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### Dear Business Partners,

After a period of uncertainty, a renewed confidence has come back into the construction sector and we can look back on the last year as hugely positive for the UAE and Oman. Numerous projects were completed across a range of different sectors and at PERI we happily welcomed many new customers.

Dubai's successful bid for the World EXPO 2020, a global recovery from the financial crisis and various regional development projects have pushed the construction sector to the economic forefront once again and the future outlook looks to be both promising and sustainable.

2013 was busier than ever before. This is clearly visible on the numerous construction sites where PERI applications form highrise towers or raise

thousands of square metres of slabs and walls. Our large stockyard in Dubai saw bustling logistics activities on a day-to-day basis, not least in supplying around 2,000 truck loads of formwork to Abu Dhabi's Midfield Terminal Project.

Winning the above project – the biggest ever handled by PERI in the Middle East – emphasises our position as the leading formwork partner, locally and globally. Smaller-scale projects equally benefit from our German engineering strengths, offering solutions for any project size, budget and schedule.

A notable highlight in 2013 was PERI's participation at the bauma Construction Fair in Munich, which saw numerous visitors from the UAE and Oman. The new product developments we introduced there have been well received by our customers. They are already in use at many sites in the region, setting the benchmark for safety and efficiency.

We at PERI believe that the success of construction projects needs far more than just a supplier. The key is to have an innovative partner with unrivalled expertise through all project stages.

In another development we have now launched our plywood business in the UAE and Oman. This completes our product portfolio within the region, making us a one-stop dependable partner.

In this 2014 issue of the PERI scope I invite you to find out more about PERI's new products and a fascinating assortment of our various projects. We look forward to partnering with you for an even more successful 2014.

Ulrich Rottler  
Managing Director PERI L.L.C.

## NEW PERI UP Rosett Flex heavy duty prop The prop with hydraulic lowering and preloading



PERI has introduced the newest addition to its versatile PERI UP product series.

The new heavy duty PERI UP HD prop offers huge advantages in pre-tensioning and shoring. Its smart engineering offers premium features that include:

### A high load-bearing capacity

Up to 200 kN per prop can be transferred safely. With complete versatility built into its design, PERI UP HD props can easily be incorporated in a tower or system layout.

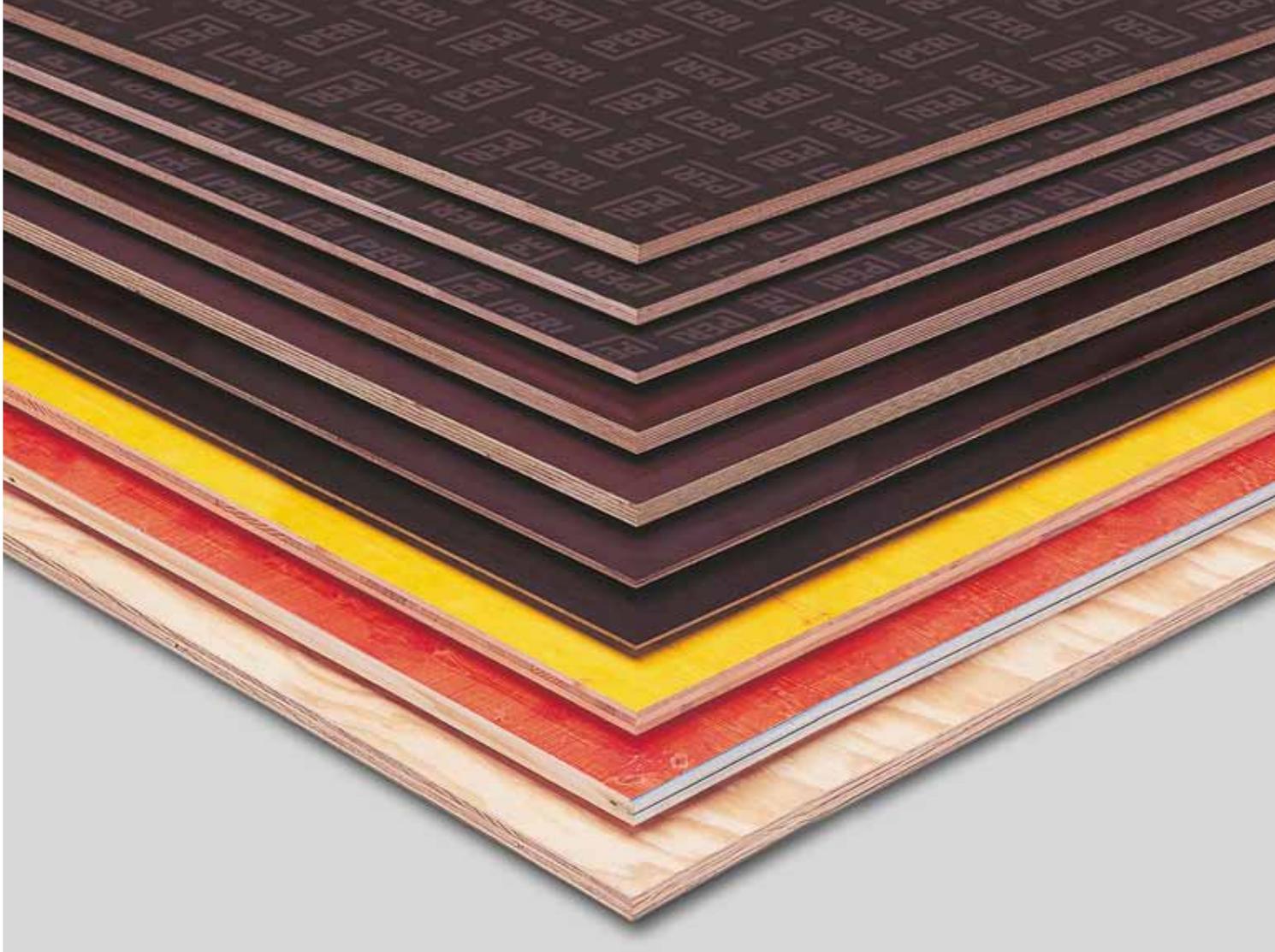
### Safe operations

The hydraulic cylinder allows for controlled lowering by up to 68 mm in 10 mm increments, even under load.

### Economic use

The use of standard components within the PERI UP system lowers investment costs and increases the utilisation of parts.





## **NEW PERI introduces formwork plywood** **The right plywood for every job**

With more than 20 years' experience in plywood trading, PERI brings customers its substantial know-how and links to the best plywood manufacturers globally. Regardless of the formwork systems used or the intended applications, PERI supplies to every construction project. Within a short timeframe, the requested quantities are delivered from our Dubai warehouse facilities.



### **Product range**

Several plywood types are available ranging from top to lower-end quality. Non-typical grades and special sizes are also available upon request.



### **Cost efficiency**

By sourcing all plywood products directly from the global manufacturers, PERI guarantees competitive pricing. PERI high-quality plywood has a high number of uses with lower consumption.



### **Sustainability**

Supporting green construction is a key strategy for PERI, which is certified to FSC (Forest Stewardship Council) and PEFC (Programme for Endorsement of Forest Certification) standards.

# A global traffic hub rises with PERI Midfield Terminal Complex, Abu Dhabi Airport





The massive Midfield Terminal Complex is the ultimate construction site in the Middle East because of its sheer size and the ambitious construction schedule. The completion of construction and operational readiness of the 700,000 m<sup>2</sup> terminal building and ancillary facilities will be achieved in four years' time only.



**Fathi Abdul Muti,**  
**Deputy Project Director:**

*„We met all milestones ahead of schedule which can only be achieved with the right partner and solutions. PERI prove to be very responsive and handled the challenges of such a huge project like ours very well.“*

**Contractor**

Joint Venture of TAV Construction, Consolidated Contractors Company and Arabtec

**Field Service**

PERI Abu Dhabi

**Engineering and Design**

PERI Abu Dhabi and PERI Dubai



The flexibility of VARIO GT 24 allowed easy forming of walls, buttress walls and columns.



Custom fabricated steel formwork and VARIO GT 24 was used for more than 4,000 circular, rectangular and square columns in different dimensions.

PERI's solid track record working on large-scale airport projects across the Middle East, its outstanding product offerings and extensive site support were crucial for winning the largest project the company has handled in the region to-date.

Once fully operational in 2017, the new Midfield Terminal Complex between Abu Dhabi International Airport's two runways will have a footfall of around 35 million passengers. Its main structure, the seven-storey Central Processor, houses the check-in, hospitality and retail facilities as well as the baggage sorting area.

During the project's 18-months construction period all milestones were achieved. This was only possible

through deploying the most advanced formwork applications, more specifically PERI's unique project handling and logistics concept.

The sheer size of the project is represented by the huge quantities of formwork PERI delivered to the site phase-wise. It covered the equivalent of almost 10 soccer pitches, comprising more than 60,000 PD 8 frames, almost 25,000 lm of girders and 9,000 LIWA panels. Strategically delivering the formwork phase-wise ensured no interruption to project schedules without blocking space at site.

The terminal building and its slabs rest on more than 4,000 reinforced columns of different dimensions, for which custom produced steel formwork as well as

VARIO GT 24 was selected. With a requirement to withstand concrete pressure of up to 65 kN, VARIO GT 24 was also used to form core and buttress walls.

PERI engineers developed a flexible solution to suit the different geometries and slab heights of the Central Processor. PD 8 slab tables with MULTIFLEX decking were chosen to form the 65,000 m<sup>2</sup> slab area, as the modular layout of the PD 8 stacking frames allowed quick adaption to the various table heights of more than 10 m.

With limited crane availability, a critical success factor was the ability to reposition the tables manually. With the help of a table trolley, even high tables could be moved to the next section safely

PD 8 towers of up to 10 m height were used for slab support.



LIWA in use as side shutters for the beams.



Quick repositioning of PD 8 towers without crane or disassembly.





**Ma'amoun Abu Jbarah,  
Sr. Project Manager:**

„The supply with material was one of the crucial topics to be mastered. PERI met our requirements and supplied material for ca. 65,000 m<sup>2</sup> – more than double of the initial request.“



**Ali El-Said,  
Sr. Project Manager:**

„I have been working with PERI since long time. They have a solution for every concrete structure to be built, like the unorthodox use of LIWA as sideshutters. Again, the durability and performance of the products was really good.“



**Raymond Rice,  
Sr. Project Manager:**

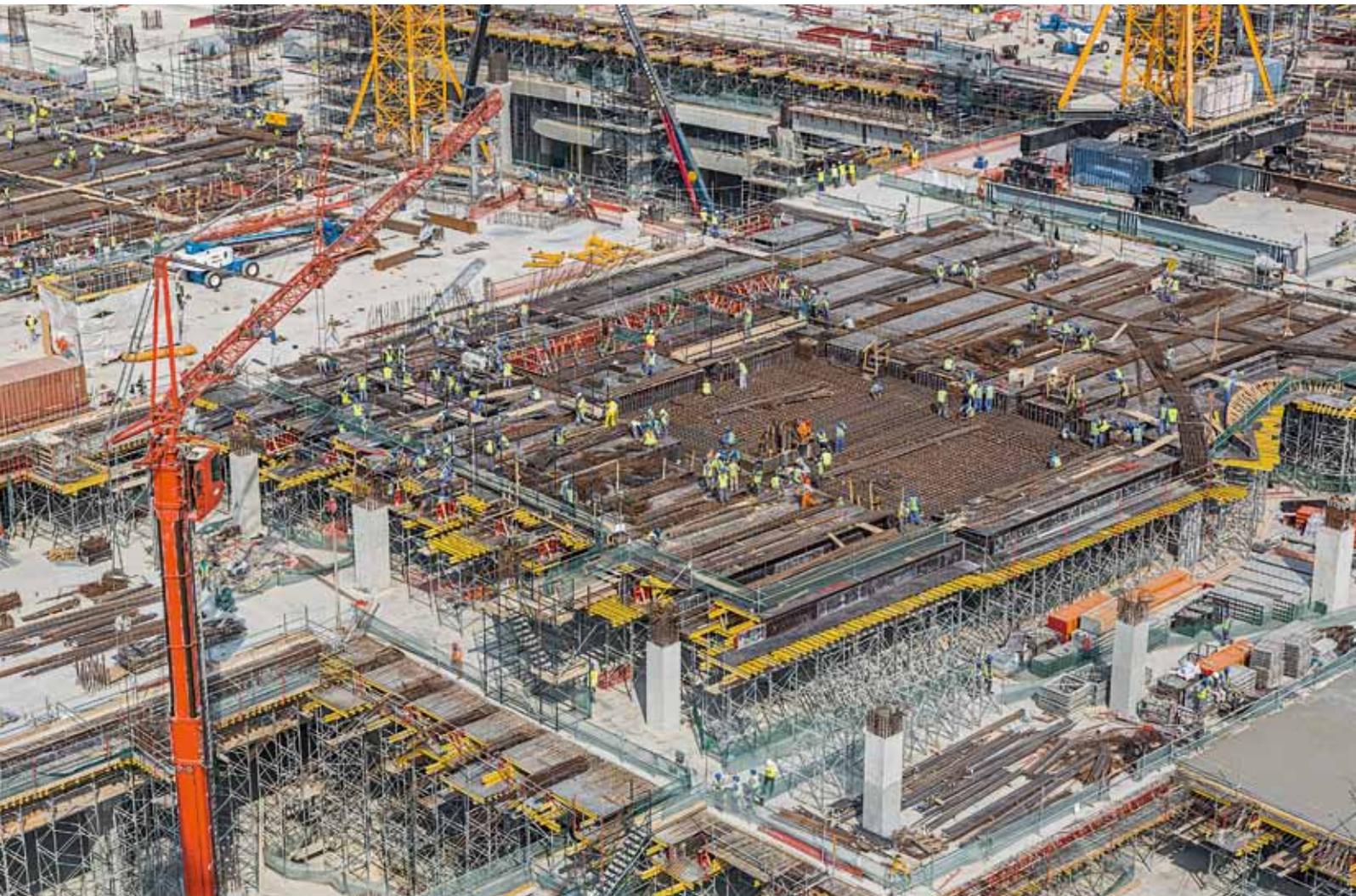
„The know-how in engineering makes the difference. Despite the many design changes of the project, we could rely on efficient technical solutions that helped us greatly in meeting our target.“

and easily by only a few workers. LIWA was used for side shuttering of the massive 0.85 m wide by 1.10 m high beams which were poured together with the slabs. This approach allowed for very easy handling and striking by hand because of the low

weight of the panels. Process efficiencies were further enhanced by PERI's trademark site support. As well as providing a project manager and dedicated formwork instructor, PERI allocated additional supervision to the job site to ensure

smooth operations of the systems throughout their deployment. As a result, the feedback from the client's site managers and workers was positive and well-received in all respects.

Slabs and beams were poured together for a fast and efficient processing of the different sectors.



# NEW PEP Ergo slab props

## Compatible with all PERI slab systems

Takes loads of up to 50 kN

PERI's recently introduced PEP Ergo slab prop family replaces its PEP 10-30 series. Available for both sale and rental, PEP Ergo props are compatible with all PERI slab systems and prop heads, while providing even more advantages. Their capacity factor (load-bearing capacity to prop weight ratio) are now up to 70 % higher than comparable slab props and allow for wider spacing. The prop itself has a lower dead weight, simplifying handling at site.

### Durable

Completely galvanised for a long-service life in tough conditions

### Safe

Certified to load classes B, D and E of DIN standard EN 1065 and DIBt approved

### Sophisticated

Smart solutions improve handling and ensure a high level of safety



#### PEP Ergo B

- Working loads of up to 30 kN
- Extension length up to 3.50 m

#### PEP Ergo D

- Working loads of up to 40 kN
- Extension length up to 5.00 m

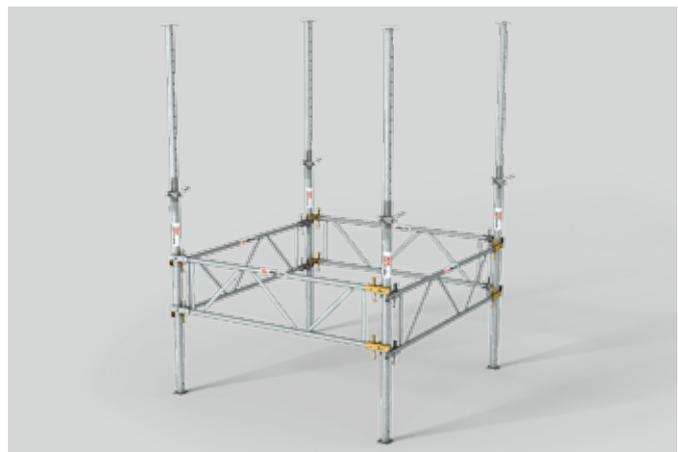
#### PEP Ergo E

- Working loads of up to 50 kN
- Extension length up to 4.00 m

The form of the patented G-hook combines the highest load-bearing capacity with optimum functionality and minimum weight.

The shape of the new lowering nut shows the direction for lowering when under load and ensures damage-free striking.

In addition to the tripod, the PRK frame can be used as an assembly aid.



# PERI SKYDECK

## The most advanced slab formwork system available

**NEW** System components for an even safer and easier handling



**Bassam Shaath,  
Senior Project Manager, ECC:**  
“Our latest project – The Panorama Views in The Greens, Dubai – was the very first time we used PERI SKYDECK, as the 39,000 m<sup>2</sup> slab area had to be formed as efficiently as possible. We have found it to be much more advanced than other slab formwork solutions we have used and it saves us a lot of plywood. The handling is very safe and we can progress fast with less manpower. I definitely recommend it.”

### Efficient handling

With very few system components, PERI SKYDECK reduces onsite material stocks and guarantees the simple, systematic erection of large areas without intense training.

### High-quality plywood

All panels are equipped with PERI FinPly plywood panels, a high-quality Nordic hardwood for a very smooth concrete finish and high number of reuses.

### Lightweight

All components are made of lightweight aluminum. The standard beam and largest panels weigh less than 16 kg and can be handled by a single labourer.

### Early striking

Early striking is possible after just one day – depending on the prop head, slab thickness and concrete strength.

### NEW

#### Additional safety component

The new guardrail for fall protection allows installation in any position on the main beams without tools.



### NEW

#### Prop head

Allows a change in direction of the SKYDECK main beams – and thus also the panels.

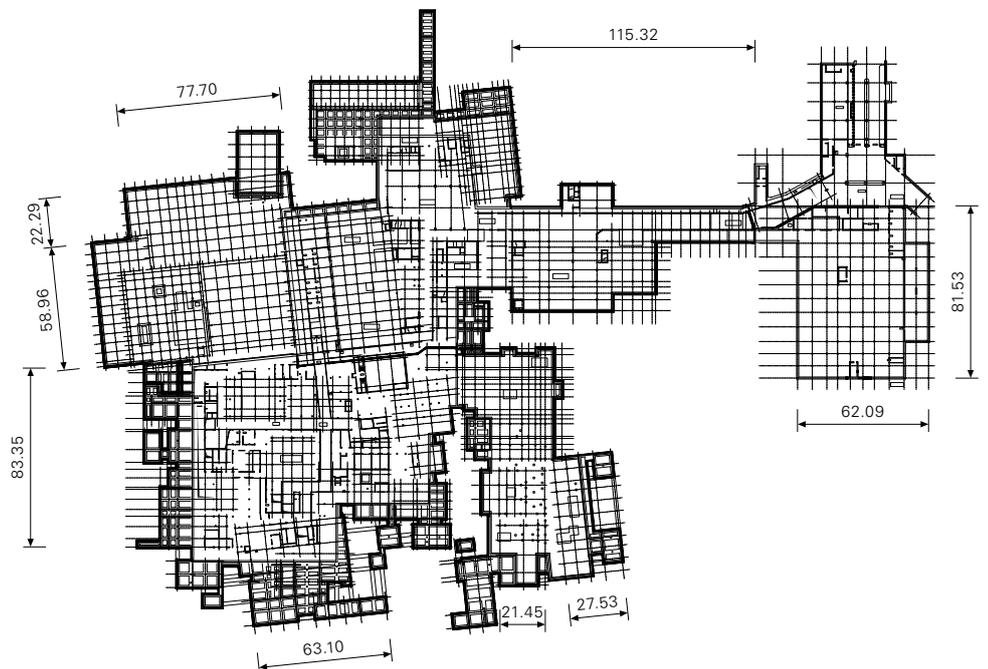


# Building a new home for world class art

The Louvre Abu Dhabi Museum



**Antonio Bermudez,**  
**Construction Project Manager:**  
"We have often used PERI in the past. Once again this time around they were clearly the best option. The carpenters here in the region are well familiar with the VARIO GT 24 system – not only for its versatility and easy handling, but also the technically-perfect shop drawings which lead to very smooth operations at site."





Courtesy of TDIC

Enabled by PERI technology, a groundbreaking and unique new project has taken shape on Abu Dhabi's Saadiyat Island. Designed by the famous French architect Jean Nouvel, the Louvre Abu Dhabi Museum will be the first building complex in Saadiyat Island's Cultural District, and the world's third Louvre Museum to open after its famous French counterparts in Paris and Lens. The Cultural District will later also be home to the Zayed National Museum



and the world's largest Guggenheim Museum.

With a scheduled opening in 2015, the Louvre Abu Dhabi Museum will exhibit contemporary and historic world class art from various cultures and eras. Its ambitious design, dominated by a huge umbrella-like dome, incorporates both arabesque and modern elements. The dome itself spans over 180 m and partially covers a complex of plazas, pavilions and seawater canals, creating the impression of a city floating in the sea. The joint venture of Arabtec, San Jose Constructora and Oger Abu Dhabi awarded PERI the contract to deliver its proven German-made formwork systems. This was in no small part because of PERI's broad experience in creating sophisticated designs. PERI's engineering expertise has been deployed on several impressive cultural projects, most notably the Sheikh

**Contractor**

Joint Venture of Arabtec, San Jose Constructora and Oger Abu Dhabi

**Field Service**

PERI Abu Dhabi

**Engineering and Design**

PERI Abu Dhabi and PERI Dubai



Courtesy of TDIC

Zayed Desert Learning Centre in Al Ain. Around 200,000 m<sup>2</sup> of vertical structures, such as columns, retaining walls and the huge dome piers, were formed using PERI's VARIO GT 24 system. It allows for an optimal customisation of panel dimensions and a variable spacing of GT 24 girders, steel walers and tie rods. The system also allows for the absorption of high concrete pressure, such as for the various 100 cm thick and 6.90 m high retaining walls specifically-designed to protect the museum from seawater. Supported by CB 240 climbing brackets, large-sized VARIO GT 24 panels were also employed to form the dome piers. Contractors greatly appreciated PERI's engineering support, which included a dedicated site supervisor and the provision of hundreds of shop drawings in sequence of the casting schedule. This significantly contributed to meeting the project timelines.

## GT 24 formwork girder

High load-bearing capacity at low weight



**PERI's GT 24 is the most advanced girder available for slab, wall and column formwork.**

Weighing the same as common formwork girders, the GT 24 offers unrivalled advantages at site due to its

high load-bearing capacity. These include lower material requirements, higher utilisation rates and subsequently less asset costs – both for girders and other system components such as props or walers. Specifications include:

- Light weight of only 5.9 kg/m
- 14 kN permissible shear force
- 7.0 kNm permissible bending moment
- 18 standard lengths available

# Practical and efficient formwork and shoring solution for a dual carriageway

Al-Batinah Coastal Road flyover, Sohar, Sultanate of Oman



**Contractor**  
NCC  
**Field Service**  
PERI Dubai  
**Engineering and Design**  
PERI Oman

**G Punnaiah, Deputy GM:**  
“PERI understands our needs and always delivers promptly. This is one of many projects we have worked on with them, and as always they provided a very practicable and efficient solution.”

acity. Following an initial mock-up, PERI delivered three sets of PD 8 towers, customised deck slabs and cantilever GT 24 formwork. Each set of the 10.70 m high PD 8 towers covered a 120 m stretch and transferred a legload of up to 55 kN safely into the ground.

PD 8 shoring again proved to be the most versatile and efficient solution for bridge projects.

As Oman continues to invest heavily in upgrading its infrastructure, a current major development is the 240 km long Al-Batinah Coastal Road. As part of

the project, NCC constructed a flyover near Sohar, heavily relying on a comprehensive PERI solution. Completion of the 360 m long dual carriageway within the tight 9-months schedule was only possible by combining simple handling with a high load-bearing cap-

Operations at site progressed rapidly through the system’s simple handling, along with PERI’s comprehensive site support. Through innovative technologies backed-up by an on-site team of experts, NCC and PERI have since formed a fruitful long-term partnership.

## PERI shoring solutions for infrastructure projects

### PD 8

- Standard base layout 1.5 m x 1.5 m
- Heights of over 20 m
- Up to 85 kN legload (PD 8 HD version)



### PERI UP

- Flexible base layout
- Heights of over 60 m
- Up to 50 kN legload



### VARIOKIT heavy duty shoring tower

- 2 m x 2 m base layout
- Heights of up to 40 m
- Up to 700 kN legload



# Sophisticated PERI tunnel formwork solution and best project support

Tunnel in Muscat, Sultanate of Oman



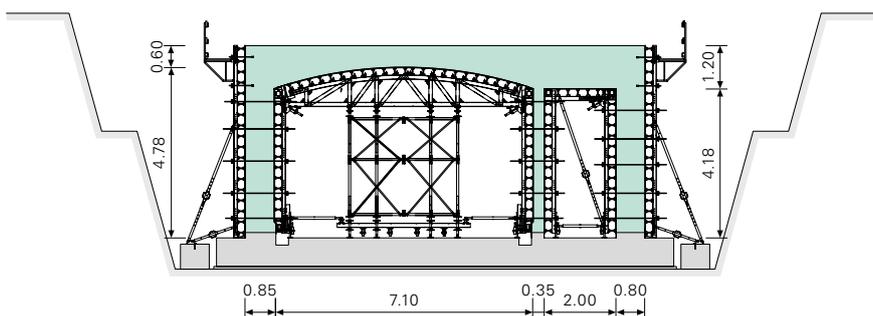
Enabled by customized PERI tunnel formwork, a rapid four-day cycle per section was achieved at a tunnel construction site near Muscat. All 15 m long sections of the 940 m long tunnel were cast monolithically in an alternating sequence using four formwork sets. The smaller tube was formed with pre-assembled VARIO VT 20 profiles, moved into position by crane, whereas

the main tube was built using a carriage comprising movable PD 8 HD towers with a custom fabricated steel arch. Through its cost-effective and flexible design, the side shutters and decking also relied on VARIO VT 20. Additionally, MULTIPROP was used for back-propping while cast sections were curing. The impressive results of the PERI solution understandably delighted the customer.



**Mansour El Akouri,**  
**Construction Manager:**

**“We chose PERI because of the local support and the technical expertise they provide in every detail. The speed and efficiency we were able to achieve throughout the project is unthinkable with any other system.”**



Comprehensive design and support services from PERI Engineering ensure successful construction of most complex projects.

**Contractor**  
Saroj Construction Company  
**Field Service**  
PERI Dubai  
**Engineering and Design**  
PERI Oman



# Setting the new scaffolding standard for the Middle East

## Modular scaffold PERI UP Rosett Flex

PERI UP offers a combination of flexibility, cost efficiency and safety due to its smart design. The main components of the modular scaffolding, such as standards, ledgers and decks, have uniform length dimensions of 25 cm or 50 cm. The wide range of ledgers with lengths starting from 25 cm ensures maximum adaptability to suit project-specific geometries.

### Flexibility

PERI UP is a modular scaffold that consists of only a few standard components, which allow a variety of shoring and scaffolding applications on-site.

### Cost efficiency

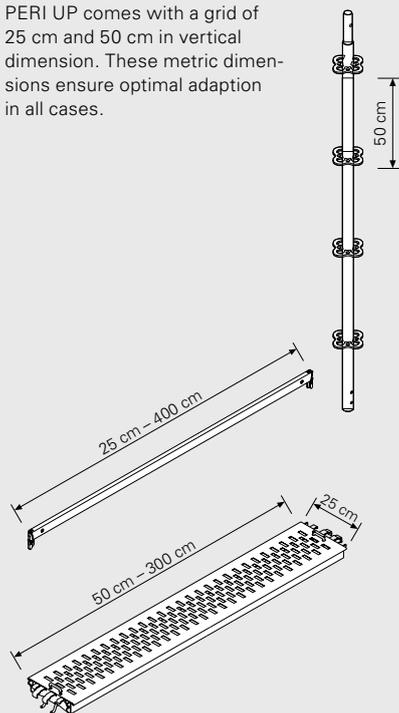
PERI UP saves investment costs due to its versatility and high erection and dismantling productivity. As with all PERI systems, PERI provides comprehensive on-site training.

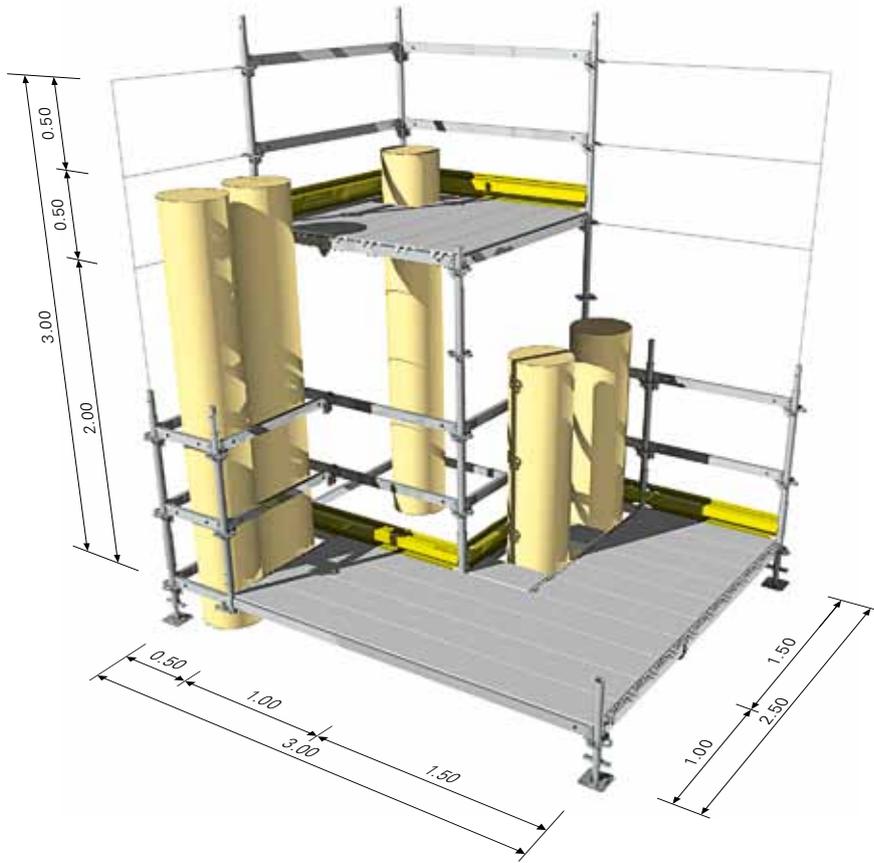
### Safety

PERI UP is certified to highest European safety standards and features reinforced wedges and gravity locks for safe erection and dismantling.



PERI UP comes with a grid of 25 cm and 50 cm in vertical dimension. These metric dimensions ensure optimal adaption in all cases.





PERI UP scaffolding offers maximum flexibility in scaffolding construction. The UDG industrial decks are self-locking and can be fitted to every horizontal ledger. No special transoms or couplers are required.

### Applications

- Stair Tower
- Reinforcement Scaffold
- Facade Scaffold
- Industrial Scaffold
- Shoring
- Working Platforms
- Cradles
- Weather Protection Roofs
- Birdcage Scaffold
- Suspended Scaffold

### Flexible shoring solution

PERI UP is designed for a high load-bearing capacity, various footprints and heights. It can also support loose decks or slab tables. Leg-loads of up to 50 kN are standard, while highly-concentrated loads can be transferred safely into the ground using a leg spacing of 25 cm.

### Protection roofs with LGS

Spanning up to 32 m, PERI UP protection roofs provide complete weather protection throughout the summer and give your workers a chance to escape the direct sun. Slow concrete settlement also ensures high-quality finishings (e.g. bridges). The LGS (lattice girder system) is mounted on rails, allowing for easy repositioning without dismantling.

### Stair towers

PERI UP stair towers guarantee safe access to heights of up to 90 m and stair widths of up to 1.25 m. Individual stair tower units can be lifted in by crane or erected horizontally before being positioned.

### UFS 20 trolleys

The UFS 20 trolley is the ideal solution when cradles are needed. With a load capacity of 20 kN, various shapes of working platforms can ease access to e.g. facades or roofs. These platforms are assembled with PERI UP standard components and allow for easy repositioning. Provided the loads can be transferred safely into the structure, the trolley can be fixed to any steel beam on site.



# Where to find us

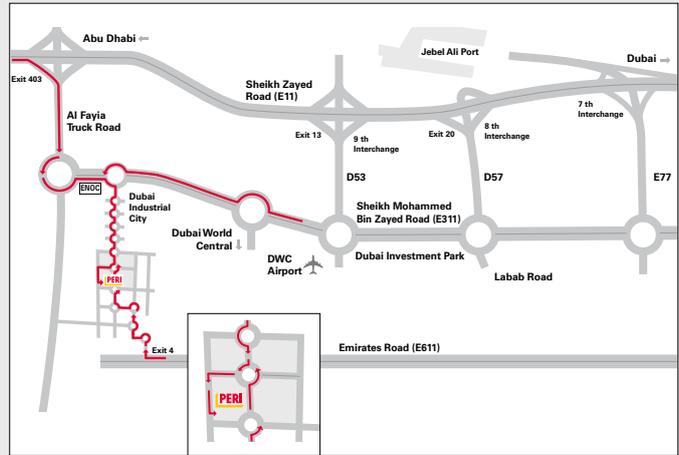
## PERI Offices and Stockyard

### Head Office Dubai



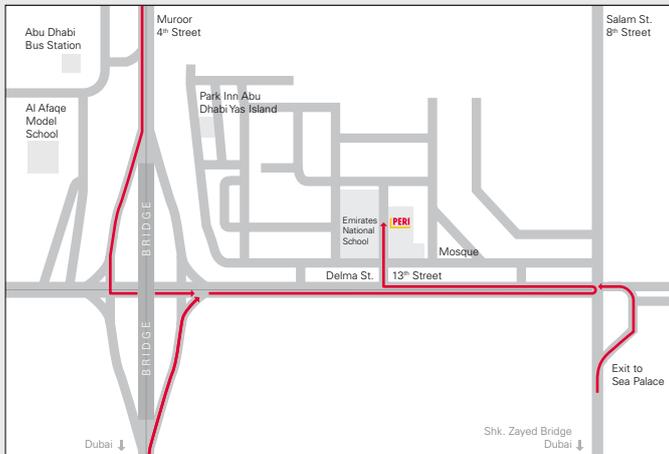
Palace Towers, 24<sup>th</sup> floor  
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 Phone +971 (0)43 26 29 92  
 Fax +971 (0)43 26 29 93  
[perillc@perime.com](mailto:perillc@perime.com)

### Stockyard Dubai



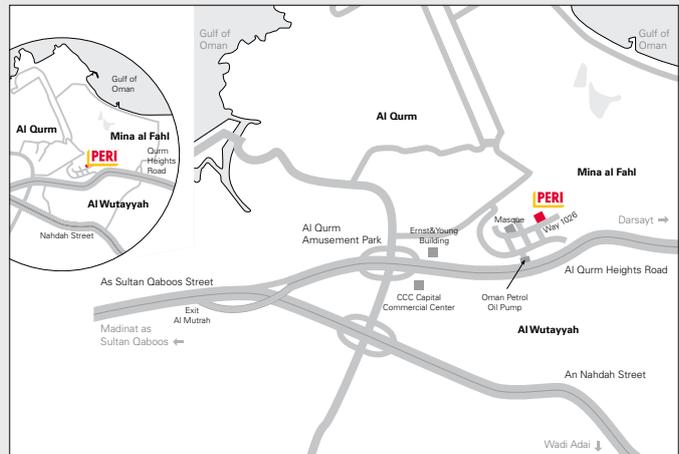
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The photographs in this brochure feature construction sites in progress. For this reason especially safety and anchor details cannot always be considered as conclusive or final. These are subject to the risk assessment carried out by the contractor.

© PERI GmbH



**Formwork  
 Scaffolding  
 Engineering**

[www.perime.com](http://www.perime.com)

# PERI Formwork Plywood

## Enhancing the lifetime of plywood panels

Proper and careful handling as well as cleaning enhances the lifetime of plywood panels. Kindly read through this guide of how to handle and use your PERI formwork plywood to achieve a maximum of re-uses.

### Storage

- Protect the panels from contact with water and direct sunlight.
- To avoid deflection store on leveled ground only.

### Preparation for forming

All coated PERI plywood panels are delivered with the edges painted to protect all four edges and to reduce moisture penetration. After cutting or drilling the plywood panels the following should be observed:

- Fill the gaps between the veneers on the edges with putty and seal the edges afterwards.
- Pilot the tie-rod holes first and then drill them.
- Paint the unprotected edges and drill holes with an edge sealant at least once.

Examples of good products to be used as edge sealant are:

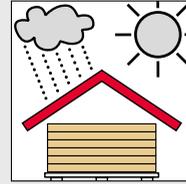
- HEMPEL SQD Enamel 530 AE
  - Industrial Quick Drying Enamel
  - Oasis QD Industrial Enamel
- Oil the panels before **every** use. For the best result use a high-quality and biodegradable release agent, such as PERI Bio Clean.

For the best results and for minimal damage to the panel surface, the plywood should be fastened from the back of the panels to the support.

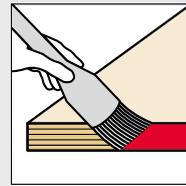
### After use

- Clean the plywood panels immediately and do not damage the surface, use preferably plastic or nylon tools.
- Clean the surface with soap water to degrease the surface before applying a release agent again.
- Repair small scratches with a suitable mastic/arabic gum.
- Fill deeper scratches, nail or screw holes with mastic or epoxy filler.

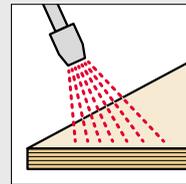
The above is a guide only, PERI does not accept any liability and/or responsibility when it comes to the number of re-uses or the concrete surface quality. There are many other factors out of the influence of PERI that will affect them both.



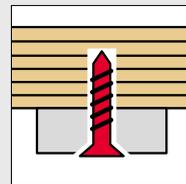
**Protect from weather**



**Seal edges and holes**



**Oil panels before use**



**Back face fastening**



**Clean panels after use**



**Formwork  
Scaffolding  
Engineering**

[www.perime.com](http://www.perime.com)

# Introduction Promotion

## PERI formwork plywood

### PERI Birch

- Nordic birch plywood, 13 ply construction
- Coated both sides with a dark-brown 120 g/sqm phenolic film with PERI logo
- WBP glueing according to DIN 68705
- Sealed edges



Item No.: 52805  
 Thickness: 18 mm  
 Panel size: 1220 x 2440 mm  
 Weight: 12.6 kg/sqm  
 Shipment: 33 sheets/pallet  
 Approximately up to 50 uses\*

**Ideal for fair-faced concrete surfaces for walls and slabs**

### Pinefilm

- South American Plywood, 13-ply construction
- Coated both sides with a dark brown 120g/sqm phenolic resin film
- WBP glue
- Sealed edges



Item No.: 050862  
 Thickness: 18 mm  
 Panel size: 2440 x 1220 mm  
 Weight: 11.8 kg/m<sup>2</sup>  
 Shipment: 53 sheets/pallet  
 Approximately up to 20 uses\*

**Reliable formwork panel for medium requirements**

### Eucafilm

- Eucalyptus plywood, 9-11 ply construction
- Coated both sides with a brown 200 g/sqm film with Eucafilm logo
- WBP glue
- Sealed edges



Item No.: 50750  
 Thickness: 18 mm  
 Panel size: 1220 x 2440 mm  
 Weight: 10.4 kg/sqm  
 Shipment: 50 sheets/pallet  
 Approximately up to 10 uses\*

**Our bestseller in Europe for smooth concrete surfaces**

### Betoplex

- Combi core, 11-13 ply construction
- Coated both sides with a 200 g/sqm film with Betoplex logo
- WBP glue
- Sealed edges



Item No.: 50060  
 Thickness: 18 mm  
 Panel size: 1220 x 2440 mm  
 Weight: 9.5 kg/sqm  
 Shipment: 50 sheets/pallet  
 Approximately up to 5 uses\*

**An efficient plywood for flat concrete finish**

### Replex

- Poplar plywood
- Coated both sides with a 200 g/sqm film
- WBP glue
- Sealed edges



Item No.: 50059  
 Thickness: 18 mm  
 Panel size: 1220 x 2440 mm  
 Weight: 9.5 kg/sqm  
 Shipment: 50 sheets/pallet  
 Approximately up to 2 uses\*

**An inexpensive solution for slabs**

**Other types of plywood and special sizes are available on request.**

For your personal offer please call your PERI Sales Manager or one of our offices at:

Dubai +971 (0)4.3 26 2992

Abu Dhabi +971 (0)2.6 79 8804

Oman +968 (0)2.4 57 1090

### Terms and conditions apply.

\* The given number of re-uses are only non-binding guide values. The actual number of re-uses may vary depending on the application and the type of use and handling.



**Formwork  
 Scaffolding  
 Engineering**

[www.perime.com](http://www.perime.com)