is particularly efficient: The formlining can be mounted by hand quickly and easily with a few screws – even at the construction site.

Usual wear and tear on the formlining leads to poor quality concrete surfaces. Therefore, regular replacement of the formlining is required for all panel formwork. The DUO system allows you to replace the formlining quickly without any special tools or particular expertise.



1. Loosening the screws



2. Removing the damaged formlining



3. Installing the new formlining



4. Screwing on the new formlining

Space-saving storage and transportation with DUO stacking aids

The DUO stacking aid is a sophisticated solution for stacking DUO panels. The DUO elements can be stacked, stored and transported compactly, thus saving space.

What's more, with the stacking aid, you are also able to move panels on the construction site quickly and without additional aids. You have the option to move the stacks either by crane or by attaching wheels to the underside of the stacking aids. To ensure safe transportation and to protect the elements, the uppermost element is secured with at least one DUO coupler.





Uncluttered storage of accessories

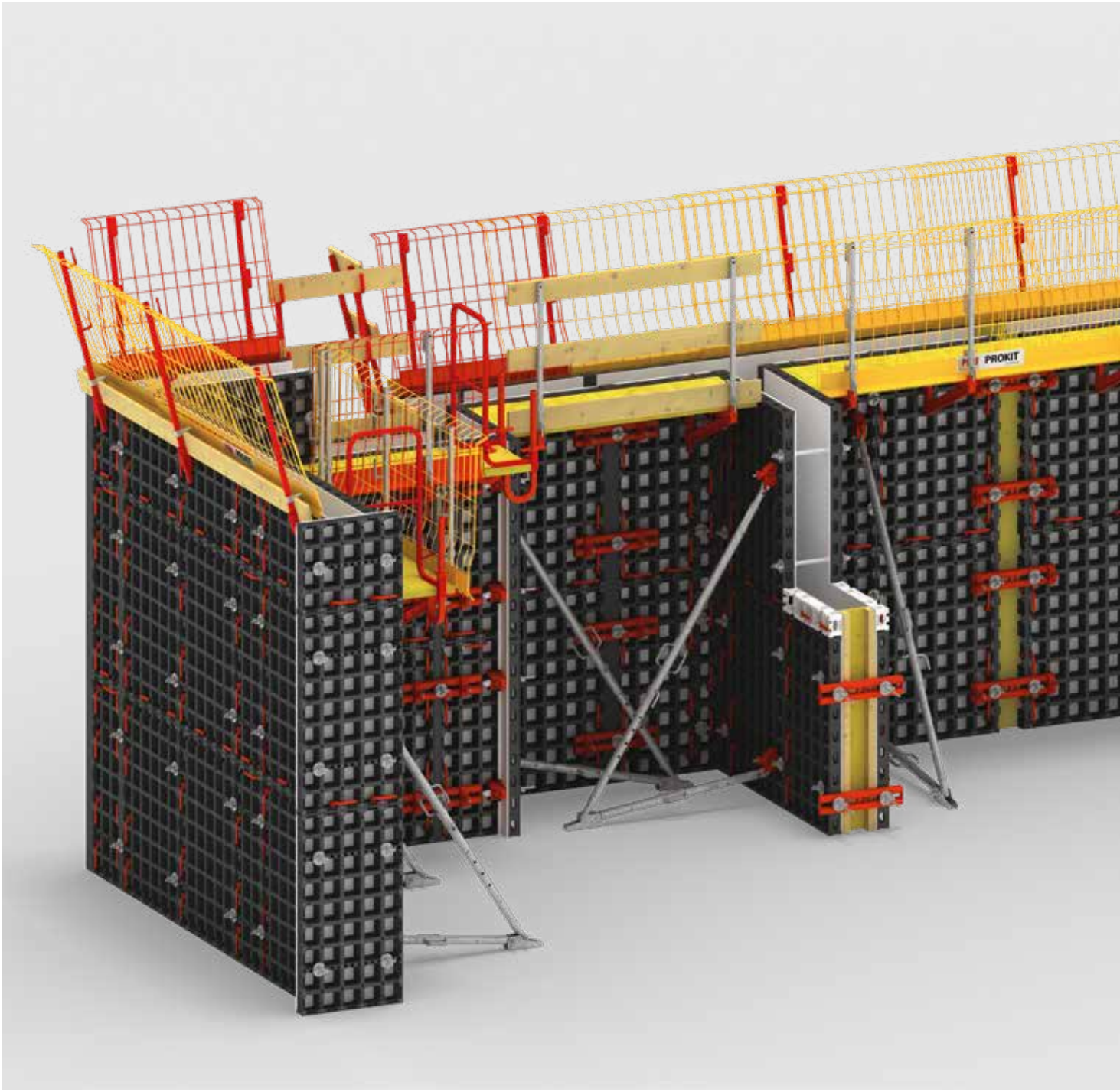
The lightweight and robust DUO accessories bag provides you with a solution for storing all of your small DUO accessory parts from the construction site in a clean and uncluttered manner.

This enables you, for example, to store couplers and corner connectors safely in one location.



DUO as wall, column and foundation formwork

Standard applications for vertical use



The following pages describe standard applications for the forming of walls, foundations, columns and shear walls. The explanations show important basic principles but do not claim to be comprehensive. All detailed specifications as well as any possible country-specific data can be found in the Instructions for Assembly and Use. Furthermore, the corresponding Instructions for Use must also be observed.



In the case of wall formwork applications, the DUO system has been optimised for wall thicknesses of 15 cm to 40 cm. Wall thicknesses can be adapted in 1 cm increments by means of compensation elements. Columns can be formed with cross-sections from 15 cm to 55 cm in 5 cm increments. DUO is also ideally suited for the realisation of foundations thanks to the easy-to-handle individual components.

Shuttering of corners between 75 and 165 degrees, T-junctions and wall connections

Connecting the elements

The DUO coupler can be used flexibly for the majority of element connections.

Installing the couplers is straightforward: The DUO coupler is inserted through the elongated frame openings of the panels and then turned through 90° to secure it in place. Weighing only 160 grams, it is very light and easy to handle.





Shuttering of corners, T-junctions and wall connections

Using DUO corner posts, it is possible to form right-angled corners, T-junctions and wall connections in 1 cm increments from 15 cm to 40 cm. If necessary, you can insert wall thickness compensators to achieve this.

For standard connections, it is usually the case that three couplers are positioned on the long panel side and two couplers on the short panel side.





Using LIWA adapters to form walls

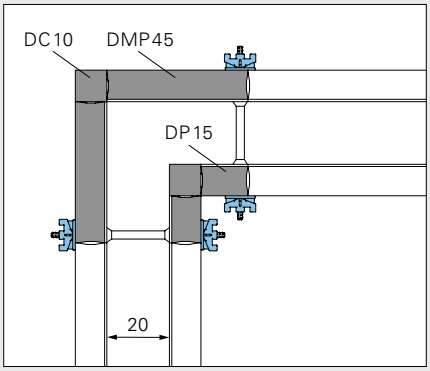
Together with LIWA articulated corners, DUO LIWA adapters allow you to form walls with angles of 75° to 165°.

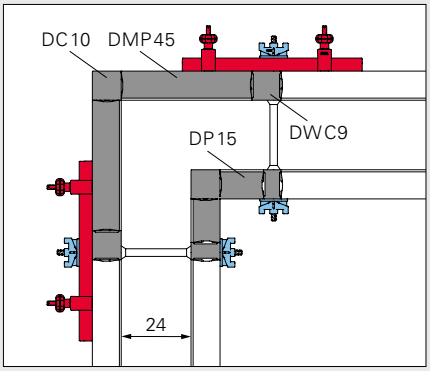
LIWA adapters consist of two components: The LIWA 150 articulated corner and the LIWA wedge clamp compensation. The adapter allows you to connect DUO panels quickly and easily. The tie of the adapter secures the frame profile of the DUO panel and therefore protects the DUO frame against damage. This makes it possible to achieve an ideal, closely fitting connection.



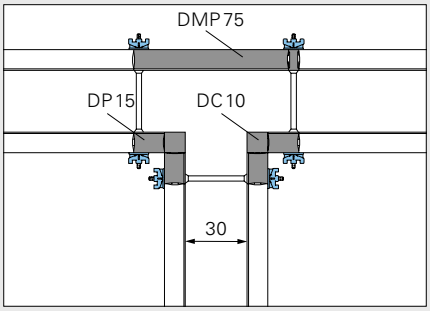


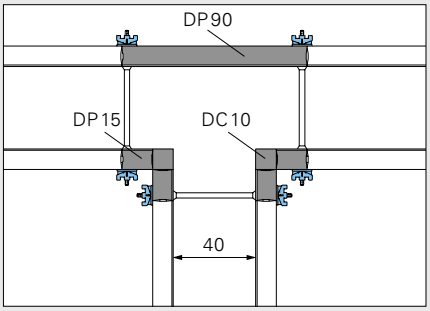
Rectangular corners can be continuously formed. If wall thickness compensators are required, these are installed between the last wall panel and the corner panel.



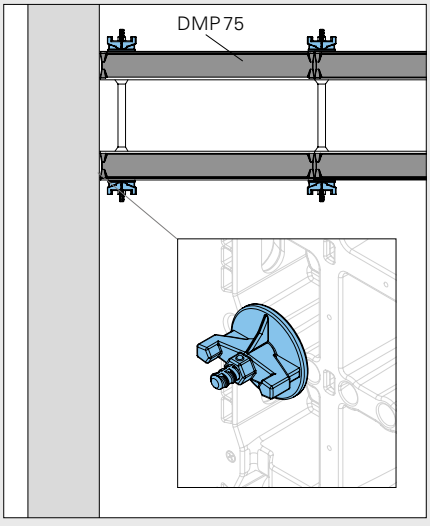


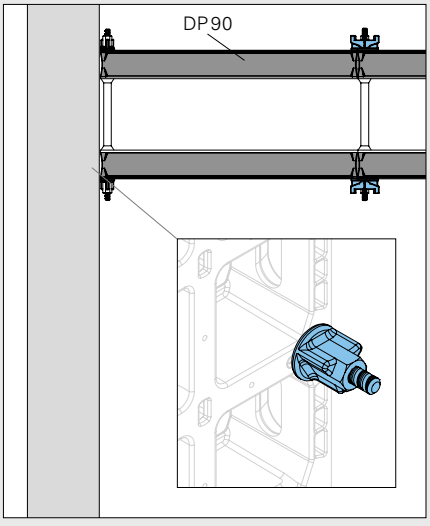
Continuous forming is also possible in the case of T-junctions for wall thicknesses of 15 cm to 40 cm. Wall thickness compensators are available with widths from 5 cm to 10 cm and can be used as needed.



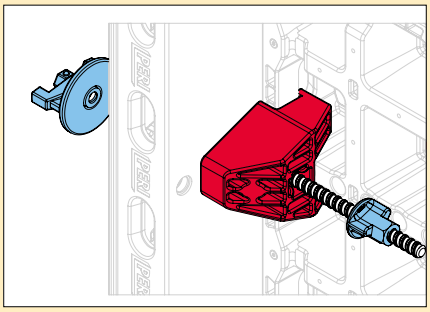


Obtuse-angle wall connections can be formed with a DUO multi panel and the standard anchor with a wingnut counterplate. Alternatively, you can use a standard panel together with the cam nut.





To form external corners, there is the option of using a DUO multi panel and DUO corner connectors.





Adapting the length of the wall formwork to the geometry of the building

Shuttering of length compensations of up to 25 cm

DUO panels are available in widths of 15 cm to 90 cm. This gives you flexibility in designing your building geometry and allows you to implement length compensations of up to 25 cm.

You can fill length compensations either with timber or DUO wall thickness compensators, thus shuttering compensations of up to 10 cm. A filler support, which requires additional walers subject to its length, is available for remaining areas of up to 25 cm.

The assembly process is straightforward: Filler timber is mounted between two panels by means of coupling ties and system compensations are fixed using DUO couplers.



Easy alignment of panels

The DUO timber connector provides additional support so that the DUO panels are properly reinforced and accurately aligned.

To achieve this, you can either use one or two pieces of timber with dimensions 4 cm x 9 cm or two metal profiles with dimensions 50 mm x 50 mm.

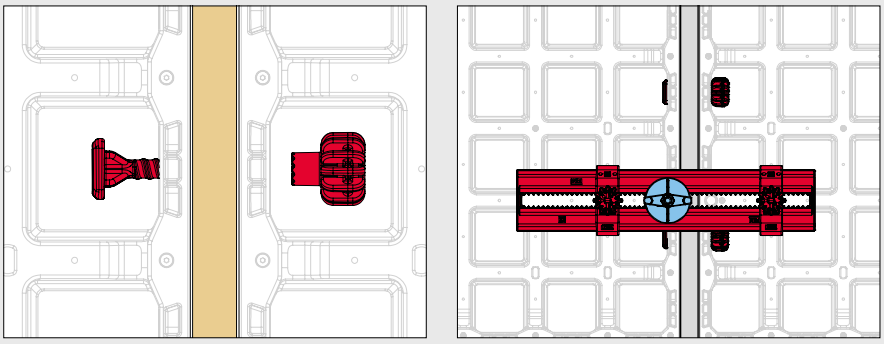
As such, you can use material that you already have to hand at your construction site.

The gap between two profiles allows you to fit a tie rod and a nut joint plate. This speeds up the shuttering process and improves cost-efficiency.



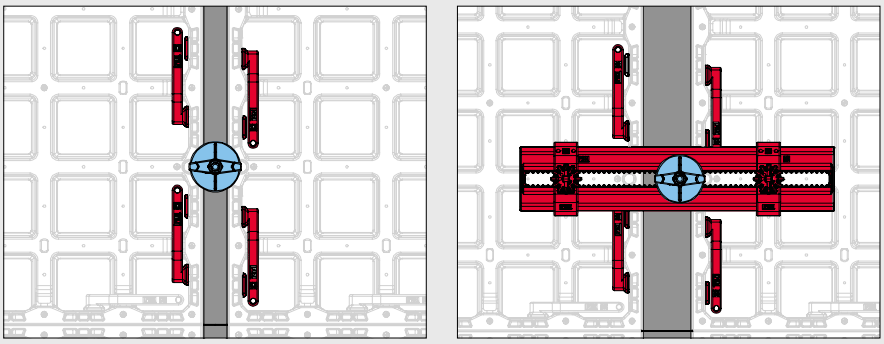
Length compensations up to 5 cm

For length compensations up to 5 cm, cut-to-size timbers can be mounted between the panels using coupling ties. Compensation walers are used to stabilise the connection.



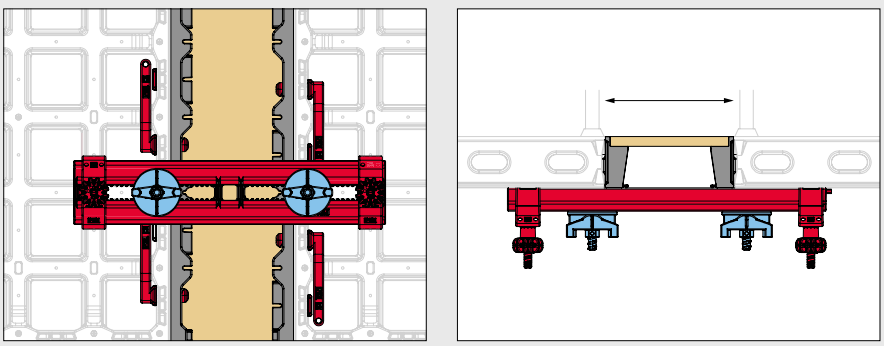
Length compensations from 5 cm to 10 cm

For length compensations from 5 cm to 10 cm, you can use wall thickness compensators, which are available in 1 cm increments. You can fix the compensators to the panel with DUO couplers. For compensation widths of 8 cm and above, you will need additional walers in order to achieve an even connection.



Length compensations up to 25 cm

It is possible to implement length compensations up to 25 cm with the aid of filler supports. To do so, the filler area is closed with a cut-to-size filler plate. Walers are then inserted for bracing purposes.



Adjusting the height of the wall formwork, assembling push-pull props

Carrying out height extensions

DUO elements can be flexibly extended in order to achieve the floor height you require.

The extension units are usually pre-assembled in a horizontal position. They are positioned so that the formlining is facing downwards during this process. The DUO system has been optimised for a wall height of 2.70 m, in which two 1.35-m-high standard panels are positioned one above the other.

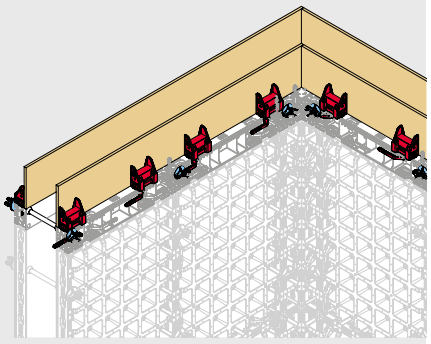
You have a great degree of flexibility as the panels can be extended in both the horizontal and vertical direction. For extension heights of 4.05 m and more, compensation walers must be mounted on the horizontal joints so that the units are sufficiently rigid.

The respective country-specific regulations regarding the maximum extension height must be observed and, in addition, the weight of the pre-assembled units must be taken into account, for example, the fact that there is a limit on the weight that can be carried by hand.



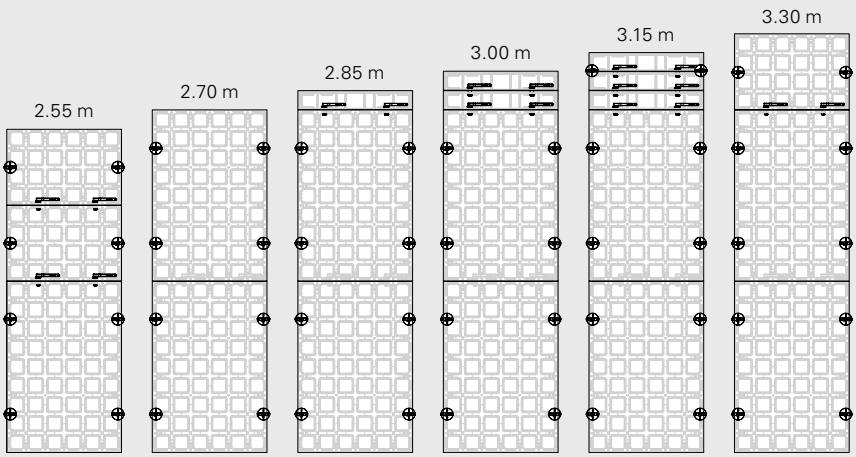


Any combination of the standard panels with heights of 1.35 m and 0.60 m provide a wide range of possibilities for height adjustments to the wall formwork.



To implement highly accurate extensions of up to 30 cm in height, you have the option of installing extension connections with filler plates. These extension connections can be placed on any of the panels.



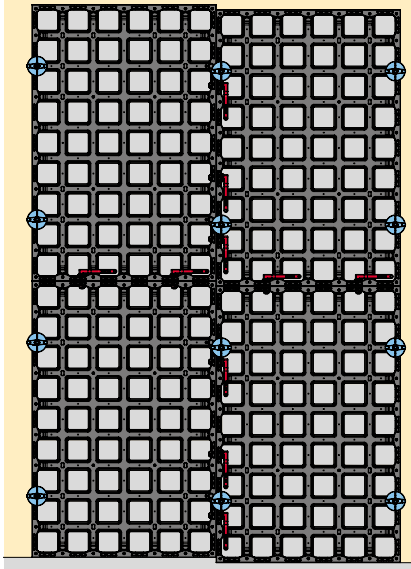


By combining 135-cm and 60-cm-high panels, it is possible to form wall heights of 2.55 m, 2.70 m and 3.30 m. Maximum flexibility in height adjustment can be achieved if additional 15-cm-high filler panels are used during the extension process.

Practical tip: Straightforward compensation of height offsets

The connector pocket in the panel offers around 2.5 cm of clearance. This means that elements can be easily installed in cases of slight unevenness, sloping terrain as well as height offsets.

To account for undulations, you can also offset each element by 15 cm. This allows for varying height offsets within the 15 cm increments, starting at 12.5 cm and rising to 17.5 cm.



Safe working conditions in all situations

Assembling working and concreting platforms

The DUO system meets the latest safety standards in force at your construction site. Working and concreting scaffolds ensure that the formwork working conditions are safe. They consist of DUO scaffold brackets, guardrail post holders, scaffold boards and guardrail boards.

The assembly process is quick and simple: Firstly, the post is inserted into the scaffold bracket. The bracket is then attached to a connector pocket on the panels. To complete the process of assembling the working platform, 5-cm-thick scaffold boards and guardrail boards are installed and fixed in position with screws or nails. The DUO Front Post Holder and the PERI Guardrail Post serve as opposing guardrails on the opposite side.



The DUO Front Post Holder

Safety on the opposite side of the formwork is provided by a guardrail consisting of two system components and guardrail boards.

Thanks to the handy DUO Front Post Holder, only one component is required for the assembly of the opposing guardrail. The front post holder is attached to the connector pocket on the panel first. The guardrail post is then simply inserted. The front post holder can be used anywhere and is compatible with all PERI guardrail posts.



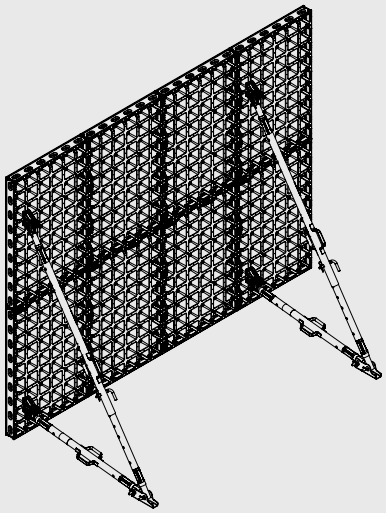
DUO front post holder



Mounting push-pull props

Mounting push-pull props and kickers allows you to align the formwork accurately.

In addition, mounting push-pull props and kickers will improve the stability of the formwork against wind forces subject to your specific wall height.



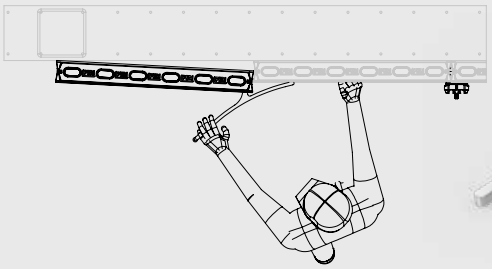


Use the brace connector to mount the push-pull props and kickers on the panel. The base plate connects the push-pull prop to the kicker.

Multifunctional striking without damage

The DUO stripping lever ensures that the DUO panels can be struck in a straightforward and multifunctional manner without causing any damage.

With the stripping lever, you will also be able to carry out frontal striking from the concrete surface in addition to horizontal and vertical striking. At 1.15 kg, the stripping lever is particularly easy to handle.

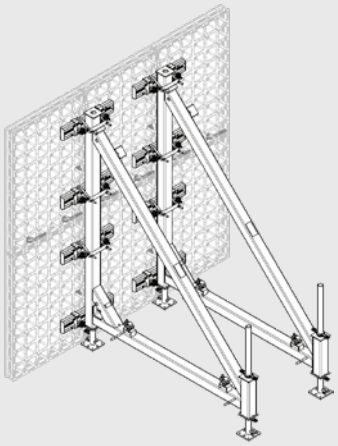




Single-sided shuttering of walls

The SB DUO hook strap allows for single-sided shuttering of walls.

The system-based solution provides a secure connection between the PERI brace frames and the DUO compensation waler on the panels.





Shuttering of connecting walls

Stopend formwork

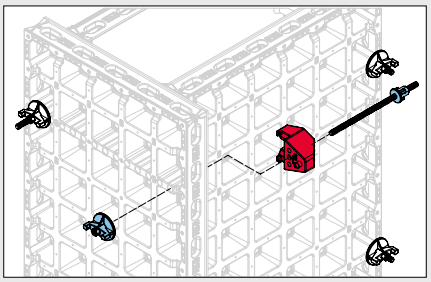
DUO provides you with a wide range of variants for establishing stopend formwork. In addition to standard system components, you also have the option of using customised filler plates.

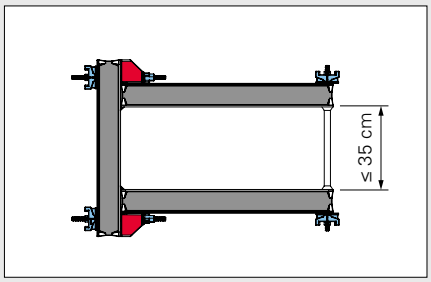
Depending on whether you choose to use multi or standard panels at the end of a wall, there are various solution possibilities for attaching and executing the stopend formwork. Compensation walers are usually used to fix the stopend formwork securely in place.



Stopend formwork for up to 35 cm wall thicknesses with system components

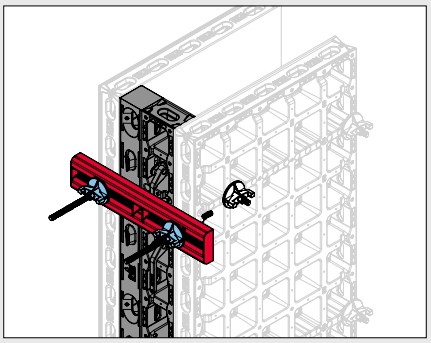
If you are using standard panels for the primary and closing formwork, then you can mount a multi panel on the front side. The multi panel is thereby connected at right angles to the standard panels by means of corner connectors. Suitable chamfer strips ensure clean chamfered edges with 15 mm edge lengths.

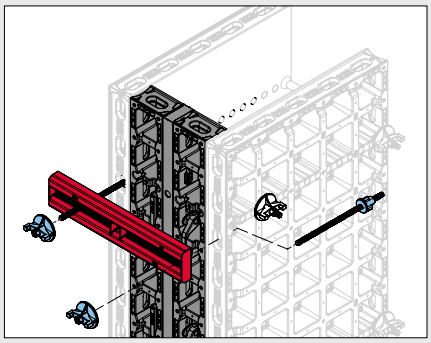




Stopend formwork for up to 40 cm wall thicknesses with system components

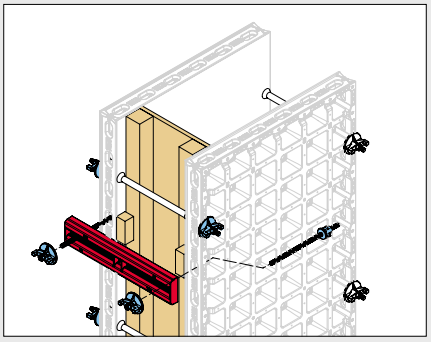
If multi panels are used as primary and closing formwork, the front side can be formed with any combination of narrow panels, corner posts or wall thickness compensators. The required compensation walers can be attached to the last multi panel elements by means of corner connection anchors.

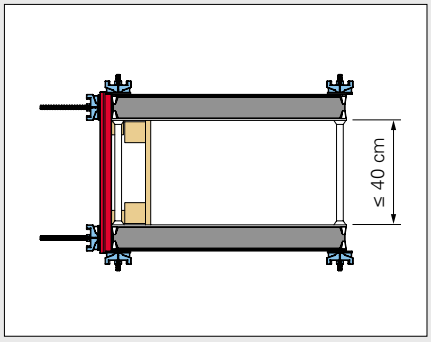


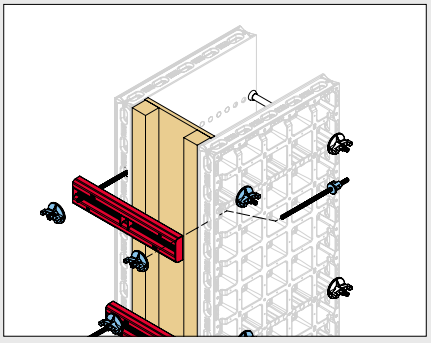


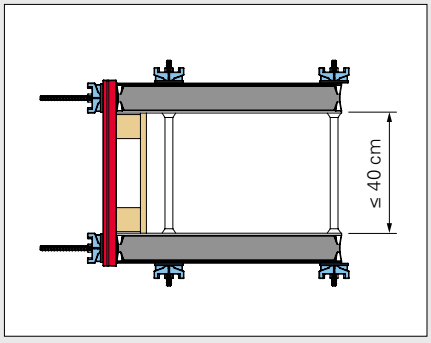
Stopend formwork for up to 40 cm wall thicknesses with filler plates

Alternatively, you can use timber and filler plates on the front side and affix these with compensation walers. If multi-purpose panels form the primary and closing formwork of the wall, you can fit the tie rod behind the stopend formwork. Wooden spacers are installed to transfer the load to the walers.









Shuttering of columns and shear walls

Shuttering of columns

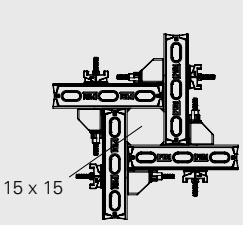
With the DUO system, square and rectangular columns with edge lengths from 15 cm to 55 cm can be shuttered in 5 cm increments without ties.

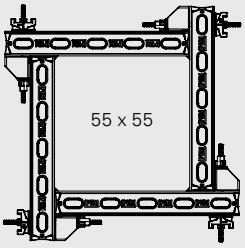
To do so, the multi panels are installed quickly and easily using corner connectors. When 45-cm-wide multi panels are used, the maximum column edge length that can be achieved is 25 cm; 75 cm multi panels allow edge lengths of up to 55 cm.

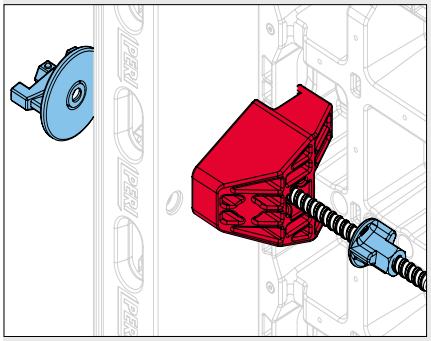
Working and concreting scaffolds for columns are installed in the same manner as they are for wall formwork: For this purpose you can use scaffold brackets, guardrail posts, scaffold boards and guardrail boards.

You can establish the column formwork in two units with the aid of a crane.





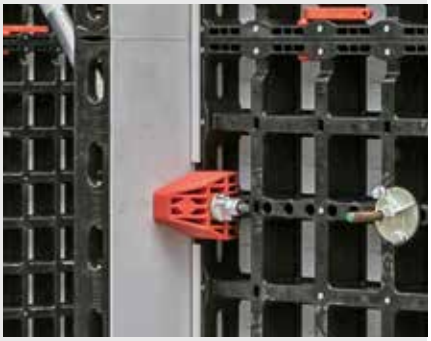




With the corner connector and corner tie, two multi panels can be connected at right angles to each other in 5 cm increments.



You simply push the DUO corner connector over a panel strut to install it ...



... and then screw it securely into place through the tie hole in the multi panel using the DUO corner tie.

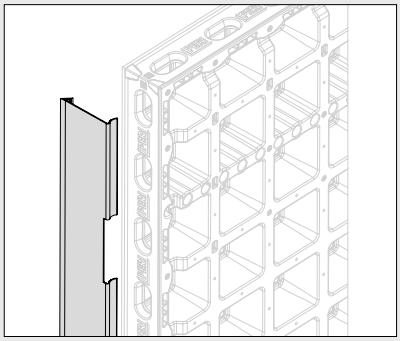
Shuttering of shear walls

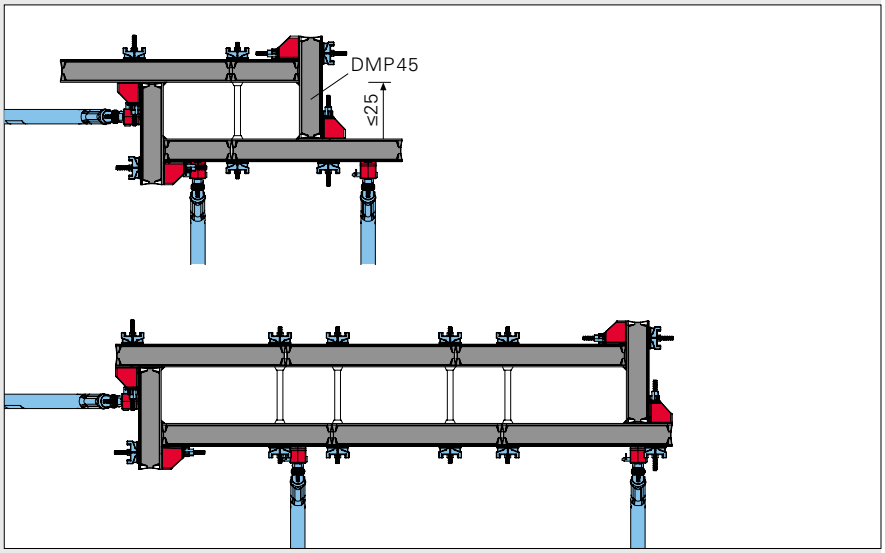
In static terms, a shear wall is a two-dimensional supporting structure which is mainly stressed by forces parallel to the wall. With the DUO system, the standardised approach to forming shear walls involves shear walls with thicknesses of 25 cm to 55 cm and lengths of 60 cm to 205 cm.

You can combine DUO standard and multi panels flexibly to shutter shear walls.

Shear walls must be anchored at all times using one to four anchors depending on the length of the shear wall. If necessary, suitable compensation walers are installed to ensure that the shear wall is level and the panels meet rigidity requirements.







Shuttering of foundations



The small-scale DUO components are easy to handle and make the process of shuttering foundations particularly efficient. You can make use of all types of DUO panels and combine them flexibly with one another.

When you are using DUO standard panels to produce foundations, there are two variants to choose from: You can either use the DUO foundation tie clamp or cam nuts.

When using horizontal elements, there is the option of fitting the upper row of ties above the formwork with the DUO frame holder. This reduces the number of tie holes through the foundations.



Shuttering of foundations with the DUO foundation tie clamp

If the bottom tie positions in the strip and individual foundations are missing, the DUO foundation tie clamp with perforated foundation tie are used.

In this case, the brace connector serves as a mount for the foundation tie clamp. In this way, you can form the foundations in 5 cm increments up to a height of 90 cm in a dimensionally accurate manner – with negligible labour costs.

The respective formwork elements are clamped together easily and then quickly released again prior to striking. In this way, valuable time is saved and the associated labour costs are kept to a minimum.





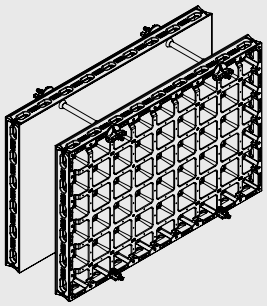
The DUO foundation tie clamp with the DUO brace connector.

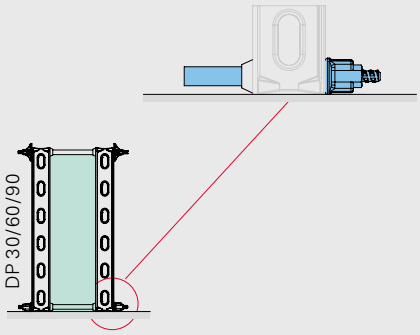
Shuttering of foundations with cam nuts

Alternatively, you can use cam nuts in the lower section when shuttering foundations as the wingnut counterplate cannot be installed directly above the ground. T-junctions and right angles can be shuttered in the same way as (higher) walls.

Using multi panels

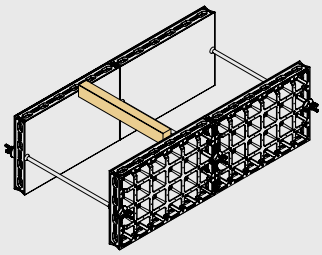
When using multi panels, standard DW 15 wingnut counterplates are used. Cam nuts are used for foundations with standard panels as the wingnut counterplate cannot be installed directly above the ground.





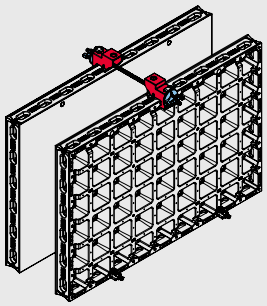
Using panels with a height of 60 cm

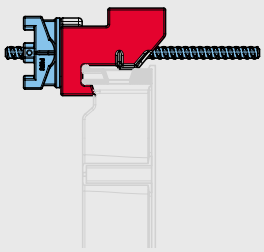
When using 60-cm-high panels to form the foundations, the ties are positioned in the centre. At the upper edge of the formwork, timber is used to brace the formwork to prevent it from tilting inwards.



Using frame holders

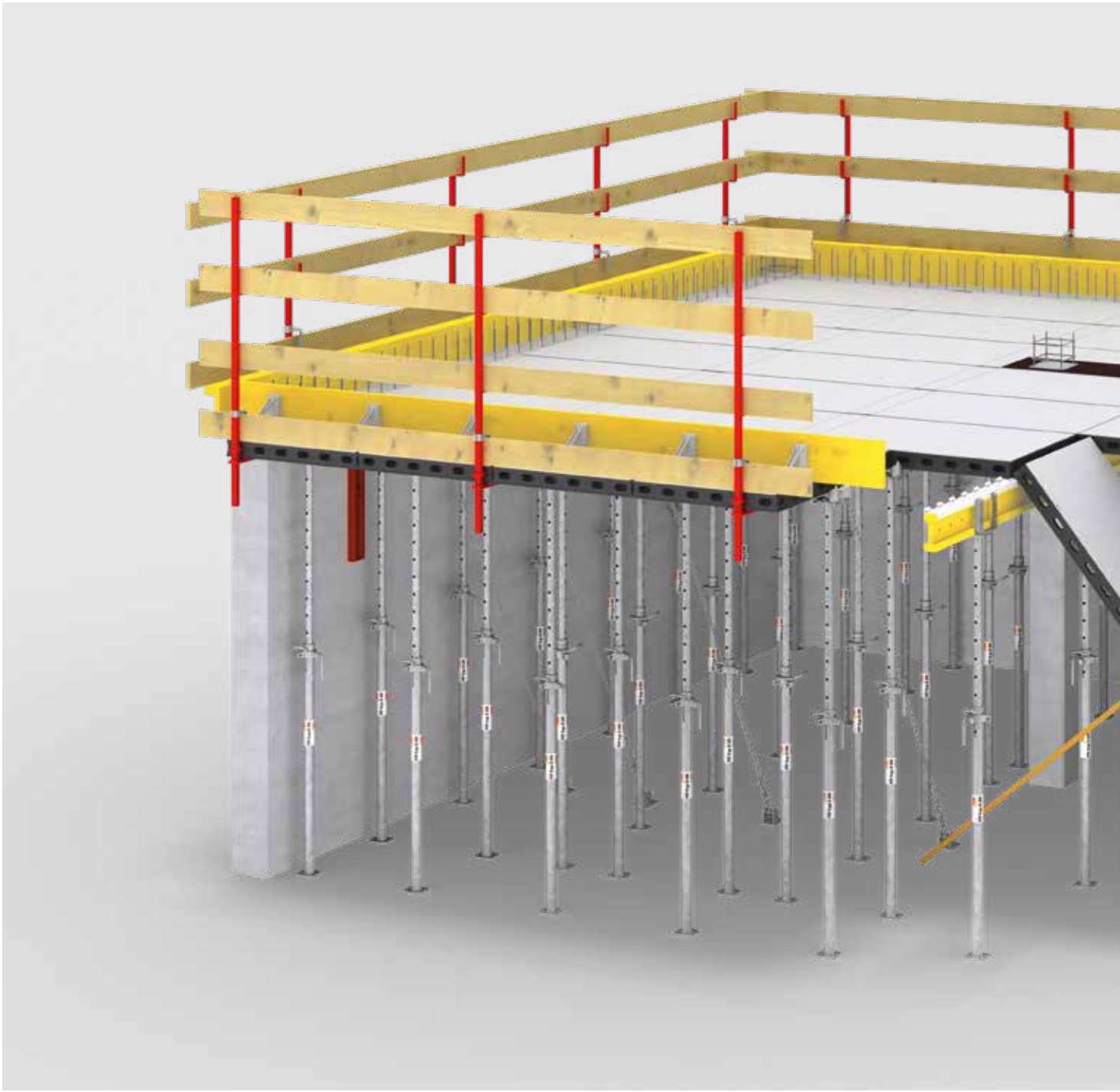
By using the frame holder on the upper edge profile of the foundation formwork, the ties can also be placed above the formwork. This reduces the number of tie holes and saves on work requirements and costs.





DUO as slab formwork

Standard applications for horizontal use



The following pages describe standard applications for the shuttering of slabs. The explanations show important basic principles but do not claim to be comprehensive. The Instructions for Assembly and Use describe all details as well as execution solutions. Furthermore, the corresponding Instructions for Use must also be observed.



The DUO panel slab formwork makes it possible to form slabs that are up to 30 cm thick. By using the DUO carrier rack, it is possible to make the forming process particularly cost-effective. Practical accessories for filler areas and slab edges will also allow you to implement unique and versatile system solutions.

Systematic shuttering from a safe and secure position with a minimum of components

Shuttering the slab from the level below

With the DUO system, you are able to safely shutter slabs from below. The slab panels are slipped into the head from a safe position on the installation surface below and pushed upwards using the shuttering aid.

This reduces the amount of work and level of effort required significantly and ensures a high level of safety and efficiency throughout the forming process. Because the position of the slab props is determined by the panel size, it is not necessary to go through time-consuming measurement processes. The straightforward systematics of the forming process mean that even inexperienced personnel can quickly learn how to work with the system.

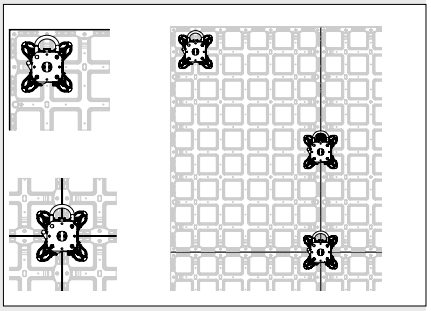


The DUO Fix Head

The standard DUO Fix Head fits onto all PERI tubular steel slab props with 120 mm x 120 mm end plates and thicknesses from 5 mm to 8 mm.

The assembly and disassembly processes are straightforward: Assembly is carried out by slipping the fix head onto the end plate of the respective prop until the integrated clip retention snaps into the locking position. Disassembly is carried out by lifting the clip retention and simply sliding the fix head down and off the end plate.





The DFH Fix Head can be securely placed in different positions in the panels: It is used anywhere within a panel field, across the edges of two adjacent panels as well as in the joint area of four panels.

The DUO Carrier Rack

Using the DUO Carrier Rack makes the slab forming process particularly cost-effective. It acts as a connecting piece between carriers and DUO panels and prevents them from slipping.

Using the carrier rack reduces material and assembly costs. For example, the number of props required can be reduced by up to 50 percent. What's more, the level of safety is increased: Working beneath the slab formwork is straightforward.

The assembly process is quick and simple: Simply place the panels on the carrier rack, which is nailed or screwed with the girder prior to erecting. It can be used flexibly on all wooden beams and all nailable beams with a belt width of 80 mm and is available in the lengths 1,305 mm and 900 mm.





The DUO Wall Holder

The DUO Wall Holder allows for horizontal anchoring of slab formwork.

The wall holder is installed in both directions on every third panel and anchored to the wall.



The DUO Prop Adapter

The handy DUO Prop Adapter allows for the use of props with end plates larger than 120 x 120 mm and also the PERI UP Head Spindle. It is particularly suitable for applications that involve the PERI MULTIPROP.

The geometry of the adapter allows it to be affixed to slabs with different thicknesses, dimensions, hole positions and hole diameters. At the same time, the prop adapter serves as a support for tubes with a diameter of 48.3 mm. Due to the fact that the prop adapter can be combined flexibly with DUO heads, the adapter extends the scope of application of your existing material.



Using the BeamHead in conjunction with the DUO system

The lightweight and self-explanatory BeamHead can be used for a variety of purposes. You can use it in connection with the DUO system as well as with girder slab formwork in order to install slab beams in a cost-efficient manner. This reduces the number of slab props that are required and the work time involved.

The Beam Head makes the process with the DUO system more efficient. Thereby, the proven functionality of the DUO universal clip is used. In addition to reducing the amount of time required for the assembly and disassembly processes, it also reduces the requirement for props. With its width being 150 mm, you do not need any additional girders.



In addition, beams with a width of up to 450 mm or a depth of up to 850 mm can be formed cost-effectively using the BeamHead.

Shuttering and early striking using backpropping

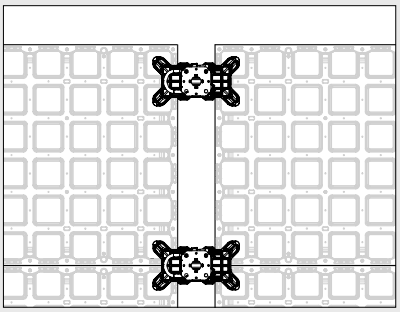
Shuttering and early striking using backpropping

Shuttering with the Backpropping Head and filler panels with a width of 15 cm minimises the shuttering time and paves the way for swift early striking. The filler panels in combination with the props provide direct support for the load transfer until the concrete has finally hardened.



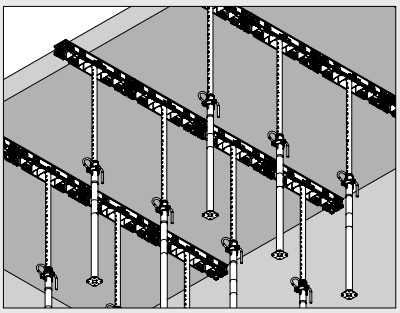
To backprop the slab, place a filler panel between two panels. The wider DBH Backpropping Head is fixed to the adjacent panels.

The Backpropping Head is always installed perpendicular to the main direction of the panel. You can place it anywhere, as is the case with the standard head.



Position standard slab props in the centre of the filler panels to carry out early striking. This will allow you to remove the connectors and the props together with the backpropping head ahead of time.

The filler panels are not connected so that additional slab props and filler panels can be removed as the concrete strength increases. You can use the components for the next cycle which will enable you to make a saving in terms of time and material costs.

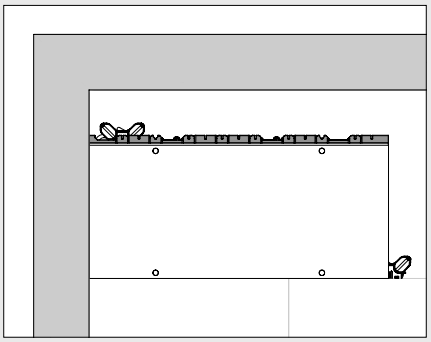


Geometrical adaptations in front of walls and columns under construction

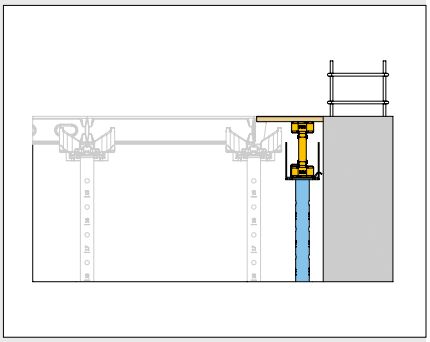
Wall compensations

Additional components such as the DUO Filler Support and suitable plywood allow you to close filler areas quickly and easily.

The slab areas are shuttered to the greatest possible extent using standard panels. To minimise residual gaps, you can also install the panels laterally. The filler support is mounted on the last panel. In front of the wall under construction, a formwork girder on a slab prop serves as support for the filler plate.



You can attach the DUO Filler Support to the long side of the panel with two DUO couplers before pushing the panel upwards.

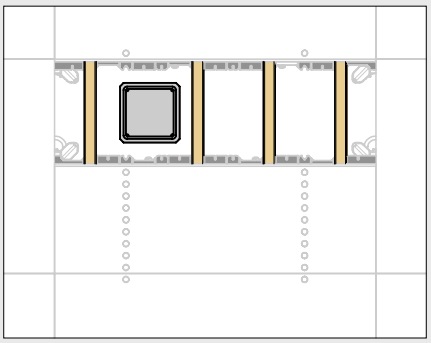


In front of the wall, a VT 20 or GT 24 formwork girder is used as a support for the filler plate. You can nail the formwork panel firmly into place.

Shuttering of slabs around columns

Using filler supports and cut-to-size plywood will enable you to safely close residual gaps even on columns under construction.

Two DUO Filler Supports on the adjacent panels and laterally positioned timber provide support for the filler plates. You can cut these to suit your project-specific geometry.









Execution of cantilevers as well as guardrails on slab edges

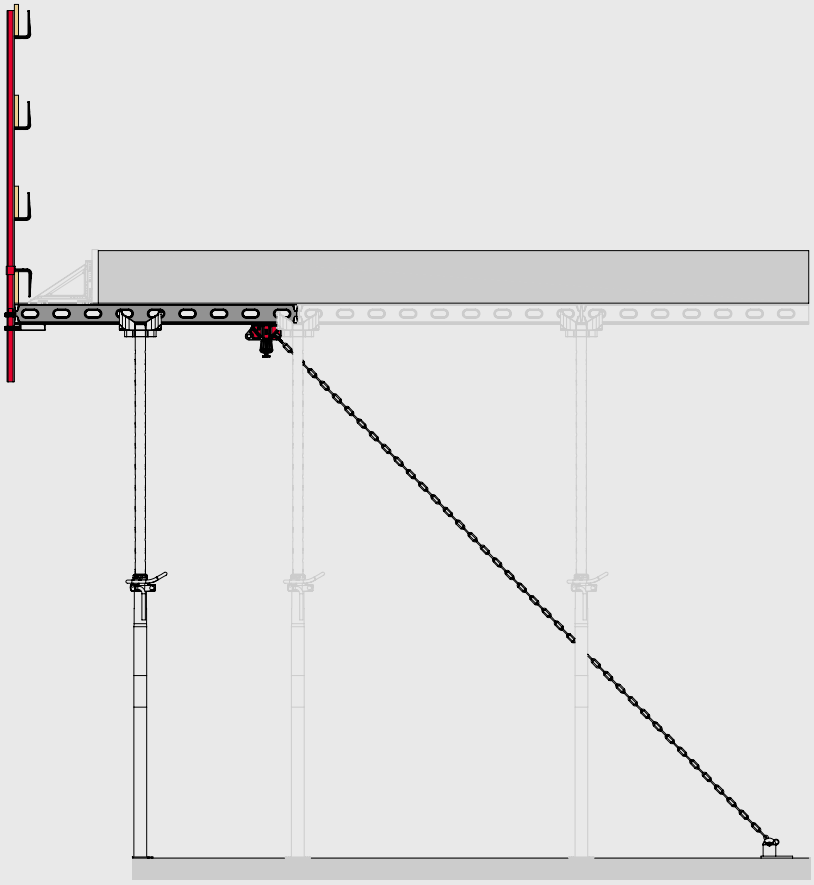
Cantilevers and guardrails on slab edges

If cantilevers are to be used, the panels must be secured to prevent them from toppling. The horizontal loads are transferred at the same time. The brace connector is used to connect up the corresponding chain.

For cantilevers, only 1.35-m-long panels are to be used. 60 cm is the largest cantilever that can be implemented. Every panel must be braced. Bracing must be installed before the panel is pushed upwards.

Slab guardrail holders and guardrail posts can also be mounted before the panel is pushed upwards in order to save time and effort. After assembly, the guardrails are fitted with back guardrail boards. The guardrail posts are then installed on the panels one after the other at 1.80 m spacings.





DUO in use
LuLu Mall, Lucknow, India



India's largest shopping centre was built in Lucknow, in the north of the country. The LuLu Mall, built by LuLu Group International and covering an area of almost 186,000 m², houses more than 200 domestic and international retail stores as well as 20 restaurants and a food court with more than 2,500 seats.

The construction company, KEF India, used around 200 m² of DUO formwork over the course of the project. DUO standard and multi panels with varying widths were combined in a flexible manner in order to form a 50-m-long retaining wall with a thickness of 300 mm. The universal applicability of the formwork solution was an important criterion during the formwork selection process. The customer was



won over by the fact that the lightweight DUO formwork could be used flexibly for a wide range of applications, namely the formation of slabs, walls, foundations and columns. The construction company will be using the formwork again in future projects, meaning they will make a significant cost saving.

On the following pages, you will find details of reference projects that have been successfully completed. These will provide you with an insight into the diverse range of applications that the DUO universal formwork can be used for.

Since the new, lightweight formwork was first introduced, DUO has proved its worth and versatility in a wide range of markets. The DUO system can be adapted flexibly to your specific project requirements. Depending on the focal point of your project, by opting to use the DUO system, you will benefit from the various advantages that the system has to offer.

DUO in use



The DUO system was the ideal choice for implementing a wide range of applications.

No additional tools were required for the installation process thanks to the easily operable DUO coupler.





The lightweight DUO formwork elements were perfectly suited to building redevelopment.

Volkstheater,
Munich, Germany

During the construction of the new Volkstheater in Munich, Germany, the DUO formwork system was used whenever a crane was not available or only available to a limited extent: In addition to the strip foundations, beams and the lift shaft, the internal side of the reinforced concrete external wall, which is over three metres high, were formed by hand using lightweight DUO panels.

The outcome of this was a complex covering around 26,000 m² on the former premises of the Munich Stockyard. The refurbishment of the adjacent listed building was also included in the construction project.

The site manager of the project made the conscious decision to work with the DUO system: "Considering the fact that we work on a wide range of different projects, there is a growing need for us to have suitable formwork for refurbishing old buildings. That's why we opted for DUO as a lightweight hand-set formwork system for applications inside the buildings themselves."



Using the DUO system resulted in a considerable increase in efficiency on the construction site.



The DUO panels were ideal for forming small-scale concrete components with low surface requirements.

Applications in infrastructure construction, Pilbara Region, Australia

The Monford Group used the DUO system for a wide range of tasks as part of a large-scale infrastructure project. In Western Australia, the contractor constructed, among other things, numerous shaft walls, sewers and bottom slabs using the lightweight formwork. A big advantage of the system for these applications was its low weight, which made both crane and scaffolding unnecessary.

Due to the simple assembly logic of the system, even less experienced users were quickly able to carry out forming operations with DUO. As such, the trained formwork craftsmen of the Monford Group were able to focus on those areas where more complex forms had to be carpentered by hand. This resulted in additional cost savings for the construction project.

According to the managing director of the contractor, the advantages of the universal formwork were obvious: the low weight reduced crane costs and the risk of injury to the users while the simple assembly process led to increased efficiency thus ensuring better results throughout construction.

Choa Chu Kang Grove, Singapore

A new residential quarter with several multi-storey buildings was built in the western area of Singapore. In total, contractor TiongSeng erected 13 apartment buildings with luxurious owner-occupied apartments featuring 20 to 25 storeys per building.

DUO was used for the pier heads of the substructure and for the walls of the rising structures. The lightweight panels were ideally suited for small-sized concrete elements with low surface requirements. The panels could be moved easily by hand and also cleaned very quickly before each subsequent application.

DUO in use



Successful first use of the lightweight universal formwork for the construction of shear walls.



Easy to mount and move manually.

Aspen Residence,
George Town, Penang, Malaysia

The Aspen Residence residential and commercial building, featuring a total of 26 storeys, was built in Penang. While the construction team worked conventionally with timber and boards on the first 13 storeys, the DUO universal formwork was used for the shear walls of the upper storeys. With horizontally and vertically arranged DUO panel extensions, up to 3.25-m-high wall formwork units were mounted and used 4 to 5 times per storey.

Due to the simple formwork logic, the construction team were able to work very quickly with the new system and after only a brief induction period. Due to the low weight, no crane was required for assembly operations and moving the formwork. As a result, no time was lost waiting for the crane, which expedited the construction work. Last but not least, the minimal cleaning work resulted in a time saving: Because very little of the concrete sticks to the panels, the formlining can be cleaned quickly and easily after every use.

The project manager summed up the fact that compared to the use of conventional timber formwork, around 50 percent working time was saved - and this with minimal training requirements.

Los Ramones II Pipeline,
San Luis Potosi, Mexico

The reinforced concrete frame columns of this control station for a gas pipeline were formed using the DUO universal formwork. 45 quadratic columns, each of them four metres high with edge lengths of 40 cm and 50 cm were constructed. The construction team mounted a total of five sets of formwork, each of which featuring four DUO DMP 75 multi panels - connected by means of DUO corner connectors. A circumferential PERI UP working scaffold with ladder access ensured safe working conditions.

This was just the latest construction site to benefit from the easily comprehensible DUO assembly system. Due to the system's simplicity, the cost of having the site personnel trained by a PERI supervisor was reduced significantly – training consisted merely of a short briefing on formwork, cleaning, storage and safe working habits. As such, it was possible to achieve a very high level of efficiency on the construction site from the outset. "Above all else, the low weight of the panels is hugely beneficial on the construction site as work carried out by hand cuts down on crane time and speeds up the progress of the construction work", project manager Ismael Gomez explained after the work had been completed.



Low weight, small-format formwork elements – DUO showed off these advantages to the full with these basement walls.



Modifications and extensions without the use of a crane – best solved with DUO.

Tonson Park View,
Bangkok, Thailand

The so-called Tonson Park View was constructed as part of an important housing project with a total of four towers. Upon completion, the building will offer luxurious apartments on a total of 17 floors. In addition, the high-rise structure includes two basement storeys. As is customary in Bangkok, the excavation pit was enclosed with sheet piling. During the formwork planning phase for the walls and columns in the basement, the contractor was confronted with a very restricted working area due to the shear wall. In addition, the use of a crane was difficult, in particular due to the steel struts used for bracing the sheet piling. DUO was therefore the optimal solution to meet these challenges – in particular due to the low weight and modularity of the formwork system. Subsequently, the construction site team decided to use the new universal formwork for the upper floors as well, where shear walls with heights of up to four metres were also to be constructed.

The contractor, Thai Obayashi, provided an extremely positive assessment of the quality of the concrete surfaces achieved with DUO. This was not the focal point of the construction project – but in this case it was a positive outcome.

Reconstruction Villa Thuja,
Boppelsen, Switzerland

The listed Villa Thuja building in Boppelsen, situated to the north-west of Zurich, recently underwent a structural alteration; in addition, an extension was added to this historically important structure. One of the essential requirements the contractor had to accommodate was to carry out all work without a crane – both outside and inside the building. PERI developed a solution based on the lightweight DUO universal formwork, which was used for forming both the walls and slabs.

Due to the small-scale formats and low weights, the panels were very easy to handle which offered great advantages especially with regard to the work required inside the villa. One further benefit that the contractor pointed out was that the formwork system only included a limited number of small components which further simplified logistics and handling procedures. In some areas, single-sided concreting operations had to be carried out. To this end, PERI's Swiss engineers developed a suitable horizontal support solution.

The optimal System for every Project and every Requirement



Wall Formwork



Column Formwork



Slab Formwork



Climbing Systems



Bridge Formwork



Tunnel Formwork



Shoring Systems



Construction Scaffold



Facade Scaffold



Industrial Scaffold



Access



Protection Scaffold



Safety Systems



System-Independent Accessories



Services

PERI SE
Formwork Scaffolding Engineering
Rudolf-Diesel-Strasse 19
89264 Weissenhorn
Germany
Tel. +49 (0)7309.950-0
Fax +49 (0)7309.951-0
info@peri.com
www.peri.com

INT en 793753 © PERI SE