Fast construction progress thanks to a safe and coordinated scaffolding and formwork solution

Terminal Building, Gazenica Passenger Port, Zadar, Croatia

For the construction of the new terminal building in the port of Gazenica, PERI Croatia planned and supplied a comprehensive formwork and scaffolding solution from a single source. The systems used were perfectly matched to one other and greatly contributed to ensuring safe and time-saving execution through efficient work procedures. The stringent demands in terms of occupational safety and surface quality could be met in spite of the complex building geometry and the need for large supporting heights.

The ferry port in Gazenica is only 3 km from the centre of the Croatian town of Zadar. The new landing facility will relieve the historic harbour in the old town which is a designated UNESCO World Heritage Site. Due to the larger capacity provided by the jetties for ferries and international ships, the new passenger port on the Adriatic coast will also be a new destination for large cruise ships in this attractive tourist region. After completion, ships with a length of more than 400 m can also dock in this modern port. As part of the extensive construction measures, a two-story passenger and ferry terminal has been realized on a total area of 25,000 m².

V-shaped inclined circular columns in the best architectural concrete quality

The most striking and technically challenging design element of the terminal skeleton construction has been the 10.30 m high circular columns – forming a V-shape due to being inclined at the angle to each other – that characterize the entrance areas of the terminal building.

For the realization of the 60-degree inclined circular columns, customized PERI SRS Circular Column Formwork was used. Due to the high manufacturing quality of the steel formwork, columns with diameters of 95 cm and 100 cm could be produced with the best surface quality. In order to support the first – 6 m high – concreting section, SRU Steel Walers and Heavy-Duty Spindles taken from the VARIOKIT Engineering Construction Kit were used. For concreting the second

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section, the construction team installed a working platform supported by PERI UP Flex Shoring that, thanks to the 25 cm system grid of the modular scaffolding, could be flexibly adapted to accommodate the circular columns which are diagonally-positioned across the inside of the structure. PERI UP Flex Stairs served as a safe and secure access solution.

The square-shaped columns of the skeleton construction were concreted using PERI TRIO Column Formwork. Due to the high fresh concrete pressure that could be accommodated by the formwork, the 5.50 m high columns could be realized in one pour. The TRIO Formwork System facilitated fast assembly as well as allowing the formwork to be easily moved from column to column.

DUO and TRIO – an unbeatable team

The foundations and side walls of the beams were formed with the universal DUO System Formwork. Through its low weight and particularly easy handling, the construction team could quickly carry out assembly, forming and moving operations, and without the need of a crane. If required, the entire formlining could be easily replaced without the use of any special tools.

Because of its numerous advantages, the construction team formed the reinforced concrete core walls with TRIO Panel Formwork. A clear plus point of the TRIO Formwork System was, among other things, the possibility of moving large-sized units by crane which in turn saved valuable working time. The minimum number of different components along with the universally usable BFD Alignment Coupler made forming with the proven panel formwork easy and fast.

Slabs systematically formed – also with large supporting heights

For forming the reinforced concrete slabs of the atrium, MULTIFLEX Girder Slab Formwork was combined with the PERI UP Flex shoring system due to the large supporting heights and the specific building design. The free arrangement of GT 24 and VT 20 Formwork Girders allowed the slab formwork to be flexibly adapted to suit the different ground plans. For accommodating the heavy loads and large spans, the particularly strong GT 24 Lattice Girder was used as twin main beams. Furthermore, the flexible PERI UP shoring system could also be adapted in the ground plan to suit the different geometries and load situations – from shoring towers with dimensions of 25 cm x 25 cm through to 4 m x 4 m birdcage scaffolding.

The SKYDECK Panel Slab Formwork made it possible to quickly form the slabs in the areas between the beams. In addition to the simple and systematic assembly

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sequence, the system was particularly convincing through the possibility of early striking. The panels and main beams were very quickly available again for subsequent concreting sections by means of the drophead – only props with dropheads and cover strips remained in position in order to support the construction. This saved valuable time and reduced on-site material requirements.

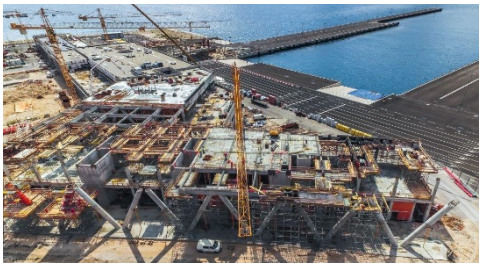


Image 1
For the construction of the new terminal building in the port of Gazenica, the optimally coordinated PERI formwork and scaffolding solution facilitated fast and uninterrupted construction progress.
(Photo: PERI Croatia)



Image 2
Using PERI SRS Circular Column Formwork, V-shaped columns with diameters up to 100 cm could be realized. The first 6 m high concreting section was supported by SRU Steel Walers and Heavy-Duty Spindles taken from the VARIOKIT Engineering Construction Kit.
(Photo: PERI Croatia)



Image 3
For concreting the second section of the 10.30 m high columns, a working platform was installed using PERI UP Flex Shoring which could be flexibly adapted in the 25 cm system grid to accommodate the diagonally-positioned circular columns.
(Photo: PERI Croatia)



Image 4
The reinforced concrete slabs of the atrium were constructed using MULTIFLEX Girder Slab Formwork. Due to the free arrangement of the formwork girders, the slab formwork could be flexibly adapted to suit the various ground plans.
(Photo: PERI Croatia)

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Image 5
Due to the low weight and the particularly easy handling of the universal DUO Lightweight Formwork, foundations could be quickly formed without requiring a crane.
(Photo: PERI Croatia)



Image 6
Thanks to the systematic assembly sequence, the SKYDECK Panel Slab Formwork facilitated fast and safe forming of the slabs in the areas between the beams – the panel size determined the position of the props which eliminated the need for any measuring. For larger supporting heights, SKYDECK was also used with MULTIPROP MP 625 Props.
(Photo: PERI Croatia)



Image 7
The V-shaped columns feature 60-degree inclinations and are connected at the heads by means of a reinforced concrete beam.
(Photo: PERI Croatia)



Image 8
Due to the high fresh concrete pressure that could be accommodated, the square-shaped columns were realized with PERI TRIO Column Formwork using a 5.50 m high concreting section. For the rising reinforced concrete core walls, large-sized units of TRIO Wall Formwork were moved by crane.
(Photo: PERI Croatia)

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