

PERI systems allow a view into the sky: The largest eye of mankind

Extremely Large Telescope (ELT), Atacama Desert, Chile

The cool, dry and cloud-free Atacama Desert in Chile offers ideal conditions for astronomical observations and is already home to several telescopes. It is therefore not surprising that the world's largest telescope is also being built there, on the 3,046-metre-high Cerro Armazones mountain, and is expected to go into operation in 2028. With the help of the ELT, scientists hope to gain new insights into the early history and future of our universe or even discover new, earth-like planets. PERI supplied the formwork and scaffolding systems required for the construction of the foundation as well as for the wall structures and the central base of the telescope.

The ELT surpasses the performance of existing telescopes many times over. With a primary mirror 39 meters in diameter, the telescope can collect 15 times the amount of light compared to previous telescopes, making it possible to see much smaller details in space than previously possible.

This requires several technical masterpieces. For example, the main mirror consists of 798 individual, movable hexagonal mirrors, which ensure that the mirror shape corresponds to an optically ideal shape at every temperature and inclination of the telescope. Before the light reaches the cameras, it is directed via a further mirror, which can be deformed using almost 6,000 adjusting elements and thus compensates for air turbulence. This is supported by six "artificial stars", which are projected by laser into the atmosphere at a height of around 90 kilometers. The complete structure will weigh 3,700 t after completion.

The large-scale project is being financed by the 15 member states of the ESO (European Organization for Astronomical Research). As the largest member, Germany is contributing around 230 million euros towards the total construction costs of 1,104 million euros. In 2016, the construction contract was awarded to an Italian consortium led by the company Cimolai S.p.A..

Responsive and effective support

PERI not only supplied the appropriate formwork and scaffolding solutions, but also contributed to a fast construction process in terms of engineering by searching for and finding the simplest possible assembly solutions, which could

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also be realized thanks to the versatile material. The fact that the PERI Engineers reacted quickly and effectively to special, ad-hoc project requirements and aligned the construction site planning accordingly was also essential for the few time losses. PERI also provided support from a commercial and logistical point of view and thus made a further contribution to efficient construction site execution.

High pressure and load absorption

The foundations for the telescopic structure were laid back in 2018 using the lightweight Handset Alpha panel formwork. TRIO Panel Formwork was used for the massive wall superstructures that now carry the steel structure of the enormous telescopic dome. The 2.40 m x 2.70 m TRIO Panels were designed for the large volume of concrete and the associated high concrete pressure. Almost in parallel, a complex shoring structure grew upwards with the help of ST 100 Stacking Towers to support the loads of the cantilevered platform above. The shoring was erected and dismantled using the stacking principle, whereby the individual frames were quickly and easily assembled without bolts or screws. By combining the Stacking Towers with components from the PERI UP Scaffolding Kit, the accesses to the platform above could then be created.

Flexible solution for a geometrically demanding area

MULTIFLEX Girder Slab Formwork was used for the so-called base in the middle of the ELT, allowing all areas of the circular surface to be covered as quickly and flexibly as possible. The MULTIFLEX Girder Slab Formwork is predestined for challenging geometries, such as the round slab area of the base, as both the spacing of the girders and props and the alignment of the girders can be individually adjusted.

First light is still a while away

After around half of the construction work on the ELT was completed in summer 2023, ESO estimates that the remaining work will probably continue until 2028 before the so-called first light is expected. At first light, the ELT will see real starlight for the first time and will then be able to provide mankind with new insights into the universe.

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About PERI

With a turnover of € 1,812 million in 2024, PERI is one of the largest manufacturers and suppliers of formwork and scaffolding systems. With around 10.000 employees and well over 140 warehouse locations in more than 63 countries, the family-owned company with headquarters in Weissenhorn (Germany) serves its customers with innovative system equipment and comprehensive services relating to all aspects of formwork and scaffolding technology.

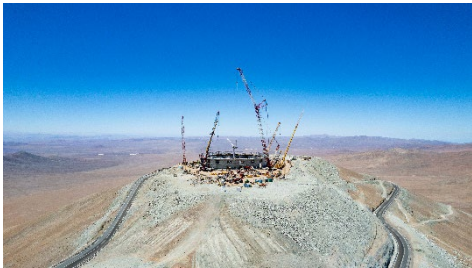


Photo 1

The ELT (Extremely Large Telescope) on the Cerro Armazones mountain in the Chilean Atacama Desert
(Photo: PERI SE)

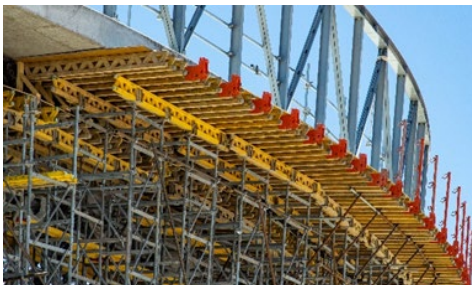


Photo 2

Shoring construction consisting of ST 100 Stacking Towers for load transfer of the cantilevered platform at the top
(Photo: PERI SE)

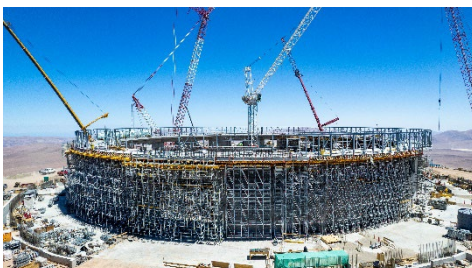


Photo 3

By combining the ST 100 Stacking Towers with components from the PERI UP Scaffolding Kit, access to the platform above could be created
(Photo: PERI SE)

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Photo 4

MULTIFLEX Girder Slab Formwork for fast and flexible covering of the base of the ELT
(Photo: PERI SE)

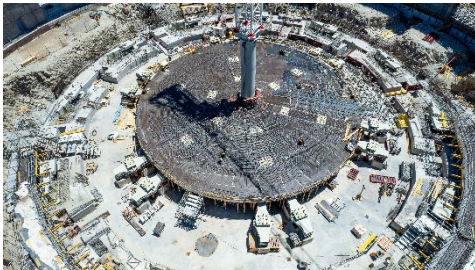


Photo 5

A bird's-eye view of the base of the ELT, which was formed with the MULTIFLEX Girder Slab Formwork
(Photo: PERI SE)

Contractor

Cimolai S.p.A.
Antofagasta, Chile

Field Service

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