



Successful construction with PERI



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Welcome to PERI scope

In 2007 the formwork industry benefited directly from continued growth in the concrete sector. At PERI this was reflected by another record year both in the UK and internationally.

In the UK our response to a changing health and safety environment paid dividends. Lightweight aluminium falsework systems have become widely accepted as the best means of controlling the risks associated with work at height. As a result the use of SKYDECK which incorporates an effective edge protection solution increased significantly through 2007.

For medium to high rise construction our full weather protection and safety screening system, RCS P, is

being used throughout the UK. We are delighted that the product, and in particular its climbing mechanism, was recently awarded the Construct Award for Innovation and Best Practice 2007, recognising its contribution both to safety and productivity.

In May 2007 PERI UK's presence at SED was dedicated to exhibiting the features and benefits of our PERI UP Rosett Flex scaffolding system. We have been very pleased by the industry response to this exciting

A cost-effective and safe alternative: PERI UP Rosett Flex shoring

Longannet Coal-fired Power Station, Kincardine

Contractor:
Morgan Est Plc, Rugby
Field Service:
PERI UK Glasgow Office



**Alex Blair,
Senior Works Manager:**
"Technical input was excellent from outline design and equipment supply to on site support and training. The design fully addressed all the health and safety requirements."

PERI UP Industrial Staricase provided safe access to the FB 180 working platforms.



Front Cover:
Adapted VARIO and CB 240 to form two 20 m dia. circular tanks at Clench Warton STW.
See more on page 8

new product which takes both safety and adaptability to a new level in the scaffolding sector.

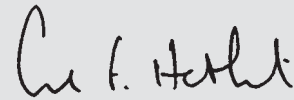
The construction industry cannot avoid the challenge presented by the need to protect the environment and to ensure long term sustainability of resources. PERI believes these challenges also present significant opportunities for innovative market players. In the UK, we have gained FSC and PEFC accreditation to supply sustainable plywood and timber products to meet the increasing

levels of specification in this area. We have also achieved ISO14001 Environmental Certification.

In Germany the major expansion of our factory, to almost double production capacity, has incorporated the construction of an on site biomass power station to recycle waste into energy, a further sign of PERI's commitment to environmentally responsible policies.

Our major objective and focus

continues to be the support of our customers through the expertise of our engineers, the quality and innovation of our products and the highest level of service. We thank you for the continued trust you place in PERI and look forward to serving your needs in 2008.



Carl Heathcote
Managing Director

Clear safe access provided by FB 180 working platforms.



To ensure a successful introduction to the system, PERI's scaffolding product manager spent several



days at the site instructing the scaffolders on safe use of the system.

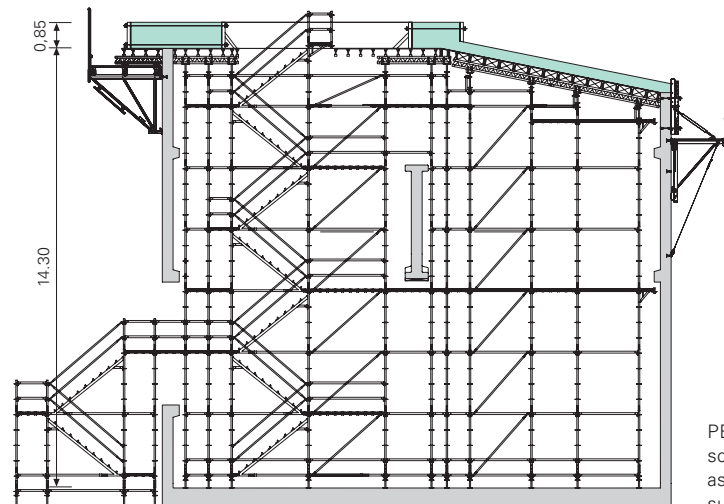


A consortium of Alstom and Amec Industrial have been commissioned to install a Sea Water FGD plant as part of a major capital improvement programme by Scottish Power that will secure the future of Longannet Power Station – the second largest coal-fired power station in Europe. The Flue Gas Desulphurisation (FGD) facility uses sea water to remove sulphur dioxide from exhaust gases. The process predominantly takes place in three cubical RC containers (Absorbers) that measure 15 x 15 x 15 m.

To form the 350 mm walls of the structures, Amec Industrial's contractor Morgan EST plc opted to use TRIO panel wall formwork with FB 180 and CBC access platforms as required. In addition, MULTIPROP strike-and-erect falsework supported panels casting large internal beams. In order to pour the roof of the Absorbers, all equipment was removed and replaced with an internal birdcage of PERI UP Rosett Flex scaffolding. This supported and gave access to GT 24 based traditional slab formwork. The scaffolding

system has load-bearing characteristics similar to an aluminium prop system, but in this case it was a more cost effective solution. More importantly it could be integrated with a complete access system of staircases and levels of decking that ensured safe erection of the falsework and preparation of the slab itself. Being one of the newest scaffold systems on the market, the system has many exclusive features

that set it apart from its competitors. The components are designed to a metric 250 mm module system that contributes to its compatibility with all building dimensions. Additional features include self-locking decks and a unique wedge-based connection to the rosette which allows ledgers to be partially fixed by hand before finally securing with a single hammer blow.



PERI UP Rosett Flex scaffolding used as a 'bird cage' to support the soffit.

16 m MULTIPROP falsework and inclined TRIO columns for architectural icon

Enterprise House, Cardiff



**Dean Pumford,
Site Foreman:**
“The design of PERI systems and components is always first-rate. TRIO panels are particularly fast and easy to use while the MULTIPROP strike-and-erect system enabled us to successfully form the challenging slabs.”

Contractor:
Thames Valley Construction Ltd,
Beaconsfield, BUCKS
Field Service:
PERI UK, Dartford Office

The Atrium in Cardiff is a new campus of the University of Glamorgan that will house the Cardiff school of Creative and Cultural Industries. Described as an architectural icon, the Atrium is due to open in September 2007.

The complicated design of the concrete shell presented many challenges to PERI design engineers particularly due to the varying dimen-

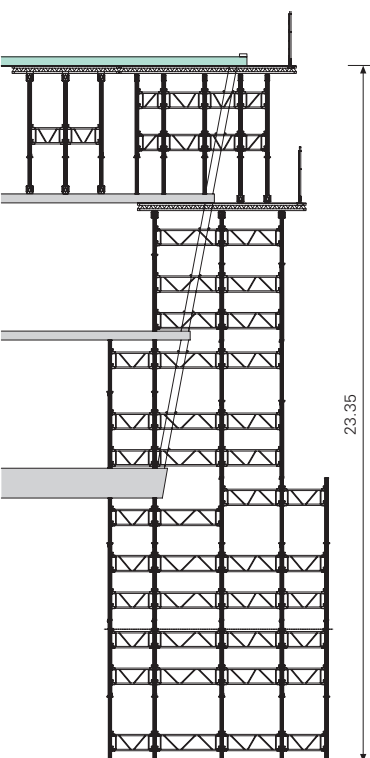
sions of each consecutive slab. While the middle section of each slab remained fairly constant, the floor sections at the rear of the building alternated between a slab and a ring beam arrangement.

At the front of the building, each slab cantilevered out further than the one below it. At times this required MULTIPROP shoring heights of over 16 m to safely sup-

port the protruding slabs from the ground rather than using cantilevered falsework. While the slab and beams were formed with strike-and-erect MULTIPROP and aluminium beam falsework, the vertical elements of the structure were formed with a combination of TRIO and VARIO formwork.

At the face of the building, where inclined columns needed to be formed, TRIO panels braced with Push-Pull props were successfully employed. This included the 2-storey inclined column that had to support most of the cantilevering front end of the building and was nicknamed “The elephants foot” on site, due to its shear size.

In just 21 weeks on site, sub-contractors Thames Valley Construction successfully formed the impressive and challenging five-storey concrete structure.



The cantilevering slabs required MULTIPROP shoring heights of up to 16 m.



An arrangement of MULTIPROP Strike-and-erect falsework utilising aluminium beams as primary girders.



Pouring of one of the TRIO columns.

PERI's RCS P System offers protection and promotion

The Elektron Buildings, London E14



On a site bisected by the Greenwich Meridian line, the Elektron development consists of two 22-storey buildings and a 25-storey building that will provide 437 apartments in the Tower Hamlets borough of London.

Sub-contractors Atlantic Contracts Ltd (who are part of the Masterson Holdings Group of companies that also include Getjar Ltd and Glencoe Plant Services Ltd) complimented SKYDECK aluminium panel slab formwork with the RCS P (Rail climbed protection panels)

system on all three buildings. While protecting personnel from poor weather and falls from height, the system also provides access platforms around the slab formwork; this results in safer slab preparation and concreting.

Aside from the safety benefits enjoyed by Atlantic, the system also provided their client – Barratt Homes – an opportunity to promote their venture on over 1,500 m² of advertising space in a prominent, and otherwise very expensive, location.

The steel frames for the RCS P panels were pre-assembled at the PERI depot in Rugby and shipped to site where they were completed with timber struts and faced with plywood. Finally they were finished with Barratt's logo and advertising message before being attached to the structure with PERI's award-winning climbing shoe.



Contractor:
Atlantic Contracts Ltd, Hemel Hempstead, HERTS
Field Service:
PERI UK, Rugby Office



Eamon Munnely, Construction Manager:
"Following our successful use of the RCS P system on a previous project we had no hesitation in specifying it for the Elektron Buildings. The RCS P panels created a safe working environment and provided protection from the wind and rain allowing construction to proceed on programme."



Investment in equipment produces successful results

South Quay Development, Swansea



**John Fletcher,
Site Manager:**

"This is the first time I've used the SKYDECK system and I will definitely be using it again. PERI always provide good designs and delivery of equipment is well organised."

In the Nineteenth Century, Swansea Docks was one of the largest shipping ports in the world. As part of its regeneration, The Swansea Waterfront development will see the conception of over 2,000 new apartments and houses in addition to commercial, retail and leisure facilities.

Quest Property Ltd's project to create 162 such apartments has been managed by Main Contractor Sir Alfred McAlpine who in turn handed responsibility of the concrete structure to Don Hayes and Sons Ltd.

On site, there was an impressive variety of PERI equipment used ranging from VARIO girder wall Formwork to QUATTRO and TRIO column forms. For the slabs, both SKYDECK and MULTIPROP strike-and-erect systems were employed in combination to maximise turnaround.

This development is a prime example of how investment in equipment backed-up with thorough designs and logistical support can contribute to the success of a project.

SKYDECK panel slab formwork.



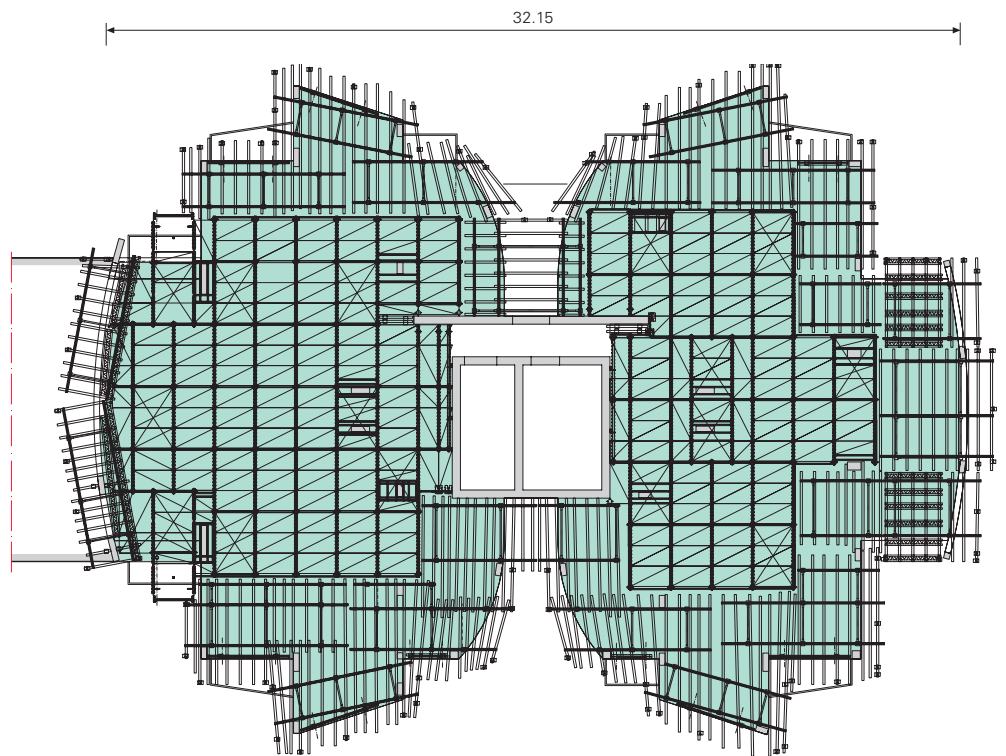
Positioning of the VARIO panels by site personnel.



Contractor:
Don Hayes & Sons Ltd, Swansea
Field Service:
PERI UK, Dartford & Bristol Office



To provide safe access, MULTIPROP strike-and-erect formwork utilising aluminium beams was erected around the perimeter of the slab. Meanwhile, the area of SKYDECK used internally was maximised for speed and safety. The simple system enabled very fast erection without the need for working at height.



Plan showing different areas of MULTIPROP and SKYDECK for slab construction.



Don Hayes and Sons Ltd complimented their existing stock of TRIO Column Formwork with QUATTRO to minimise crane use. QUATTRO formwork can be moved around the slabs manually due to its low weight and castor wheels.

Adapted VARIO and CB 240 used to form two 20 m circular tanks

Clench Warton STW, King's Lynn, Norfolk

Contractor:

Bell Formwork Services Ltd, Spalding, Lincs

Field Service:

PERI UK, Rugby Office



**Stuart Edwards,
Site Supervisor:**

"From the time of our early involvement in this major project, we looked to PERI for assistance. The pre-fabricated curved VARIO system and the technical support offered were excellent and when problems arose they were quickly solved. We would have no hesitation in using PERI again."



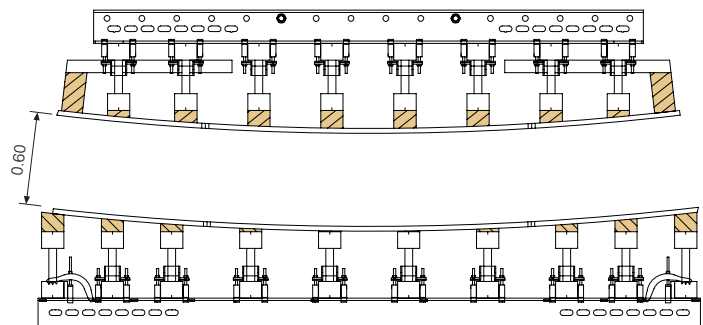
On the banks of The Wash in King's Lynn, Norfolk, Principal Contractor Galliford Try-Meica is overseeing the £25 million construction of a new Bio-solids Treatment Centre.

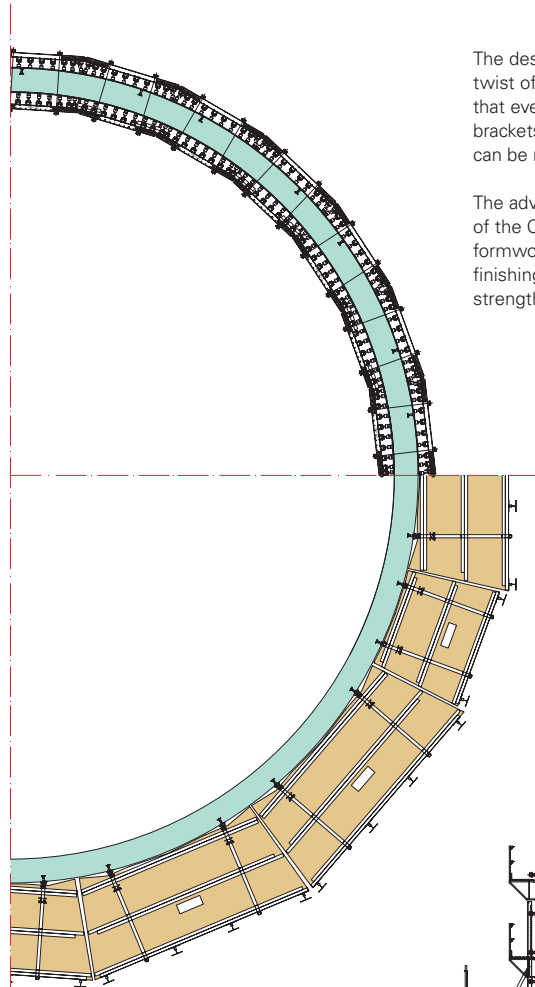
Sub contractor, Bell Formwork Services Ltd were offered a £1.5 million contract to build the two 20 m diameter concrete tanks. Working in cooperation with PERI, they decided to pour the 20 m high tank walls in four pours using 5 m high adapted VARIO curved shutters.

After pouring the first lift, CB 240 climbing scaffold was brought in to support the formwork and provide access. The nature of the CBC system means that the shutters and platforms can be craned up to the next level, even during the episodic, strong winds coming in from The Wash. As a result, the entire external formwork for each tank could be raised in a mere six hours. Bell Formwork, who have been specialising in RC construction for 35 years, appreciated the expertise

offered by PERI early at the pre-tender stage. The partnership evolved successfully throughout the project with the PERI fabrication department pre-assembling high quality curved shutters, and the technical department offering attentive, ongoing support to the initial design. When Bell decided to double their order to one set of formwork per tank, in order to meet the demanding program schedule, PERI fabricated and delivered an additional 54 curved shutters on schedule.

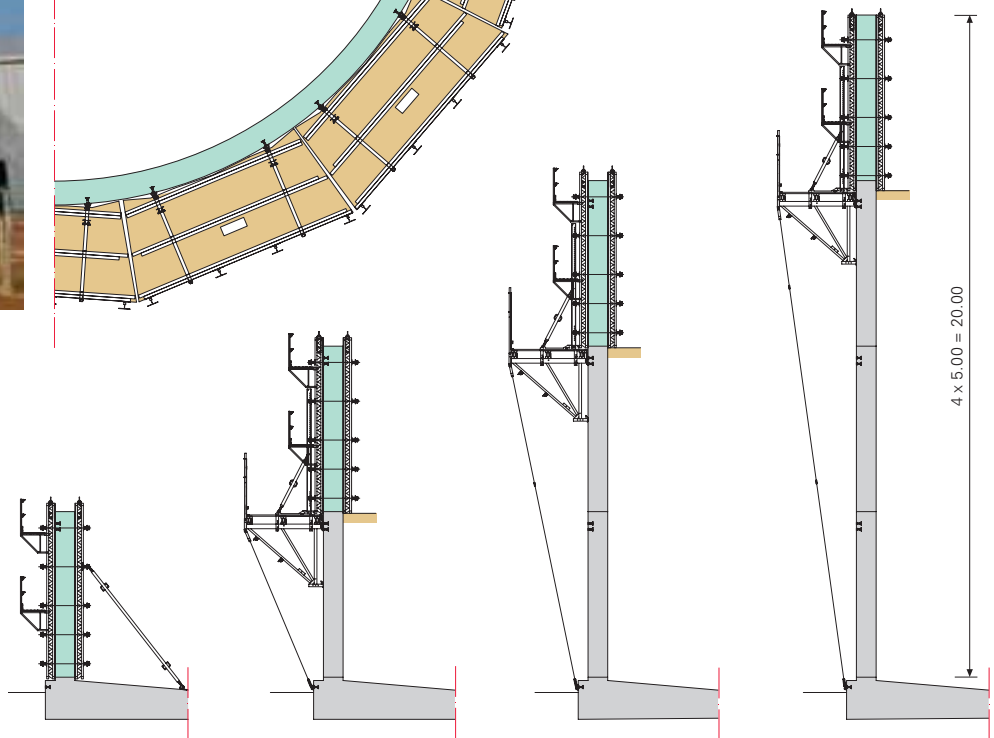
The adapted VARIO curved shutters are fabricated in much the same way as standard VARIO shutters on a grid of GT 24 girders and steel walers. Timber batons of varying cross-sections are fastened along the length of the girders to produce the curved surface over which the ply form-face is fixed.





The design of the CB 240 allows for a maximum twist of 5° in the scaffold mounting. This means that even on circular structures, the CB 240 scaffold brackets (which incorporates the formwork carriage) can be mounted in parallel to each other.

The advantage of this is that the retractable carriage of the CB 240 platforms can then operate to pull the formwork back from the wall, enabling access for finishing, while the concrete reaches the required strength to support the next lift.



Fabricated panels await delivery at PERI's Rugby depot.



MULTIPROP falsework used to support 3,500 tonne slab

New Shires Shopping Centre, Leicester

Contractor:
Byrne Bros. (Formwork) Ltd, London
Field Service:
PERI UK, Rugby Office



**Don Houston,
Senior Project Manager:**
"We found the simplicity of the TRIO system very impressive. As it can be largely man-handled, it was extremely useful where awkward building layouts restricted access."



The successful installation of the carpark access area was the result of a 6-month team effort between Byrne Bros., Sir Robert McAlpine, Watermans Engineers and PERI Ltd. In order to allow for sag under its enormous self-load, the slab was pre-cambered by a maximum of 50 mm.



As part of massive investment in the City of Leicester's infrastructure, Sir Robert McAlpine have been awarded the design and build contract of a £350 million redevelopment at the heart of the city.

Doubling the size of the existing shopping centre with an additional 600,000 sq ft of retail area, the High-cross Quarter project is expected to require 150,000 tonnes of concrete which is being managed by sub-contractor Byrne Bros. (formwork) Ltd.

Byrne Bros. chose to use they're existing stock of VARIO girder wall formwork alongside PERI CB 240 climbing scaffold on 11 of the projects 15 cores. The TRIO panels on the remaining four cores were hired additionally in order to make a comparison of the two systems.

30 m long, 4 m high Reinforced concrete 'I'-beam containing 90 tonnes of steel reinforcement. The operation took six months to plan and utilised 800 PERI MULTIPROPs with accompanying Aluminium beams and GT 24 girders.

Forming car park access over the shopping centres central atrium, a massive 3,500 tonne slab with a soffit height of 14.50 m was required to be cast in-situ. The backbone of the slab is a



Crane availability problems solved with PERI SKYDECK

Atlanta Boulevard, Romford



TRIO panel wall formwork used to form the columns. Formwork erection and pouring of ten columns could be carried out in one day by a two man team.

For the part Housing Association development of Atlanta Boulevard, sub-contractors Toureen Mangan were awarded enabling works and groundworks contracts in addition to a £1.3 million contract to form the nine storey concrete frame.

Specifying PERI as their sole formwork provider, Toureen Mangan went with a combination of SKYDECK and traditional MULTIPROP based formwork/falsework for slabs, while utilising TRIO panel wall formwork for columns and the walls of two cores.

The SKYDECK system was operated by teams containing one carpenter and two general operatives. At certain parts of the slab where the soffit cantilevered out and required a high quality concrete finish, the SKYDECK panels were overlaid with a 4 mm finishing ply.

To ensure safety, Toureen Mangan successfully implemented a permit-to-work scheme to access the deck for placement of infill and edge protection. After a period of only 48 hours, the SKYDECK panels were struck and transported to the floor above.

The kitchens and bathrooms for the apartments were entirely pre-assembled as units off-site so that they could be craned in ready for use.

As they were being installed while the concrete structure was still being erected, and because all contractors on site were sharing a single crane, inevitable problems arose regarding crane availability. Placement of the SKYDECK slab formwork system was able to be continued as sub-contractors, Toureen Mangan, used specially widened service

risers to manually pass deck panels and props up through the slab to the floor above.

Although the TRIO column boxes still required crane assistance, they were quickly struck and lifted to their next position. In a single day, a two man team would have ten such columns set-up and poured. Under the in-clement site conditions, the two week turnaround achieved for each floor was a credit to both the resourcefulness of the site personnel and the quality equipment provided by PERI.



Peter Blain,
Project Manager:
“This is the first time that Toureen Mangan have been using SKYDECK and we will definitely be using it again. From a safety point of view, erection from below was a huge benefit as it minimised the amount of work that required safety harnesses to be worn. Striking was also very simple and unskilled workers could carry out most of the work with little training.”

Contractor:
Toureen Mangan, Harrow
Field Service:
PERI UK, Dartford Office

Efficient PERI UP Rosett Flex scaffolding compliments SKYDECK slab formwork

Grosvenor Waterside Development, London SW1



**Richard O'Sullivan ,
Senior Engineer:**

"We found both the PERI UP scaffolding and the SKYDECK slab formwork system extremely quick and easy to use. They worked well together and contributed hugely to the success of the project."

Contractor:

Midgard Ltd,
Borehamwood, HERTS

Field Service:

PERI UK, Dartford Office,
PERI GmbH



The lightweight PERI UP Rosett Flex stair towers can be used for heights up to 90 m.



PERI UP Rosett Flex scaffolding provided access and increased site safety.



Customized formwork and scaffolding solution, compatible with all phases of the construction process.



John Reddington used a specially modified pop-up scissor lift to aid fast and safe erection of the SKYDECK system. Additionally, the scaffold arrangement helped with falsework erection at the buildings edges and provided instant edge protection and access for slab preparation.



Midgard Ltd, the main contracting arm of John Reddington Ltd, are managing the Grosvenor Waterside development of luxury city centre apartments consisting of two RC frame buildings of ten and twelve storeys. Using SKYDECK and TRIO to cast the concrete frame, John Reddington Ltd also used PERI UP Rosett Flex scaffolding to provide access and increase site safety.

Midgard Ltd, who were additionally responsible for cladding the building, worked with PERI design engineers to produce an adaptable scaffold design that was compatible with all phases of the construction process.

The scaffold was offset from the footprint of the building to allow room for the cantilevering SKYDECK slab formwork. When this was removed to the next floor, a console bracket arrangement was added that extended the scaffold onto the slab.

As a result, the perimeter of the building was edge protected without the need for additional barriers. At the cladding phase, the width of the scaffold extension was reduced, by removal of a board, allowing room for safe and efficient placement of anodised aluminium cladding.

The PERI UP scaffolding provided a stable and adaptable safety "cage" around the structures that eliminated many of the hazards that are generally associated with working at a buildings edge. In addition, new Aluminium Staircases 75 allowed access to all levels of the building.

This entire arrangement of scaffolding for both buildings – equivalent to a façade area of over 12,000 m² - was erected and maintained by a team of just three men.



The PERI UP scaffold range was showcased this year at the SED construction show at the Rockingham Motor Speedway. Now in its 42nd year, the show is the largest outdoor event of its kind in the UK.



The RCS system: Perfect for mid-rise construction

Islington Wharf Development, Manchester



**Ian Cripps,
Project Engineer:**

“We were very pleased with the efficiency of the system. In terms of climbing systems, PERI offers some of the best products on the market.”

RCS C is PERI’s rail climbed platform system for core construction and constructors are beginning to see the benefits of a climbing system that offers crane-free ascent at reasonable expense. Perfect for the medium-rise building projects that are currently so abundant in the UK, the RCS system affords versatility without compromising on safety. In fact, being rail-guided, it is one of the safest climbing systems on the market.

The Islington Wharf residential development in Manchester is one of the latest sites to enjoy these benefits. Despite the ambitious plan of the building’s core, PERI designers delivered a successful scheme of RCS platforms and internal platform beams to support TRIO panel wall formwork.

Utilising the TSE “quick-strike” shaft element for the interiors of the two lift shafts and stairwell, sub-contractor Expanded Structures Ltd were able

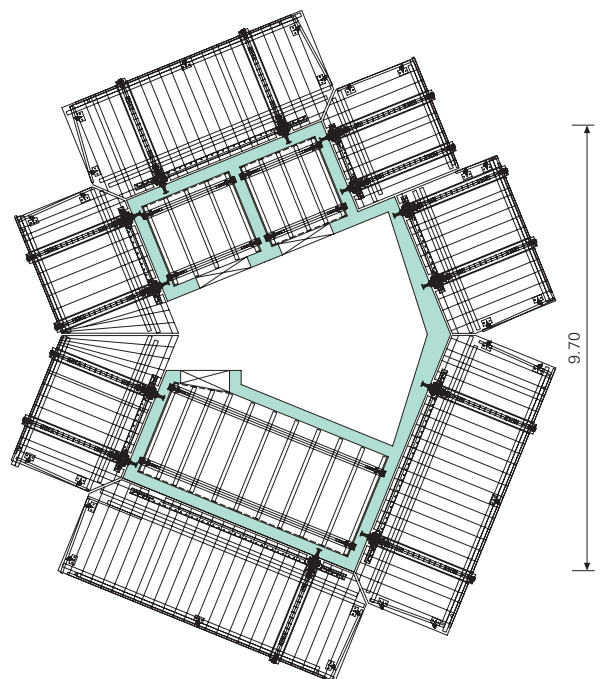
to achieve a turnaround rate of one floor per week.

After 18 storeys have been formed, Expanded intend to offset the core by 5 m and then continue for two further floors with the TRIO panels. When the 52-week contract is finished, this landmark tower will provide 200 residential units together with leisure and retail amenities for its residents.



Contractor:
Expanded Structures Ltd, Dartford
Field service:
PERI Weissenhorn, PERI Rugby

PERI design engineers were able to adapt the versatile RCS system to the core specifications. In order to save on the expense of a trailing platform, Expanded opted to leave the climbing shoes in place to be removed at a later date.



A range of PERI systems used to realise ambitious car centre

The Audi Centre, Brentford



Mick McGrath, Site Manager (left, together with Justin Barrett, Project Engineer on the right):
“Considering the complex nature of the project, the many PERI systems have worked very well together and have proved to be user-friendly and adaptable.”

Contractor:
Ground Construction Ltd, St. Albans
Field service:
PERI UK, Rugby Office



Located adjacent to the M4 in Brentford, London, the ambitious Audi Centre project is utilising a phenomenal variety of PERI equipment and systems. With over 17,000 m² of floor space, the building will ultimately be the world’s largest Audi headquarters.

The structure is based around two cores whose shaft walls and wing walls were climbed with PERI CB 240 climbing scaffold and TRIO panel formwork.

The upper floors of the building will be steel based while the slabs of the lower floors were cast on a combination of SKYDECK and MULTIPROP strike-and-erect (with aluminium beam primaries). The SKYDECK, which was 6.20 m high in places, had no problem adapting to the sloping slab arrangement that was required for drainage of the car park.



Concrete sub-contractors, Ground Construction Ltd, also used both TRIO and VARIO wall formwork to cast supporting columns.



745 m² of TRIO panel wall formwork per lift in one core pour

Bothwell Street, Glasgow



Following the demolition of the existing building, Expanded Structures Ltd have won the concreting for an eight-storey steel framed office development on Bothwell Street, Glasgow.

Despite its steel shell, there was still a challenging RC element to the project in the form of four, 10 storey cores. The largest of these required a staggering 745 m² of TRIO panel wall formwork to form three lift shafts, two stairwells and adjoining corridors. Internal shaft formwork utilised the TRIO TSE shaft element to allow it to be struck and removed in a single crane lift.

This contributed to an impressive turnaround period of under ten days for the large central core.

Expanded Structures Ltd used CB 240 jump forms with trailing platforms on all four cores and chose to have them pre-assembled at the PERI fabrication facility in Rugby. For the handed east and west cores, CB 240 platforms were fabricated to the specifications of the west core and then, once the core had been completed, were returned to the fabrication facility to be modified for use on the east core.

Contractor:
Expanded Structures Ltd, Dartford
Field Service:
PERI UK, Glasgow Office



Fraser Baird, Contracts Manager:
"We used the PERI CB 240 climbing scaffold in conjunction with TRIO panel formwork to construct a number of concrete cores on this project in lifts of typically 4.50 m. The system exceeded our expectations in terms of both program constraints and the inherent safety feature demanded by us."

The illustrations featured in this brochure are photographs taken at particular time on a construction site. Therefore the safety details shown cannot be considered as final.

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