

Materials Services
Infrastructure

Scaffolding systems

Solutions our customers
can build on.



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Span-wise Demolition of the Old Autobahn Viaduct to Limburg in Direction of Construction.

Piece by piece, the 397-meter-long superstructure of the old Lahntal Viaduct was dismantled. Together with the firm executing the project, we devised a specific proposal with a movable scaffolding system. The foundation of the successful demolition was the main girders of the movable scaffolding system, the first of their kind designed for this construction height and part of our modular HV21 girder system.

During the work, the movable scaffolding system was only stabilized by our S500 support system on the piers of the viaduct, so that the scaffolding and viaduct formed a shared support system. The movable scaffolding system took care of supporting the old superstructure and holding the dismantled material. As soon as one span was dismantled during the demolition, the scaffolding was hydraulically moved to the next span.

It was the first time in the world that a superstructure of the old viaduct was dismantled in the direction of construction. A prerequisite for that was the solution of separating the old structure between the prestressing tendon anchors. In order for the heavy demolition equipment to be able to break up the superstructure, our movable scaffolding system, with its four posts each, held our S500 auxiliary support system with a load-bearing capacity of 500 metric tons and a 19-meter unsupported length on two posts each. Span by span, the superstructure was dismantled. A cross cut at the tendon coupler kept the tension in the rest of the structure.

Then the superstructure could continue to be dismantled. The dismantled material was thrown into the formwork surrounding the movable scaffolding system and transported away across the still intact sections of the superstructure. After the penultimate span was dismantled, the movable scaffolding system was itself taken down. The final span was dismantled using a conventional approach.

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Worldwide expertise for infrastructure projects.

Whether mobility, urbanization, climate, or resource efficiency: As a leading supplier in the fields of civil, marine, foundation, and structural engineering, we offer our customers the complete range of products and services for handling their infrastructure projects worldwide. Our portfolio consists of four divisions: steel sections (sheet piles, anchor equipment, flood protection), machinery, trench shoring, and scaffolding systems.

We are a full-service supplier to the construction industry. We always begin our projects by providing customers with in-depth consulting, jointly developing solutions precisely tailored to the job in hand. We can fully depend on the expert support of our own consulting engineers. We provide our customers with all the products they need to implement their projects, most of which are manufactured in-house, such as müller pile driving and extracting equipment and thyssenkrupp cold formed sections. We are the exclusive distributors of thyssenkrupp anchor equipment and trench shoring systems from e+s and krings. We place great emphasis on the topic of sustainability.

Our steel products meet the strictest environmental standards and have a balanced carbon footprint. They are produced with a minimum of energy consumption, are eco-friendly to use, straightforward to dismantle, and virtually 100% recyclable. Our machinery runs quietly and is based on a power supply that generates low carbon emissions. With offices throughout the world, we are present wherever our customers need us. We know the local markets and their requirements, enabling us to provide tailored advice in the field; a crucial advantage, especially in aftersales service.



Scaffolding Systems.

Our complex scaffolding systems are put to use in many large-scale projects at home and abroad. Under the globally renowned roro product brand, our portfolio is an assurance of safe and cost-effective operations wherever heavy loads have to be discharged. We serve our customers dependably from design and the supply of materials through to erection.



Innovative: Our stationary scaffolds.

In Germany we are the specialists in stationary scaffolds for bridge construction. Our products and services make a big contribution to safe and cost-effective operations. These include technical advice, the provision and movement of materials as well as the assembly of the systems and the preparation of custom solutions.

Our röro stationary scaffold systems provide temporary support for building elements and auxiliary structures. They are used in bridge construction – mainly in solid bridges built of cast-in-place concrete, but also in structures made of precast components.

Portfolio.

We have a broad range of frame supports, heavy-duty props, lattice girders, rolled-section girders, and hydraulic equipment. The stationary scaffolds made of these components can be cost-effectively utilized even at great heights.

Top performance.

thyssenkrupp Infrastructure has by far the biggest inventory of materials for stationary scaffolding systems. All components are rapidly available. Our single props are designed for loads up to 500 tons. The spans can be as much as 40 meters, with up to 60 meters being possible in special cases. Arched designs are also possible. A large proportion of our components are type-tested, withstand high loads and, thanks to their modularity, are flexible in their uses. Occupational safety for the user of our stationary scaffolds is the focus of our overall strategy. For instance, walkways are provided at all support axes.



Massetal bridge near Masserberg, Thuringian Forest.

To construct the bridge arch with a box girder cross section, it was necessary to erect a ground-supported stationary scaffold. The foundation levels of the scaffold towers had to be adapted to the existing terrain. Together with the customer, we decided to place the biggest span between the piers to the left and right of the center tower. This way, we managed to minimize the heights of the other towers and bridge the existing road. For disassembly, the scaffolding in all axes was pulled out simultaneously on foot beams from beneath the superstructure.

Examples of our services.



1 Construction of new helipad for Klinikum Pforzheim.

On the roof of the new hospital building, the design envisaged a helipad projecting beyond the building's footprint on two sides. These projections had to be supported during construction. The loads were discharged with a system of heavy-duty towers. The scaffold proved particularly tricky to take down. To this end, the scaffold towers were suspended from the finished concrete slab and dismantled segment by segment from below.

2 Construction of new wildlife overpass over the A14 freeway near Karstädt.

The arched bridge was to be built in nine sections. Two sections had to be scaffolded at any one time so that work on the freeway under the bridge could continue as quickly as possible. As the solution, we chose scaffolds with E2000 arched trusses whose polygonal shape came close to that of the superstructure. To keep production time as short as possible, we opted to erect two identical scaffolds. On completion of concreting, they were then slid into the next section. For ease of disassembly on completion of the final section, the scaffold was pushed out from under the bridge.

3 New Cologne headquarters – facade shoring K1.

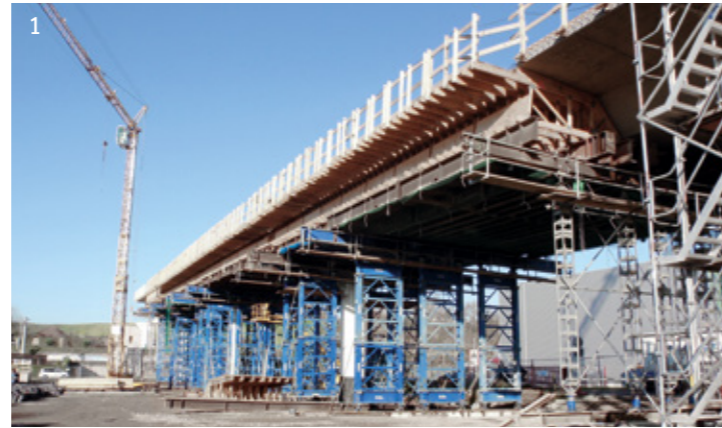
The goal of this project was to gut the building preserved as a monument and retain the facade together with its cornices and stone coping. To support the building, we used free-standing support towers with foot beams anchored in the foundations. The facade was attached to the support towers with threaded rods, double-U sections, and timber lining (resistant to tension and compression). The support structure for the cornices consisted of frame supports, steel tubes, tubular steel lattice constructions, and HEB sections. Creating the foundations proved arduous because of the building's proximity to the Rhine River, supply lines, and old foundations. The shoring was in service for over two years, necessitating regular checks and possible corrections to the attachment points.

4 Engineering Works for the Reconstruction of the E 18 in Norway.

Part of the E 18 road between Rugtvedt and Dørdal in southern Norway was to be reconstructed. The construction firm executing the project commissioned us to provide scaffolding systems for the setup of 14 engineering works within just two years. A special challenge this project posed was six large type K110 viaducts, which had the same superstructure cross-sections but different span lengths and span widths, and pier heights measuring up to 30 meters.

In order to achieve short manufacturing cycles, we worked with the engineers at the construction firm to optimize the span widths of the viaduct to 24 meters in the side spans and 30 meters in the standard spans. This standardization made it possible to use our modular U2000-2 and U1800 scaffolding trusses uniformly for the standard spans. For the side spans we used H33 scaffolding trusses throughout. Only six trussed tubes therefore had to be used for each viaduct span. This made construction significantly faster. The eight-post S250 support towers with constant grid dimensions also helped to speed up the construction progress: with a modular design, they measure between one and 20 meters tall and guarantee fast erection and dismantling. Also noteworthy is the fact that we transported approx. 3,000 metric tons of scaffolding material to Norway for the construction of the viaducts on this section of the E 18 road. The trussed girders were delivered in sections and assembled on site into tubes measuring up to 30 meters long.

Examples of our services.



1
Bridge of the L1074 over the Leine River, Heiligenstadt western feeder road.

The bridge was to cross a river, roads, and a railroad line. During construction, the adjacent industrial park was to remain constantly accessible for large transport vehicles. One of the customer's principal demands was to keep the cost of auxiliary foundations as low as possible. To span the traffic routes and waterway, we used single-span girders up to 20 meters long. The long girders were re-used several times, making a large number of auxiliary foundations and supplies of materials superfluous. Thanks to the precise coordination of length and width, we were able to use the formwork several times. Our solutions went a long way toward reducing the time for bridge construction.

2
Viaduct for the B 256, Rengsdorf bypass.

As part of the Rengsdorf bypass routing, a valley partially designated as a nature conservation area is being bridged. The placement of auxiliary foundations in the ground was therefore prohibited. In addition, our customer demanded minimization of the shuttering and the use of lifting gear as far as possible. We bridged the large spans of the viaduct with an H33 truss system. For this the structure rested entirely on the bridge's foundations. Our construction ensured that transverse shifting from superstructure to superstructure was possible despite the non-parallel pier axes. The H33 modules were configured to ensure trouble-free rebuilding from the first construction section to the fourth and from the second to the third. A special challenge was the large support heights of over 20 meters when shifting the scaffold.

3
New Ebensfeld – Erfurt railroad line, Kiengrund bridge near Coburg.

To make it possible to dispense with additional auxiliary foundations, the bridge sections were to be spanned with as little intermediate support as possible. The customer also attached importance to minimizing the quantities of formwork used. The large spans in the middle sections were mastered with an H33 truss system, with the scaffolding rested entirely on the bridge foundations. For the section-by-section construction of the superstructure, the cantilever joints were positioned on the bridge's axes.



4
Berlin Brandenburg Airport, auxiliary towers for the construction of the terminal roof.

To support the terminal roof during construction, a support structure was erected. To discharge the high loads down to the foundations, we developed a tower system of S150 heavy-duty props. The entire structure was pre-assembled and then set up on site. Some of the props were over 20 meters tall. To cope with the high wind loads, supplementary guying was necessary.

High-performance: Our Movable Scaffolding Systems.

Our expertise in movable scaffolding systems (MSSs) for the construction of bridge superstructures is outstanding. This applies as much to the technology as to the processes. Our customers benefit from in-depth consultations, exceptional equipment, expert service, and constant monitoring of the project on site.

Portfolio.

Under the roro brand, we offer a multitude of rentable modular components. These range from auxiliary erection towers and pier scaffolding as heavy-duty towers, bracket, or insert beam solutions, via main girders, and fixed or movable transverse formwork beams to the cantilever suspension configuration. Our solutions provide the highest safety standard on the German market and are always tailored to the specific needs of the project and of the customer. All movable scaffolding components can be used for the construction and dismantling of bridges. Our systems achieve unsupported spans of 68 meters with single-span production and up to 120 meters with segmental construction.

Top performance.

thyssenkrupp Infrastructure sets standards in bridge construction. An example of this is the span-by-span demolition of large viaducts on movable scaffolding. We ourselves have developed this innovative demolition method that is employed on solid structures in sensitive areas.

Construction of the new Sava Bridge in Belgrade, Serbia.

Extensive stationary scaffold constructions were necessary in the proximity of the southern access ramps, which is where the eastern access route into Belgrade is crossed. The allotted time for construction was extremely tight. No more than three months after contract award was construction on the three parallel access roads to start. We handled the planning, supply, erection, and launching operations for three movable scaffolds that ran beneath the superstructure. All components of the structure were obtained from our rental park. During the construction period, the spans of the bridge were modified. Thanks to our continuous supervision of the project, the modified plans were quickly implemented without difficulty. By omitting a cantilever suspension construction, we were able to achieve lightweight superstructure cross sections and streamline the superstructure construction cycles.

Examples of our services.



1
Construction of the new Eaux de Fontaines viaduct in the Canton of Bern, Switzerland.

Planned was a semi-integral box girder bridge with over 30 meter tall piers and a standard span of up to 57 meters. The two parallel superstructures were to be built with changing crossfalls and longitudinal inclines. At the same time, the capacity of the lifting gear in the standard construction sections was limited. We were responsible for the planning, supply, erection, and launching operations. We opted for a movable scaffold running beneath the superstructure as part of a custom solution on insert beams. For the movable scaffold we chose a three-dimensionally variable bearing construction. This way we were able to adapt the position and shape of the formwork to the changing crossfalls and gradients of the bridge superstructures without having to modify the formwork design. To minimize the assembly weights when moving the scaffolds, we designed a modular pier scaffold structure. Also worth mentioning is that the permissible deflections under fresh concrete were limited to $L/600$ of the span of the movable scaffold in mid-span.



2
Construction of the Scherkondetal bridge near Weimar.

The bridge is a semi-integral structure with a solid cross section and spans of up to 44 meters. The structure carries the railroad line over a river and a nature conservation area. One of the prime demands was therefore to minimize the environmental impact. We were entrusted with the planning, supply, erection, and relocation services for a rentable movable scaffold that ran beneath the superstructure and was used for span-by-span construction. For shifting we used crane-independent self-launching brackets. No ground-supported lifting gear was required to relocate the pier scaffolds. By fixing the self-securing launching equipment of the movable scaffold on reaching the concreting position, we were able to achieve the structurally beneficial pre-curvature of the bridge piers.



3
Demolition of the A45 freeway viaduct at Münchholzhausen near Wetzlar.

The double-cell box girder bridge was no longer sufficiently load-bearing. While one superstructure was to be demolished and replaced on the stationary scaffold, the entire traffic had to be channeled along the second superstructure. We were responsible for the planning, delivery, erection, and launching operations. We used a movable scaffold running beneath the superstructure as part of a custom solution. In this way, we facilitated the span-by-span demolition of both superstructures in the reverse direction of production. Thanks to the movable scaffold, there was no need for any intermediate supports during demolition. When moving the scaffold into the next demolition section, the use of lifting gear was confined to modification of the pier scaffolding. A synchronized launching device cut friction-induced horizontal forces due to launching to almost zero, thus eliminating the need to guy the hinged piers in launching mode. Ground-supported demolition took place on the modular and rentable heavy-duty props of the rôro brand. By locking the self-securing longitudinal launching system, the movable scaffold stabilized the hinged bridge piers in demolition mode. Hydraulically collapsible formwork beams minimized the degree of transverse shifting when bypassing the piers during longitudinal movement into the next demolition section.



4
Demolition of the A45 Lützelbachtal bridge near Dillenburg.

The bridge dating back to 1969 with up to 57.8 meter spans crosses a valley at a height of about 50 meters. The two superstructures were no longer equal to today's traffic volumes. While one superstructure was to be demolished and replaced, the entire traffic had to be channeled along the second superstructure. We were responsible for the planning, supply, erection, and launching operations for a shiftable scaffold that ran beneath the superstructures. There it was used for span-by-span demolition in the reverse direction of production. After demolition of the first superstructure, the movable scaffold was parked under the second one. It was then shifted in its empty state back to the end of the bridge. From there, demolition of the second superstructure was then started in the same direction as the first. The use of two movable pier scaffolds reduced the need for lifting gear when transferring the scaffold from the first to the second superstructure.



Construction of the new Freybrücke in Berlin Spandau.

One of the most important Berlin bridges was undergoing rebuilding with two lanes and a broadened sidewalk. During construction, traffic was spectacularly rerouted over a temporary bridge assembled by specialists of thyssenkrupp Infrastructure. With incremental launching and counterweighting, the two-lane temporary bridge was brought into its final position in only 36 hours. The high point was the use of a barge for bridge launch.

Mobile: Our temporary bridges.

In the planning and construction of temporary bridges, thyssenkrupp Infrastructure has unparalleled know-how and decades of experience. Our customers appreciate us as a dependable and professional partner. Since 1991, we have built over 100 temporary bridges for vehicle and pedestrian traffic – with spans up to 80 meters.

Portfolio.

For a huge diversity of applications and locations, we offer a variety of solutions for temporary bridges under the rôro product name. These include the tried-and-tested SS80 bridge system, the D-bridge, and the SKB bridge from the inventory of Germany's Federal Ministry of Transport and Digital Infrastructure. Cycle and pedestrian bridges for a wide range of assignments for rerouting traffic during construction projects are also covered by our portfolio. The precise design is always agreed on in advance in close consultation with the customer. Key factors are the technical and economic issues as well as the client's special requests. Our cycle and pedestrian bridges are composed of trusses and the spans can be as much as 45 meters. Temporary bridges with small spans can also be erected from steel sections. We also of course supply the associated stairways – everything in a package from our extensive rental park.

Top performance.

In the case of smaller spans of less than 36 meters, the combinations of trusses for temporary bridges are lifted into place by truck-mounted crane. For greater spans, a launched assembly is employed. And for extreme spans, we offer solutions with auxiliary support from our extensive stocks of stationary scaffolds. Our offering for the customer also extends to intelligent custom solutions, such as pontoon assignments.

Examples of our services.



1
Construction of the new Marquardt road bridge over the Sacrow-Paretzer Canal.

In particularly big demand are our services when temporary bridges have to be built over impassible terrain or water courses. The goal is always to keep assembly time and route closures to a minimum. On this project, the 28 meter long and 5.4 meter high side truss configurations were lifted in tandem by two truck-mounted cranes in the pre-assembly area. Because of the extreme span, the cantilevered configurations with the necessary counterweighting failed to reach the other bank. We were able to master the challenge with auxiliary supports on a barge.

2
Temporary bridge with a single-side cycle lane and sidewalk over the Main River at Breitengüßsbach.

The triple-span bridge with its 91 meter length was one of our large temporary bridges. A particularly exacting task for our fitters was the launching process: It was therefore necessary to continuously adapt the level of the rolling gear to the sag and the roller track's position setting. Another special feature of the bridge was the dedicated sidewalk and cycle lane.



3
Temporary bridge carrying the A115 over the A10, Nuthetal freeway junction.

The assembly of the temporary bridge for both carriageways of the A115 freeway over the A10 was highly challenging. We joined the two individual bridges in the pre-assembly area and attached the nose. As soon as the first temporary bridge had been pushed into place, the connection between the bridges was released, the first bridge was skidded across into the other carriageway and brought into its final position. The temporary bridge for the other carriageway was then skidded into its position. This way, road closures were kept to a minimum.



4
Pedestrian bridge over a vehicle manufacturer's test track.

It was our task to bridge a multi-lane test track so as to afford workers unrestricted access to a construction site. We fitted a temporary bridge using rentable standard röro components – U1800 lattice girders and S50 props. The structure's span was 45 meters without intermediate support. To prevent shading of the test track as far as possible, we opted in consultation with the customer for a special surface. We also erected a 2 meter high screening barrier. During project planning, the contract was extended to include further truss girders to serve as a pipe bridge. Thanks to the modular tower construction and our large rental park, we were also able to satisfy this request without problems. A remarkable achievement was the installation of the main girders of the temporary bridge within a day.



5
Ebersbach railroad overpass.

The underpass to the various platforms at Ebersbach railroad station was being modernized. During construction, the various platforms had to remain accessible to travelers. Special challenges here were the very narrow construction corridor and very low headroom of 2.5 meters maximum. The time-frame was also extremely tight. Our solution consisted of a customized steel structure with system stairways which we assembled in record time. To eliminate the risk of electric shocks from the high-voltage cables above and below the bridge, we installed a protective roof. The complete structure was lifted into place by special lifting gear in a single lift.

Superior: Our hydraulics.

Civil engineering, building construction, and industrial construction – our high-performance hydraulic systems of the roro product brand are put to use in all areas. Our customers benefit from our extensive expertise right from the bidding stage. Our customized solutions help them to save time and money. Planning takes place in direct consultation with our clients. Our experienced technicians and fitters are capable of handling several launching and skidding projects at the same time – reliably and on time.

Portfolio.

With hydraulic presses of all sizes, thyssenkrupp Infrastructure can move any building structure: from steel structures weighing just a few tons to post-tensioned concrete superstructures weighing several thousand tons. Our equipment ranges from 20 ton lightweight cylinders to over 500 ton presses, and from the 15 ton hollow piston press to over 200 ton strand jacks. In addition, computer-controlled synchronized lifting systems are available that can be combined and synchronized as required.

Top performance.

For lifting, lowering, and launching bridge superstructures and structural frames, our customers receive complex solutions from a single source. For example, we often raise bridge structures over freeways, railroad tracks, or waterways to ensure the necessary headroom. We then lower them hydraulically – with millimeter precision. Conversely, before demolishing bridges with low headroom, it is possible to lift out the superstructure hydraulically to make space for support with stationary scaffolds for demolition above moving traffic.



City Tunnel, Leipzig.

In inner-city railroad tunnels, sound emissions have to be curbed as far as possible. This is achieved by using so-called spring/mass systems. So that they work perfectly, it was necessary to uniformly raise concrete track slabs over their entire length and lower them onto elastomer bearings. They were lifted with a computer-controlled synchronized lifting system. With suitable programming, lifting can be performed synchronously or with a ramp function. With ramp-function lifting, we raised 1,200 meters of continuous track slabs section by section. Because of the connecting reinforcement projected from the track slabs, materials could not be carried on them. For our lifting frames we therefore developed running gear enabling them to be shifted on the existing crane rails.

Examples of our services.



1
Reconstruction of Braunschweig southwest freeway junction.

In the course of reconstruction, an 8,100 ton and 210 meter long 5-span superstructure had to be skidded. We realized the project with a computer-controlled synchronized lifting system. To this end, we installed electronic pull rope position sensors in all six launch axes that communicated the skidding position to the synchronized lifting system. This way we were able to achieve uniform skidding. The sliding devices were fitted on tracks provided by the customer. Mounted on the sliding devices were the lifting presses that had communicating jacks for load distribution.



2
Lifting the top station of 3S Pardatschgrat aerial lift in Ischgl, Austria.

The building rests on a total of 26 piers. With the reinforced concrete slab and additional cross members, these piers form a solid frame structure. Because of the decline in permafrost, the piers settled by between 0 and 80 millimeters during the 2015 summer season. The possibility of correcting settlement had been considered in the design of the top station's piers. Because of the effect of the frame, building settlement and the corrective measures caused a considerable relocation of loads on the foundations. The challenge for us was to compensate for local settlement to prevent impermissibly high loads on the foundations. First of all, the resultant cavities were filled by injecting material under the foundations in order to increase load-bearing capacity. Then we installed two hydraulic locking-ring jacks and an electronic position sensor on each of the 19 piers. Via hydraulic hoses and data cables, the total of 38 jacks and 19 position sensors were connected to the central processing unit of our computer-controlled synchronized lifting system. From this central unit, we were then able to lift each individual pier millimeter by millimeter and monitor the effects on the other pier loads at the same time. As a result, the top station was restored precisely to its previous level.



3
Construction of the new A45 freeway Lennetal bridge near Hagen.

The freeway bridge over the Lenne River dating back to 1967 had to be replaced – without inhibiting traffic flow. The longitudinal gradient at the upper northern end of the bridge is 2.5%, diminishing to 0% toward the river. On the south side the gradient is lower. Because of the large longitudinal gradient, the superstructure had to be braked after being set in motion. We solved this exacting problem by using our modern strand jacks which were used as pull and brake cylinders. For a 60 meter launch distance, we took just six hours. This method was also extremely cost-effective. A few more interesting details: During implementation, we coordinated the pull and brake cylinders so that the brake cylinder's flow rate dictated the launching speed. All states during launch (cylinder strokes, applied pulling forces, effective holding force at the anchor block) were electronically recorded, evaluated and displayed on a monitor.

Tailor-made: Our custom solutions.

Whatever the issue – airport equipment, scaffolds and props for building modernization, tower structures, or custom structures – the custom solutions from thyssenkrupp Infrastructure are noted for their individuality, durability, and economy. Thanks to flexible modular systems, our strategies can be implemented individually and cost-effectively – in Germany, the rest of Europe, and worldwide.

Portfolio.

Together with our customers we develop tailor-made solutions for a variety of tasks. To illustrate what we mean, here are a few examples:

Aviation/military

Maintenance docks for all kinds of aircraft, radar towers, climbing towers, fire-fighting towers

Building construction/civil engineering

Supporting heavy loads, inclusive of hydraulics if required – for example, in underground parking lot refurbishment, new buildings, general building modernization, ramps for pedestrians and for motor vehicle and heavy-load traffic

Bridge refurbishment

Bridge refurbishment scaffolds as movable structures, such as mobile scaffolds, under-bridge inspection units, or bridge edge beam refurbishment travelers

Custom constructions

Theater stages, work platforms, height-adjustable mobile scaffolds, and custom scaffolds to customer specification

Top performance.

Our standardized system components of the roro product brand make prop loads of up to 500 tons possible. The system-based construction ensures individual extensibility and cost-effectiveness for every single project.



Maintenance dock for the Boeing MD-11 at Göteborg Airport, Sweden.

In order to access the key areas of the engines of an MD-11 for maintenance, various items of lifting gear, scaffolds, and ladders used to had to be set up, which was time-consuming and very costly. We developed a maintenance dock inclusive of access and maintenance platform for manpower, machines, and tools. It is light, extra-safe, and designed for easy repositioning by two persons. The investment pays off. Today our customer no longer has to carry out any preliminary work, maintenance itself takes much less time, and the aircraft is back in the air sooner. Incidentally, we also supply our maintenance dock on request with electrical or manual height adjustment.

Examples of our services.



1
Transportation of transformers in Mozambique.

Three roughly 150 ton transformers had to be transported from Sweden to the Cahora Bassa hydroelectric power plant in Mozambique. On the 250 kilometer stretch from the Zimbabwean border to the Songo Pass, there are a number of bridges whose load-bearing capacity was not sufficient for conventional transportation – on a vessel deck, for example. The construction of costly dams to bypass the structures was to be kept to a minimum. We therefore realized a so far unique solution: With a lightweight lattice girder frame construction, we spread the load of each transformer over two bridge fields. In the case of five bridges with a total of 10 spans, we were unable to verify sufficient load-bearing capacity for load distribution. In these cases, we additionally set up heavy-load props in the wadis beneath the bridges. By the start of the rainy season, all the parts of the construction had been dismantled. We were also able to attract local staff for help with the assembly work. These workers have already been trained for future assignments with the prop materials that we have left with them.

2
Modular heavy-duty support for large components during the construction of Włocławek power plant in Poland.

The Vistula River is not navigable all year round, so a large number of heavy-load components for the new power plant were supplied by river at the same time. Since they could only be installed one after the other, they had to be parked outside the power plant. Our task was to find an inexpensive solution as a substitute for expensive crane services: unloading from the barge, safe intermediate storage, and transfer from their parked position to their place of installation. To realize the project, we used rentable, height-adjustable VS500 heavy-duty stationary scaffold props. Preassembly took place in our warehouse. On site, self-propelled modular transporters (SPMT) then drove under the large components, transported them from the ship to the intermediate store, and from there lowered them onto heavy-duty trestles. We were able to dispense with cranes for unloading because it was possible to transfer the props with light gear. Owing to the existing sample test for our VS500 prop system, no further structural assessment of the support points was necessary. The customer was so impressed by the solution that it was used afterward for further projects in Kazakhstan and Uzbekistan.



3
Disassembly of movable scaffolds on the Saale-Elster viaduct near Halle.

On Germany's longest bridge construction site measuring 8.6 kilometers, seven röro movable scaffolds were in use. Four of these scaffolds weighing up to 1000 tons each were erected in poorly accessible areas, some in a nature conservation area, thus preventing disassembly on site. Nor was it possible to retract the movable scaffolds because subsequent building activities had blocked the retraction level. Furthermore, retraction would have been extremely time-consuming for some of the scaffolds.

We therefore developed a disassembly strategy, working from the finished superstructure. To this end, we used two transportable hydraulic gantries and four rentable 200 ton strand jacks. First the main girders of the four movable scaffolds lifted out of the last concreting position and lowered onto the hydraulic gantries. The gantries then drove on the bridge to the next site equipment area where the main girders were lowered with the aid of the strand jacks to the ground and disassembled. When all the lifting processes on the first movable scaffold had been completed, we drove the lifting gantry to the last concreting position of the next scaffold. In this way, we were able to dismantle the main components of all four scaffolds quickly and with minimum environmental impact.

4
Renovation of the ceiling of the Asamsaal theatre in Freising, Bavaria.

The theater hall protected as a monument has ceiling frescoes dating from the 17th century. Parts of the stucco frescoes had become detached, marring the frescoes' appearance and posing a safety risk. Initially a platform was considered for restoration, but this would have reduced the number of seats in the auditorium and had a detrimental effect on the view and acoustics. We developed a solution that left the hall almost unchanged. It was designed for loads up to 100 tons – i.e. more than sufficient for manpower, materials, and tools. To implement the project, we transported all the materials – including heavy-duty parts weighing up to 1.7 tons – through a 2nd-floor window. With the aid of a skidding system, we then brought it to its final height in the right position in the auditorium. On completion, not a single prop or girder was visible. All the seating was retained. The intermediate level was covered with a photo canvas of the ceiling fresco. The room looked exactly as it did beforehand – but just a little lower. The customer was particularly happy with the fact that we were able to complete the project and hand over the auditorium ahead of time.

Building the new Porsche Museum in Stuttgart.

A supporting scaffold was required to install the steel structure. It was deployed to carry the resulting load during the construction phase and subsequently distribute it to the building in a controlled process. In order to achieve this feat, we equipped the scaffold with hydraulic presses. The lowering process was performed using one of our own synchronous hydraulic jacking systems, enabling us to control the path and the power of the presses with great precision. The use of these technologies enabled us to smoothly implement the planners' requirements.

Solution-oriented: Our industrial construction.

Trends in residential and commercial construction have changed. Representative buildings with large atriums and cantilevered sections are currently in fashion. Therefore, during construction, there are heavy sections that need to be supported at great heights. In view of these requirements, the solutions offered by formwork manufacturers are not always financially viable and the use of a heavy-duty scaffolding system is often the better alternative. We specialize in sophisticated residential and commercial construction projects. Our aim is to provide tailored solutions for the specific needs of our customers and to help them implement their projects in every way possible.

Portfolio.

We are Germany's largest scaffolding systems specialists and have a comprehensive stock of materials at our three locations, enabling us to provide our customers with optimal support in completing their projects. Our range not only covers the planning and the provision of services, we also have our own assembly teams, which we can enlarge via subcontractors as required. Moreover, we can collaborate with various formwork manufacturers at any time. Typical applications include: Turbine platforms in power plant construction, facade shorings, commercial building construction, cantilevers in structural engineering, and steel construction supports.

Outstanding performance.

With our extensive range of materials we can offer our customers economical solutions, whatever the task at hand. Our type-tested support systems are multifunctionally equipped and flexible to use. Their easy handling means short set-up times, and we also have the right tools to handle requirements over and above the usual load transmission challenges, as we are equipped with an extensive range of hydraulic cylinders, a strand jacking system, and various synchronous hydraulic jacking systems.

Examples of our services.

1 Conversion of Hangar 285 at Elbe Flugzeugwerke GmbH in Dresden.

In order to optimally carry out maintenance and conversion work on AIRBUS aircraft, the company's Hangar 285 needed to be enlarged. Firstly, we built a scaffold some 20 meters above floor level to use as a working platform. At the same time, the scaffold also served to support loads that resulted from the hydraulic jacking of individual points in the building's roof construction. We used S50 heavy-duty support towers, which we positioned near the intersecting points in the roof of the building. The working platform was constructed using HEB girders

2 Crossbeam covering for the corporate headquarters of ZF in Friedrichshafen.

The striking new headquarters building is an architectural ensemble of several different elements. As an interface between two elements, the planning included a covering that serves as a bracing and attachment component and represents the company's Africa and India divisions. It was built in several sections. However, it was only capable of bearing a load after being connected to the actual building. Very heavy temporary loads needed to be supported in the course of construction, which we did by using stationary scaffold props around the atrium and a layer of cross-girders and stationary scaffold props in the basement.

3 Constructing the new control center in Karlsruhe.

When designing the new control center in Karlsruhe, the architect included a cantilevered section in the building. The main challenge for us was that the construction was only able to support itself after the top floor was completed. Prefabricated girders were planned for the cantilevered section, which were integrated in a circumferential edge beam. We distributed the point loads involved in three main axes. The maximum point load was $F_d = 1,345 \text{ kN}$.



4 Constructing the new Landesbank BW in Karlsruhe.

The 140-meter-long office building, which rests on V-shaped supports, bridges over a base structure featuring natural stone and glass facades. Until the uppermost ceiling was completed, the supports of the cantilevered section of the building had to distribute the load of the building shell. Only then could the load be redistributed to the building itself.



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