

THE TAILOR-MADE SUIT FOR YOUR TUNNEL PROJECT

VARIOKIT VTC Tunnel Carriage





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The VARIOKIT VTC Tunnel Carriage is an adaptable formwork carriage for cut-and-cover and mining construction methods.

With the VARIOKIT Engineering Construction Kit, it is possible to create rentable, cost-effective tunnel formwork carriages that meet the exact requirements of your construction site. Our experienced project engineers will configure your formwork carriage to meet the specific requirements of your project, such as access openings for construction site traffic, extreme gradients or varying building cross-sections, and design a suitable formwork carriage solution just like a tailor-made suit. Components for lifting, lowering and repositioning as well as safe working platforms and access points are also available for hire.

These tunnel components can also be configured according to your requirements. Helpful accessories such as concrete pump connectors round off the VARIOKIT portfolio. The wide range of formwork carriage configurations and the expertise of our PERI planning engineers pave the way for customised project solutions. For example, you can choose between manual and hydraulic operation. The manual version requires more labour, but is cheaper to hire.

The hydraulic solution is somewhat more expensive to hire, but can be controlled very conveniently by one person. The 125 mm incremental grid of the core components of the VARIOKIT Engineering Construction Kit allows the system to be geometrically optimised to suit the shape of the building and to create a lightweight, extremely strong structure with minimal use of materials. The simple and site-specific assembly process using fitting pin connections also speeds up construction progress, reduces labour costs and at the same time ensures higher quality, as deformations are minimised. Every tunnelling project has special requirements, which is why our tunnel formwork carriage solution is always planned on a project-specific basis. Once again, you can rely on a range of PERI solutions in this regard.

From material hire and planning to pre-assembly and on-site project support, you will receive precisely the support you require. What this means for you is a customised solution for your project, where you receive everything from a single source, from the initial consultation and planning to the final concreting stage.

Top product features



Reliable system components for use in tunnel construction

Customisable safety and convenience

Varying tunnel geometries can be implemented easily with standard components

Optional hydraulic system for convenient shuttering and deshuttering, lifting and lowering, as well as repositioning procedures

Optional concrete sensors for greater safety, transparency and faster construction progress



- Standardised and rentable system components in suitable lengths for project-specific formwork carriage solutions
- Swift, site-specific assembly process
- Type-tested connections with standardised loads per connection type
- Fewer tie points in the wall area
- Possibility of hydraulically driven repositioning, or procedure can be determined by the customer on site

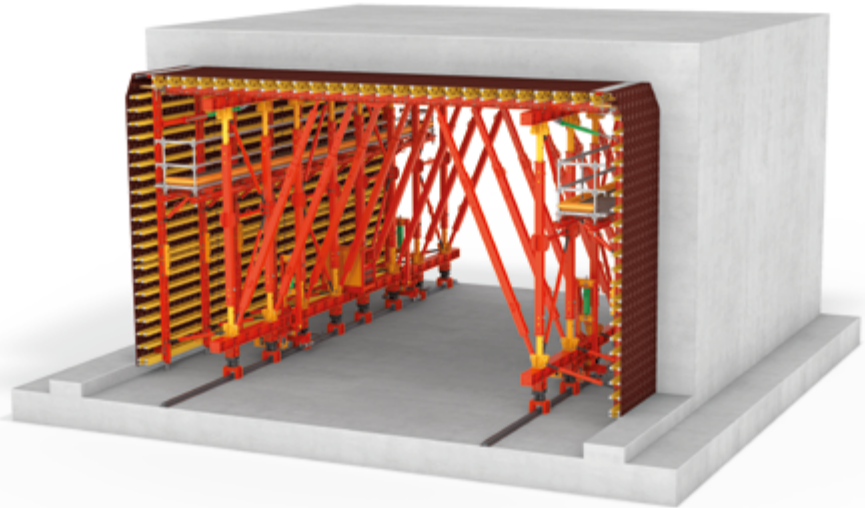


High standard with customised convenience features

Telescopic props

If the cross-section height changes, the patented telescopic prop can be adjusted to the correct length quickly and easily in just a few simple steps. The streamlined design reduces the dead weight of the formwork carriage with a high load performance still guaranteed.

By using telescopic props, you can retain the main supporting structure even after significant changes in the height of the cross-section.



Lifting and lowering device

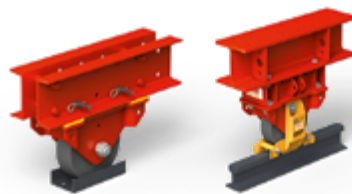
The tunnel formwork carriage can be conveniently raised and lowered using a hydraulic cylinder or manually with a jack. The smooth-running articulated carriage enables the formwork carriage to be positioned quickly and easily. The automatic transverse and longitudinal inclination adjustment ensures vertical alignment at all times without additional wedging.



The device for lifting and lowering can be operated hydraulically or manually. The handling process is simple in both cases. You can decide which variant should be used for your project.

Heavy-duty wheels and hydraulic drive

You can move the tunnel formwork carriage on heavy-duty wheels using on-site equipment or move it precisely using our hydraulic drive. In this case, too, VTC offers a high level of convenience even in the standard version: High-quality heavy-duty wheels with bearings ensure that the formwork carriage moves very smoothly.



Variant 1: You can use a U-rail or, with a 'flange cage' attachment, a crane rail as a traversing profile.



Variant 2: The hydraulic drive makes operation safer, more precise and more convenient. A construction site vehicle is not required for the process.

The PERI range – more than a product



Material availability and logistics

First of all, you will configure the performance features of the tunnel formwork carriage according to your requirements. We will then work with you to find the right technical solution for you and your project. In the end, you will decide on the overall package, i.e. whether to hire, buy or use another business model. Thanks to our global presence and expertise, we can ensure that the formwork carriage materials are delivered to your construction site precisely when you need them.

Special applications

The VARIOKIT Engineering Construction Kit for tunnel formwork carriages has been designed and optimised for the most common standard applications. If we are unable to meet all your project-specific requirements with our standardised formwork carriage solution, we will still be able to offer you a project-specific special solution. Working together with the company KERN Tunneltechnik, we can offer an impressive portfolio, particularly in the field of mining tunnels, which is capable of meeting even the most unusual requirements.

Planning

Our sales engineers and project engineers will advise you during the quotation and planning phase. We will find the optimum formwork solution for your tunnelling project, taking into account your economic interests and enabling excellent construction quality while also helping to achieve the desired construction progress.

Pre-assembly

With our pre-assembly service, you can rely on the support of our formwork professionals. This enables you to speed up your construction progress, take the pressure off your site personnel, reduce site complexity, improve formwork quality and adapt to the space available on site. We deliver the pre-assembled formwork units to your construction site – even on demand.

Project support

Achieving success together. Our project managers will be there for you throughout the entire construction period, providing you with advice and support – even on the construction site. Our digital solutions can be a further building block to facilitate your project and make your job easier.



Concrete sensors

You can digitise your tunnel formwork carriage with sensors and prevent overloading of the formwork by measuring the concrete pressure, prevent cavities by checking the fill level, and optimise the deshuttering time by measuring the temperature and monitoring the concrete maturity.



References



**Marieholm Tunnel,
Gothenburg, Sweden**
Züblin Scandinavia AB

Cut-and-cover/open

The steadily increasing volume of traffic in Sweden's second-largest city has significantly calmed down due to the new underground road. The tunnel under the Göta älv river consists of three segments, each 100 m long, 10 m high and 30 m wide. They were realised with the help of the VARIOKIT Engineering Construction Kit in an upstream dry dock. When forming the arches and slabs, two PERI Tunnel Carriages ensured fast and cost-effective procedures. Heavy-duty wheels and crane rails were used to move the almost 25-m-long formwork carriages, whereby the advantages of the flexible, lightweight and separable VARIOKIT formwork carriage were ably demonstrated in the narrow working area.



**U4 Subway Tunnel,
Hamburg, Germany**
Max Bögl

Cut-and-cover/semi-monolithic

As part of the 1,300 metre extension of the U4 line, the 710-m-long tunnel was built using the cut-and-cover method. Trough and tunnel construction took place at depths of up to 20 m within a diaphragm wall excavation pit. With the help of a VARIOKIT VTC Tunnel Carriage, the 71 sections with varying cross-sections were formed and concreted in weekly cycles – walls and slab in one pour. PERI engineers created a customised project solution based largely on system components. As the walls had to be concreted single-sided against the diaphragm walls, the loads within the formwork carriage construction had to be transferred.



Werrington Grade Separation Tunnel, Peterborough, United Kingdom

Bell Formwork

Cut-and-cover/semi-monolithic

During the construction of the Werrington Grade Separation Tunnel, PERI engineers planned an optimally co-ordinated combination of different PERI systems. In this way, the VARIOKIT VTC Tunnel Carriage used together with other PERI standard components, such as PERI UP Flex modular scaffolding, was able to demonstrate its benefits. The tunnel formwork carriage could be repositioned quickly and easily by hydraulic means without having to be assembled and disassembled. It was possible to shutter and strike the soffits and interior walls simultaneously using the VTC Tunnel Carriage.

'Place de Martyrs' Metro Station, Algiers, Algeria

GMAC: Andrade Gutierrez; Teixeira Duarte; Gesi TP; Zagope

Mining/semi-monolithic

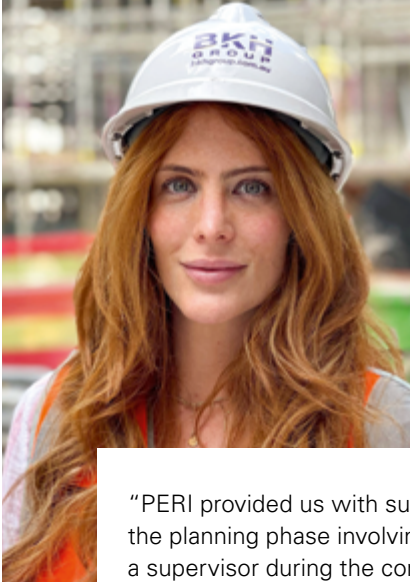
At 144 metres long and 23.00 metres wide, the 'Place des Martyrs' subway station is huge. An international team of PERI engineers designed economically optimised tunnel formwork solutions tailored to the various requirements. 'Place des Martyrs' has two different cross-sections. The imposing arch width of 23.00 m in the middle section tapers in the northern and southern directions resulting in 16.50 m widths respectively. PERI engineers developed a formwork carriage construction based on the VARIOKIT Engineering Construction Kit to realise both cross-section variants cost-effectively, while using the same system components and formwork segments.



You can find more
projects here:

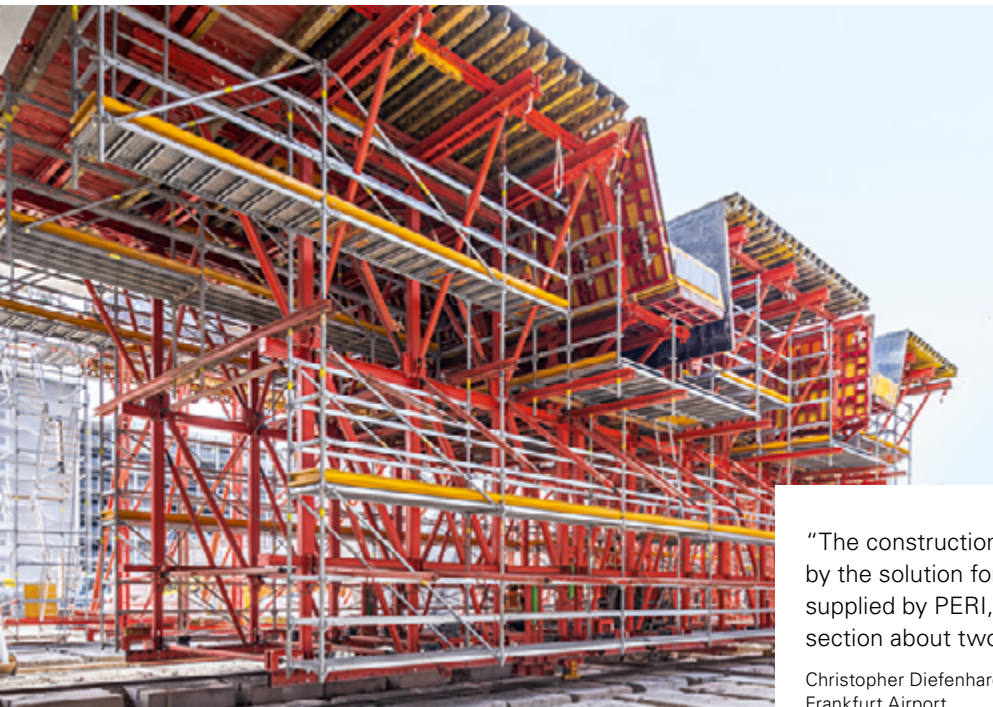
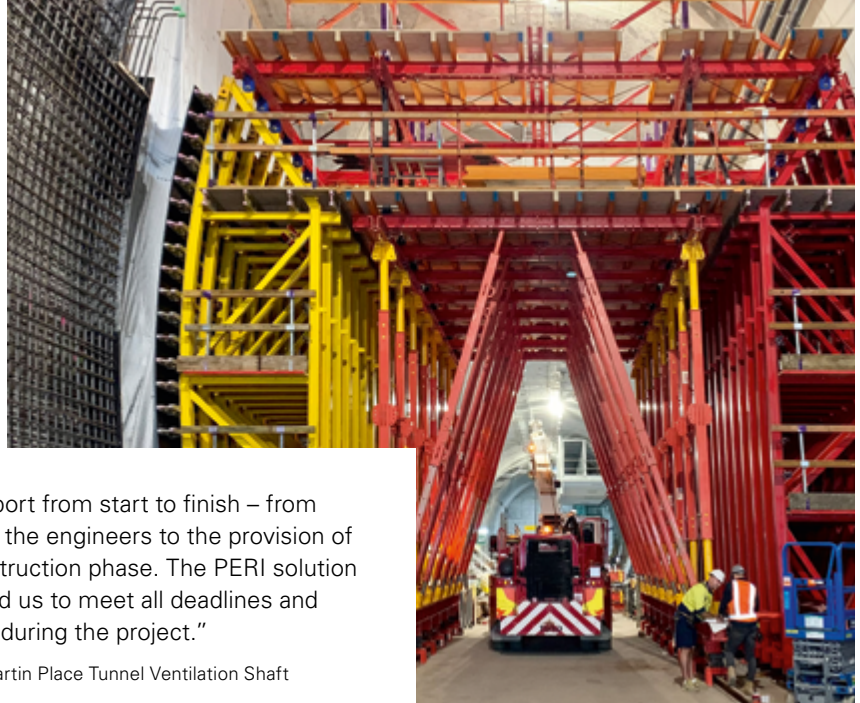


What our customers say



“PERI provided us with support from start to finish – from the planning phase involving the engineers to the provision of a supervisor during the construction phase. The PERI solution worked perfectly and allowed us to meet all deadlines and achieve all safety objectives during the project.”

Iris Isidiro, Project Management: Martin Place Tunnel Ventilation Shaft
BKH Group, Australia



“The construction site personnel were pleasantly surprised by the solution for this complex task. Thanks to the systems supplied by PERI, we were able to finish each concreting section about two weeks faster than originally planned.”

Christopher Diefenhardt, Site Manager: Drive-By Platform at Terminal 3,
Frankfurt Airport
Max Bögl, Germany