PERI Ltd.

Concrete Cafe

Neil Butlin

3rd October 2017

Who are PERI?

We help to build

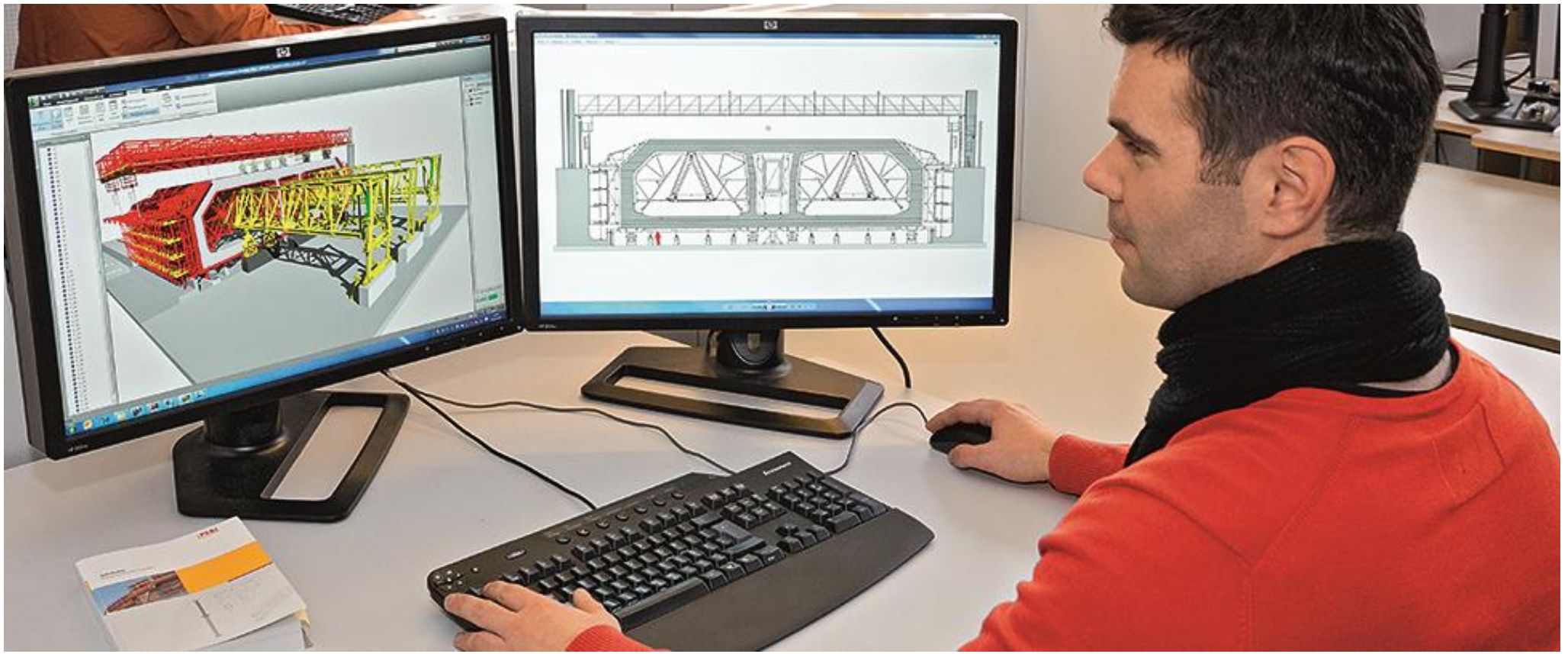
- Formwork

We help to build

- Scaffolding

We help to build

- Engineering



We help to build

Trump Tower, Chicago

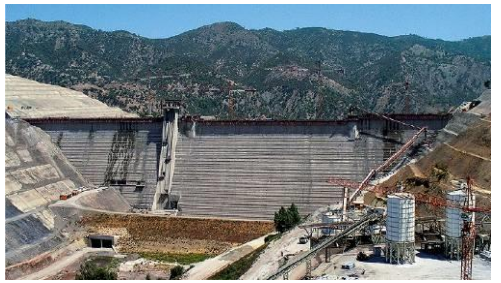
USA

We help to build

Mercedes-Benz Museum, Stuttgart, Germany

We help to build

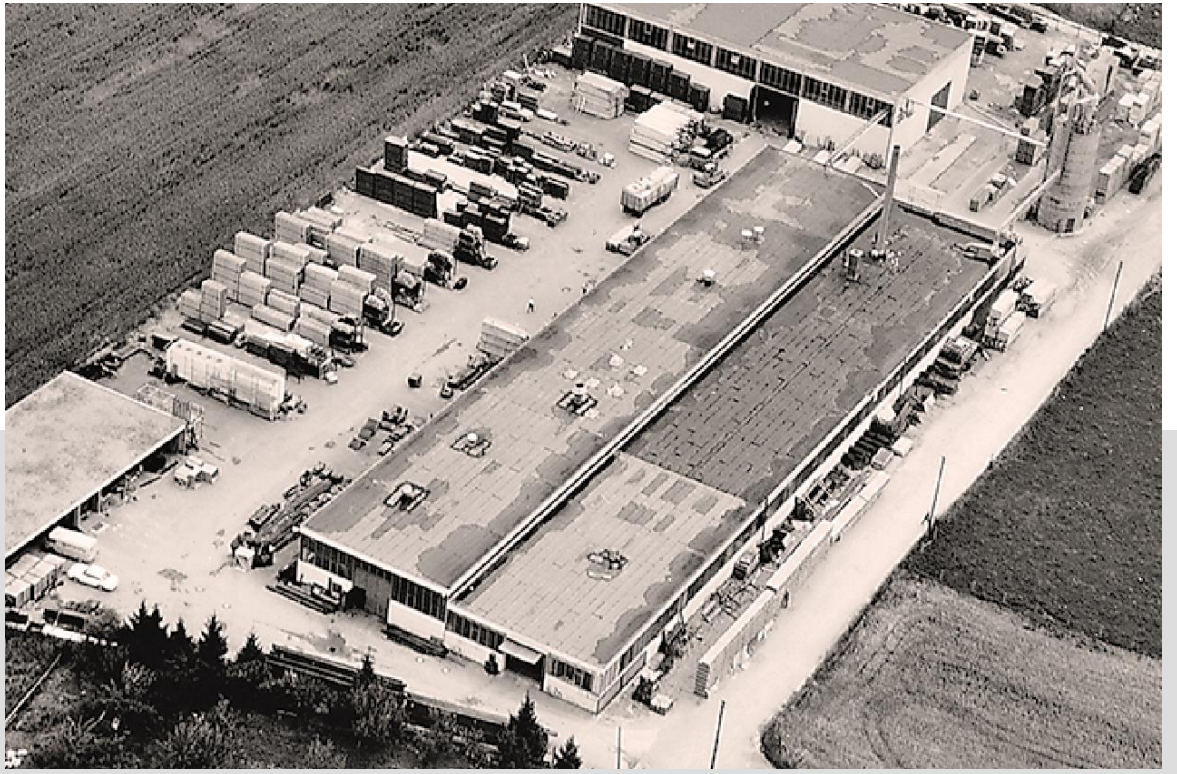
- PERI provides the solution for all kinds of concrete projects



PERI provides the solution

- This principle characterises the efforts undertaken for our customers since the company was founded by Artur Schwörer in 1969.

Artur Schwörer (1933 - 2009)
Founder of PERI GmbH



PERI GmbH 1973
Weissenhorn, Germany

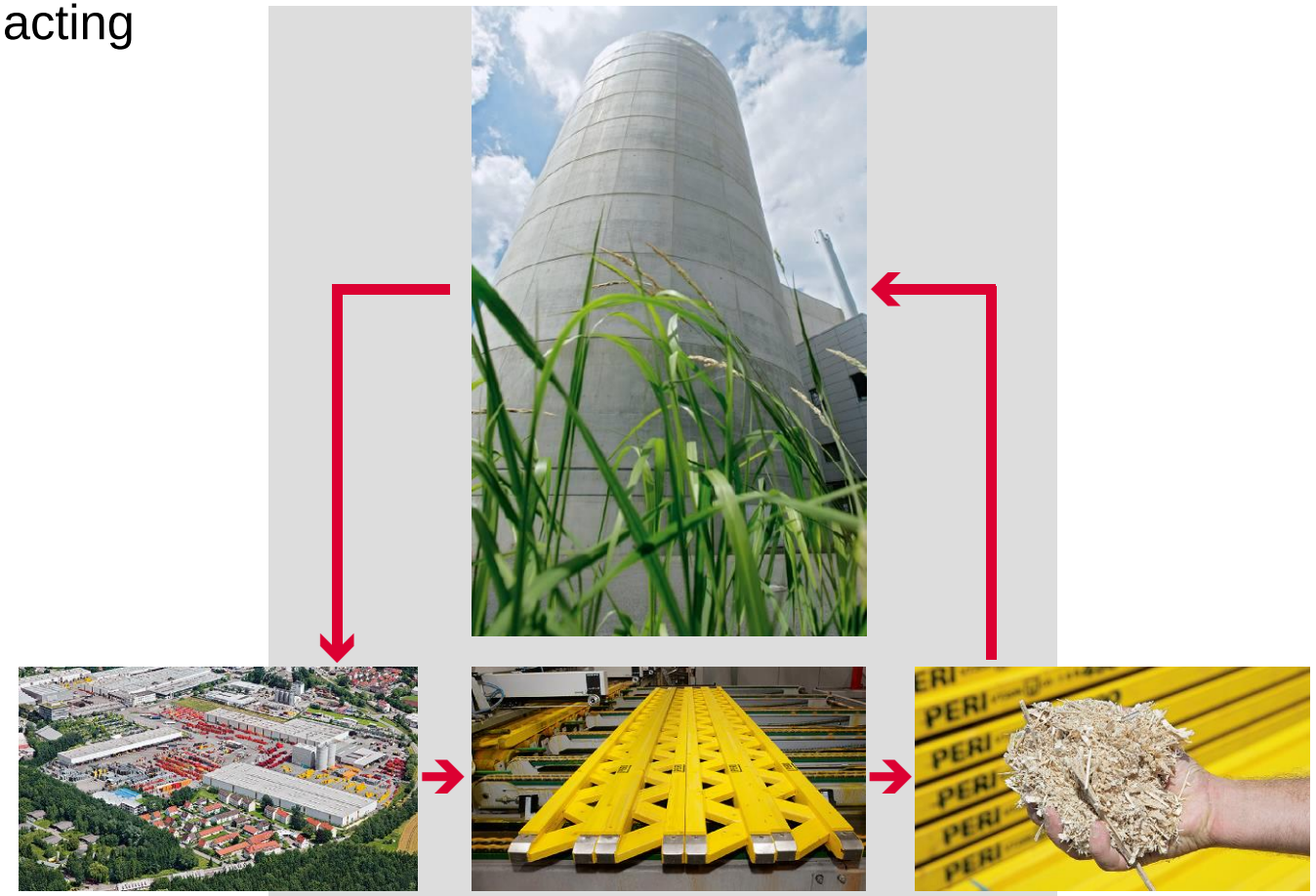
The Company

- At PERI´s headquarters in Weissenhorn, the products are developed, manufactured, assembled and stored.

Plant 1, total area 340.000 m²

Reliability – Quality – Responsibility

- Environmentally conscious thinking and acting
  - Careful handling of resources
  - Optimized usage of material
  - Durable products for many usages
  - Timber from certified growing areas
  - Efficient processes and technologies
  - Short ways of transport



Closed circuit:
the Biomass Power Station in Weissenhorn

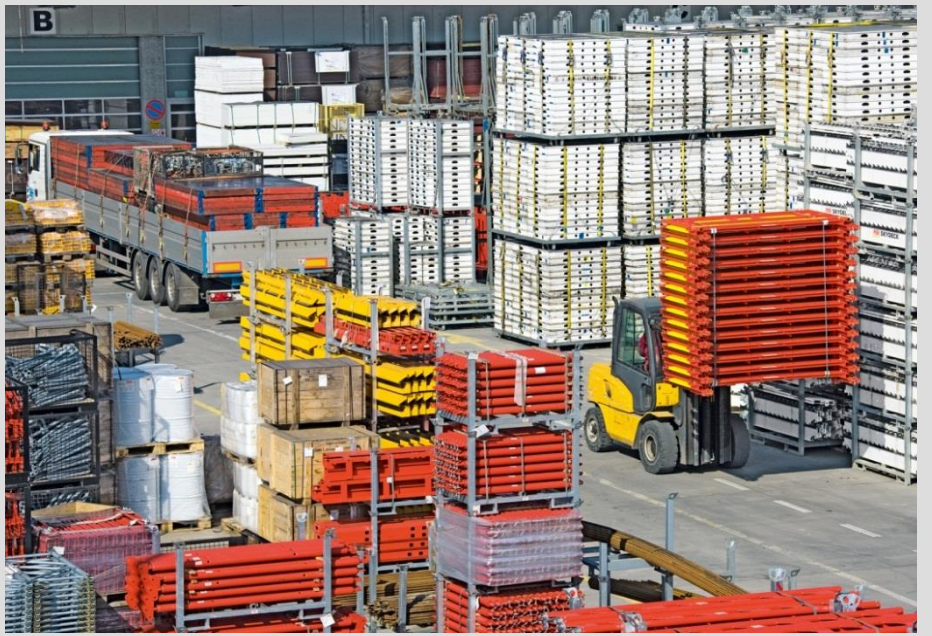
The Company

- PERI is represented in over 90 countries through its 61 subsideries

Supporting Services

- Efficient logistics operations

  Reliable delivery from 120 stock yards worldwide



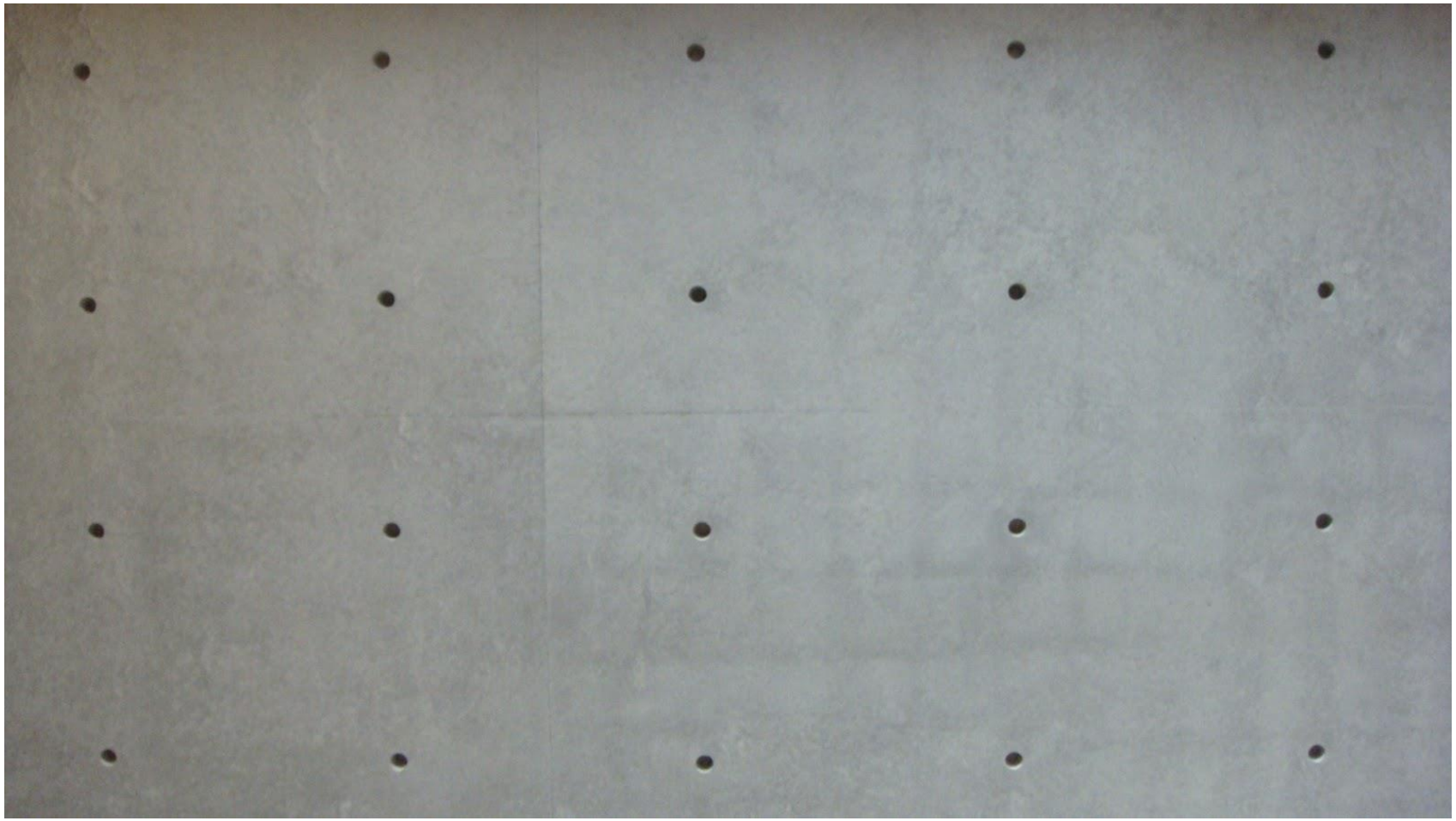
Supporting Services

- Project specific formwork
  from the individual assembly panels cut-to-size to the 3D-formwork body

Supporting Services

- Quality training seminars and workshops

Architectural Concrete



Expectations

Concrete Finishes

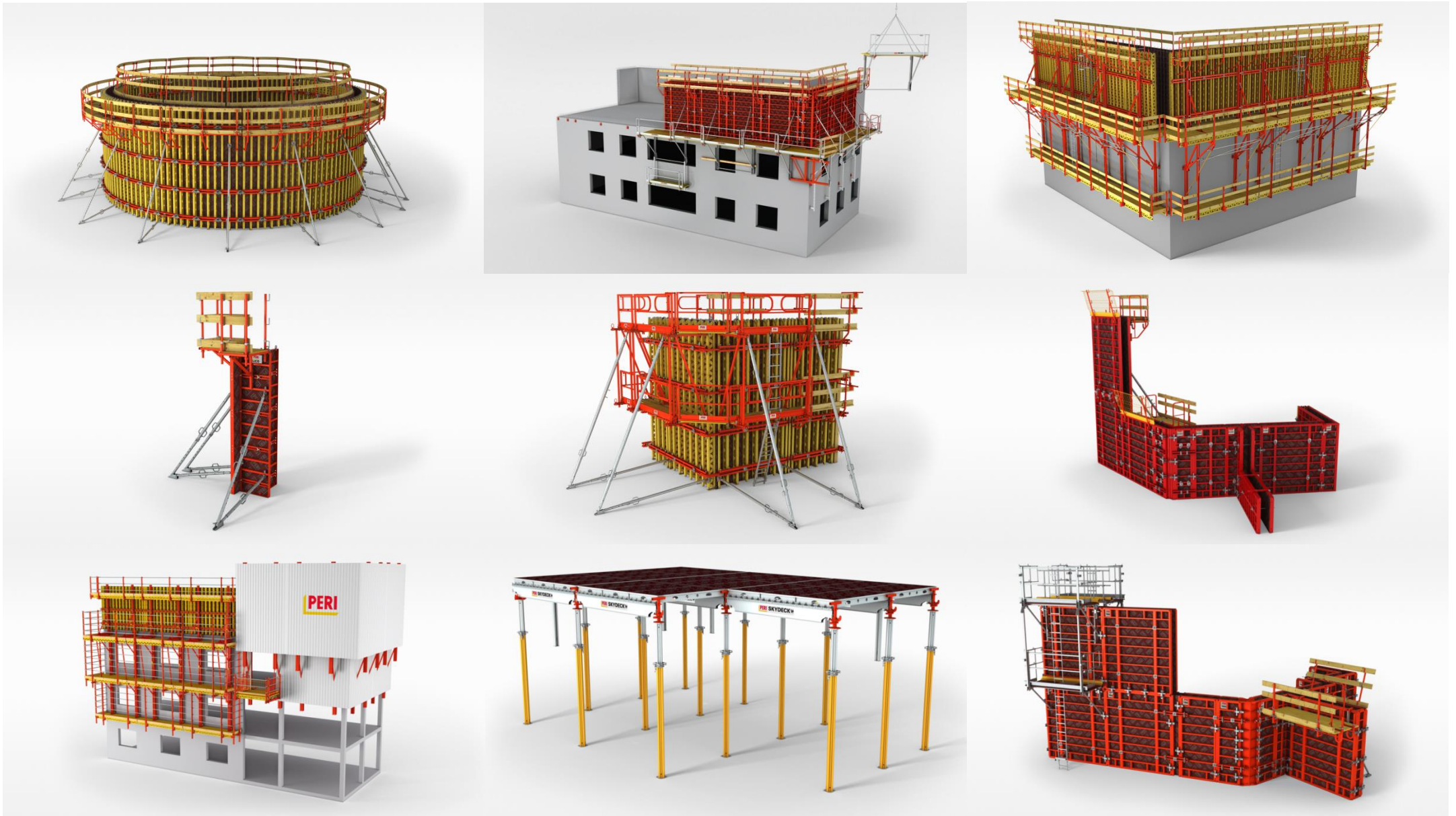
There are several factors that can affect your walls final product.

1. **Formwork and plywood Face material.**
2. **Type of release agent.**
3. **Tie rod and plywood layout design.**
4. **Concrete mix design**
5. **Placement & Vibration of concrete.**
6. **Quality of carpentry/labour.**

Obviously as a supplier items 4, 5 and 6 are items outside of our control.

PERI Formwork can help with items 1, 2 & 3.

Formwork



Basic/Panel Finish

- **Achieved with the panel formwork systems such as TRIO and DOMINO**

TRIO is a panel system with a plywood face sealed within a steel frame. Tie holes are pre-drilled with a coverage of 2m² per tie. A range of sizes are available from 3300x2400mm to 600x300mm

Only one component the unique patented BFD Coupler is required to join the panels horizontally, vertically or at corners without any need for additional stiffening or aligning components. The same BFD coupler permits timber infilling between panels.

When comparing TRIO to other panel systems, the reduction in components required and the simplicity of having only one fixing component on site in the BFD coupler, improves productivity significantly.

Basic/Panel Finish

- **Typical bulkhead / door opening using traditional timber inside a PERI TRIO form.**

Panel Finish with a regular plywood/tie layout.

Panel Finish with an regular plywood/tie layout.

- **Achieved with the MAXIMO panel formwork system**

MAXIMO is the next generation panel system from PERI with a plywood face sealed within a steel frame. Tie holes are pre-drilled with a coverage of 2m² per tie. A range of sizes are available from 3300x2400mm to 600x300mm

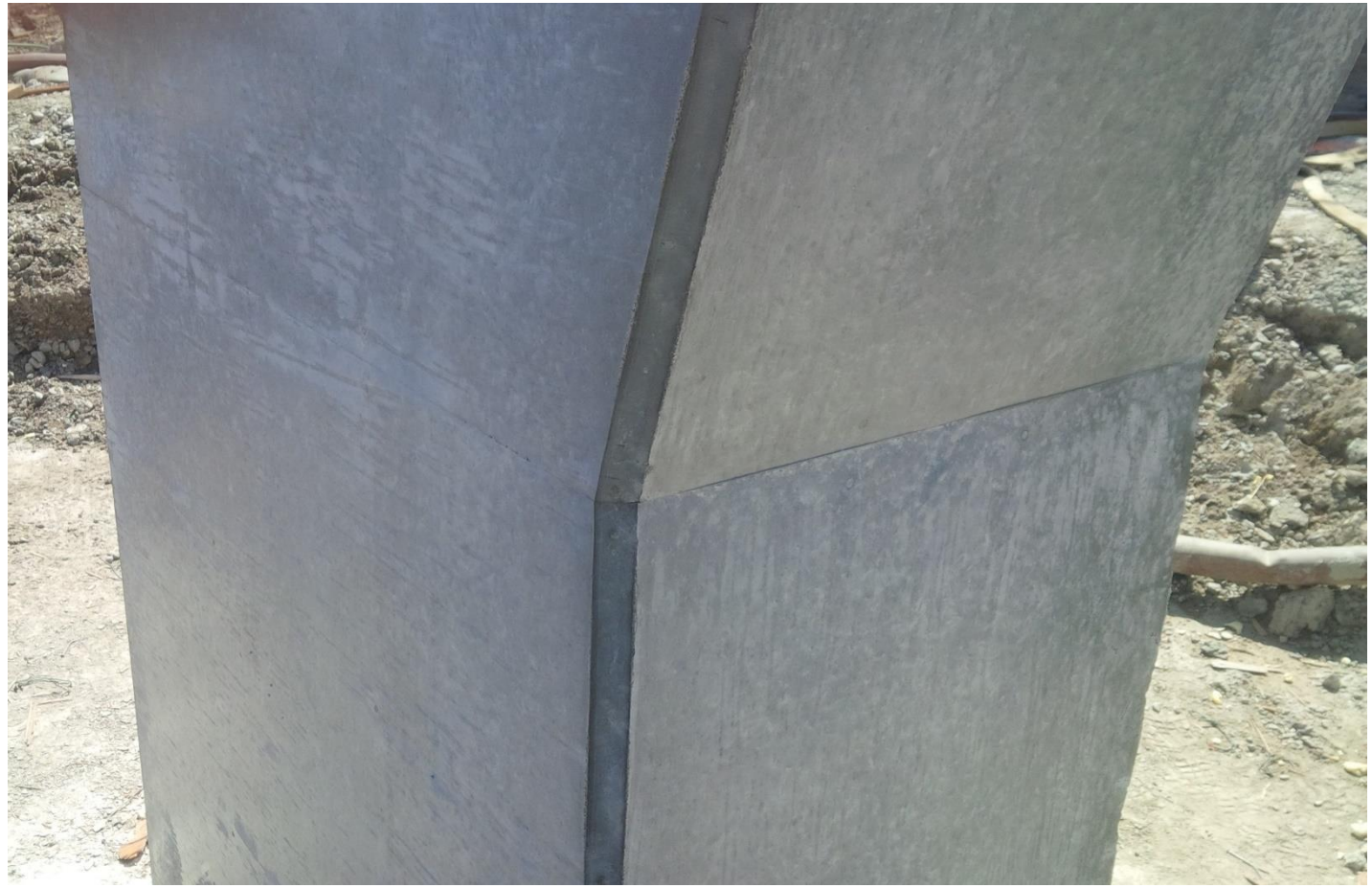
Only one component the unique patented **BFD Coupler** is required to join the panels horizontally, vertically or at corners without any need for additional stiffening or aligning components. The same BFD coupler permits timber infilling between panels.

When comparing MAXIMO to other panel systems, the reduction in components required and the simplicity of having only one fixing component on site in the BFD coupler, improves productivity significantly.

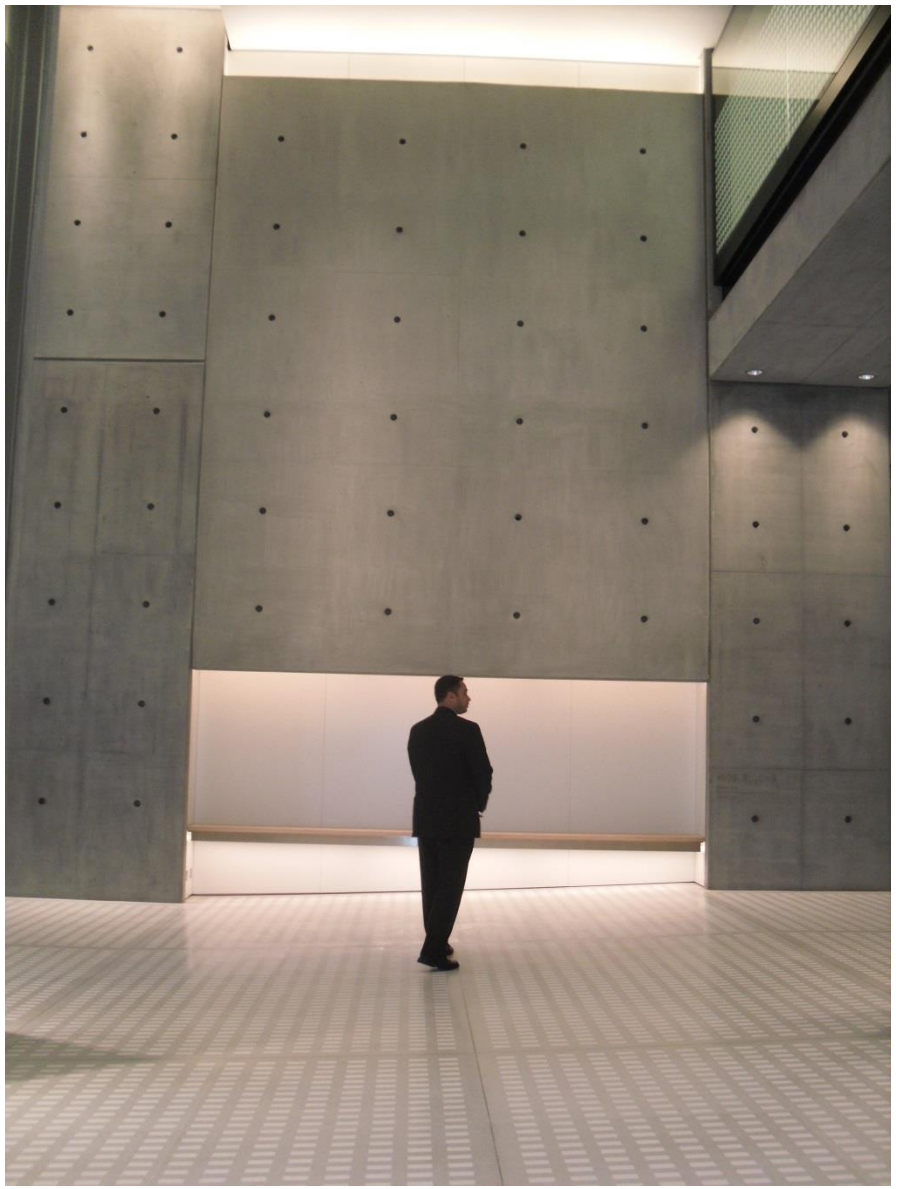
Its main advantages over the TRIO system are…

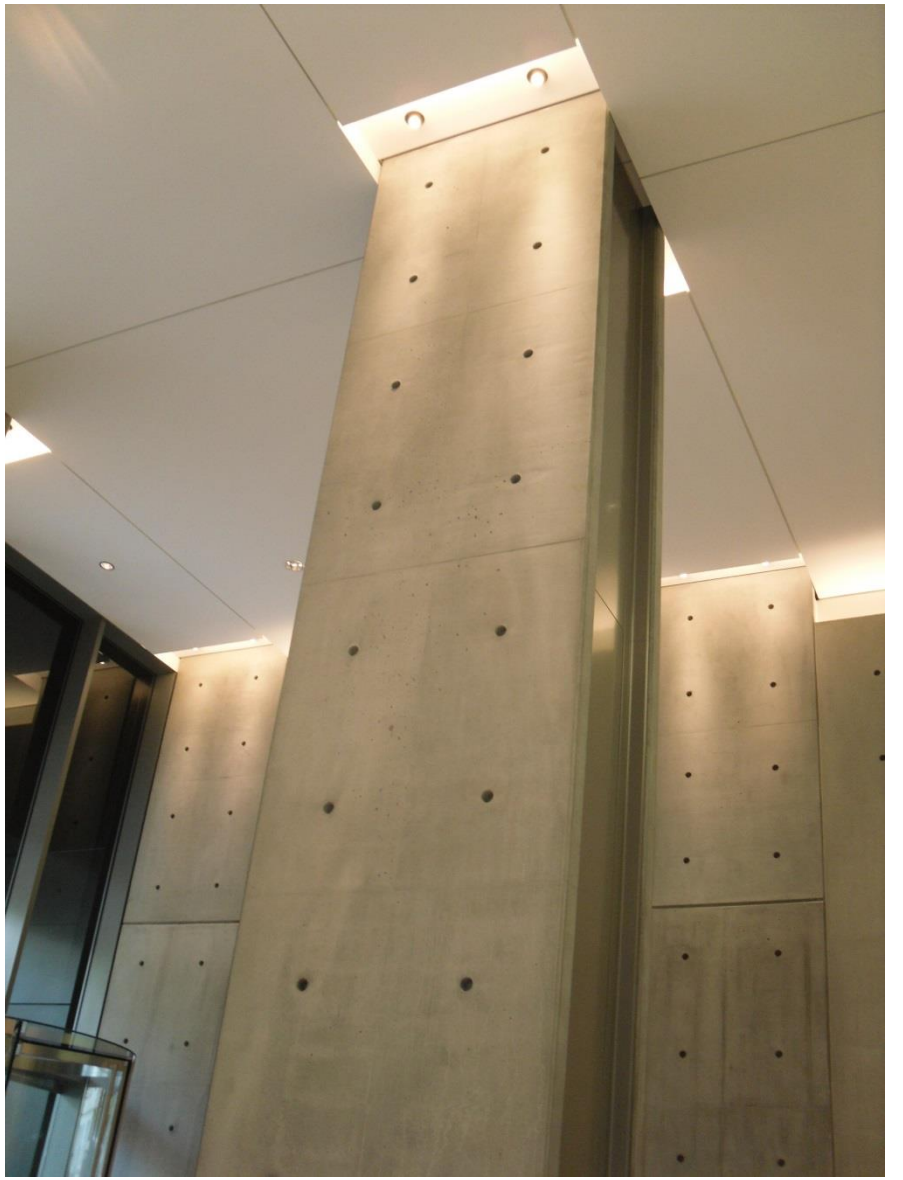
1. Faster – One sided MX tie Technology
2. Time Saving - Systemised and reduced number of tie positions.
3. Improved concrete finish through neat joint and tie arrangement.

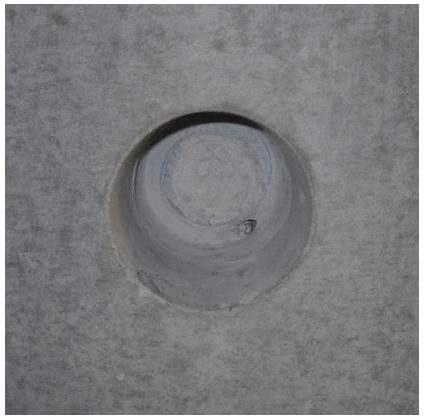
Architectural Exposed Concrete finish

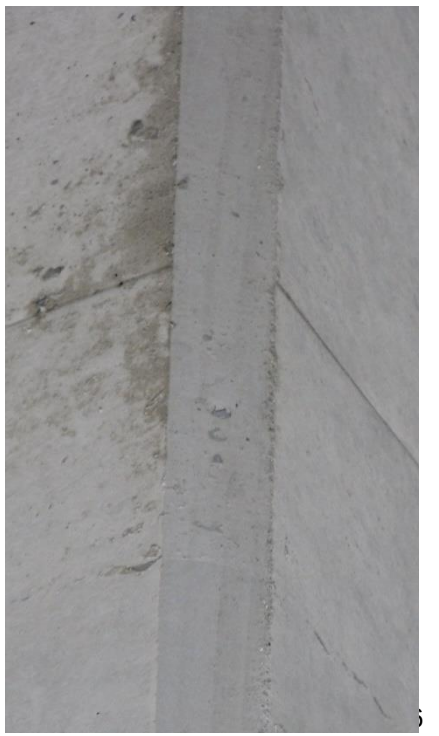


Architectural Exposed Concrete finish









Architectural Exposed Concrete finish

Plywood Joints and Nail Holes

Architectural Exposed Concrete finish

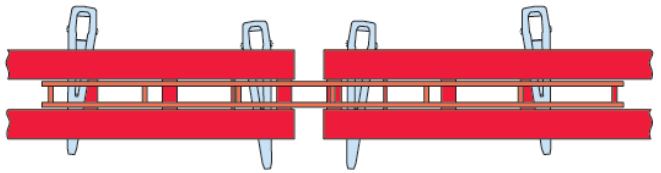
- **Achieved with the VARIO panel formwork system**

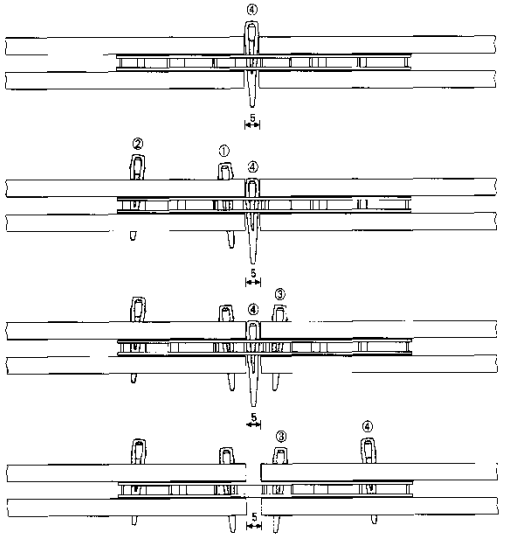
VARIO girder formwork provides engineered solutions for complicated layouts, demanding architectural requirements or high concrete pressures.

Infinitely variable the VARIO system can incorporate custom made elements together with standard component to form any layout.

The flexural stiffness of VARIO's GT24 girders and the large range of steel walers available helps optimise the formwork and minimises the number of ties speeding up shuttering times.

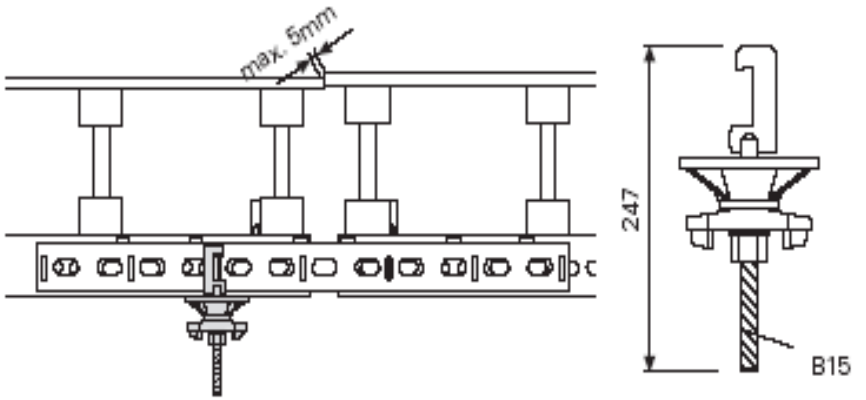
Architectural Exposed Concrete finish





Connection Sequence using **VKZ Coupler** and **KZ Wedge**

Connection using **Architectural Coupler VKS 99** and **Alignment Clamp**



Practical Tip
Tip of wedge towards the panel joint = **Wedge Pulling**
Tip of wedge away from panel joint = **Wedge Locking**

Plywood Type

- **PERI MDO333**
- MDO333 is constructed with high strength hard and softwood veneers to offer a well balanced board.
- Coated with MDO (Medium Density Overlay) new technology film. MDO is a synthetic plate that gives the board its mechanical resistance.
- 7 Ply Board 17.5mm thick
- Sheet size: 1220 x 2440. 49 sheets per bundle
- Manufactured in Brazil

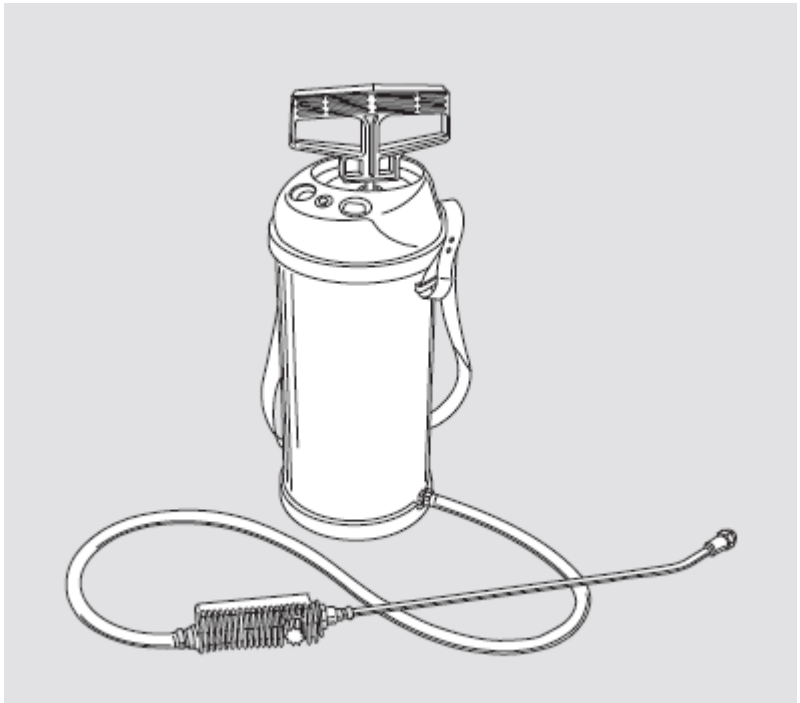
Plywood Type

- **PERI Finn Ply**
- The Fin Ply formwork panel has been designed for highest requirements and it is used as wall and slab formwork panel.
- It has a crosswise bonded birch veneer construction, a BFU 100 bonding according to DIN 68705 and it is coated on both sides with a 220 g/m² reinforced phenolic resin coating.
- Smooth, flat concrete surfaces are generated with Fin Ply panels. Apart from the regular standard dimensions of 1.25 m x 2.5 m and 1.5 m x 3.0 m, also special lengths are available (1.5 m x 3.6 m and/or 4.0 m. Special Plywood sizes up to 7m x 2.4m are available on special request.
- 50 sheets per bundle for standard sheets.
- 18mm to 21mm thick sheets.
- Manufactured in Finland
- Long leading times!

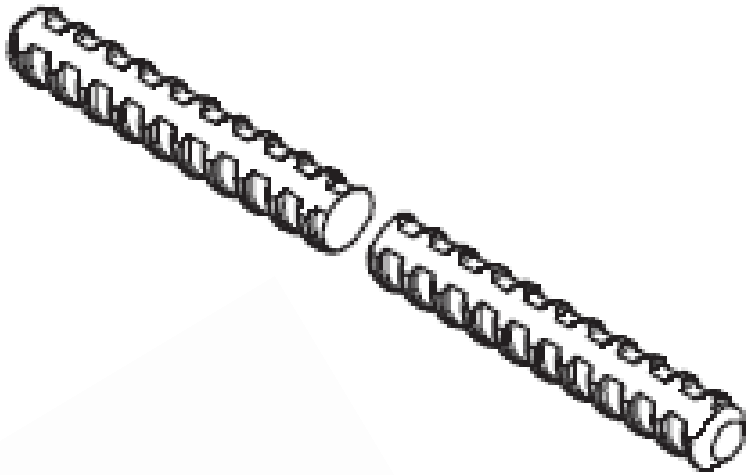
Plywood Type

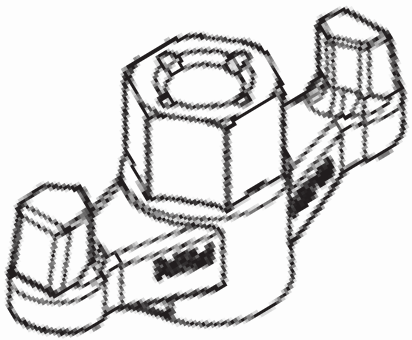
- **Pourform 107**
- This panel has been designed for anything from 10-15 uses and up and it is used as wall and slab formwork panel.
- Very popular as it combines quality and cost efficient performance.
- 1220 x 2440 panel sizes
- 50 sheets per bundle for standard sheets.
- 17.5mm thick sheets.
- PERI holds significant stock

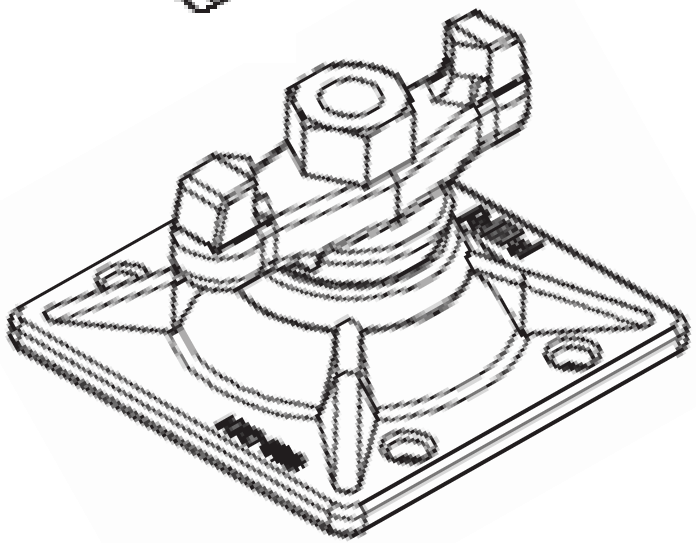
Release Agents

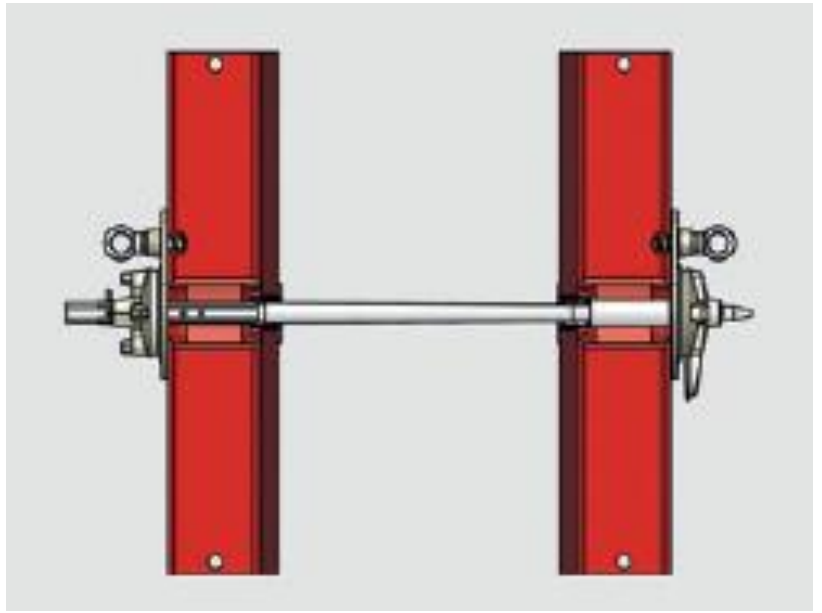


Tie Rods



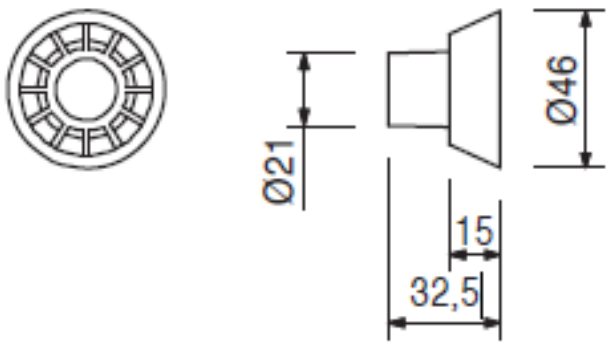






TRIO Tie Holes

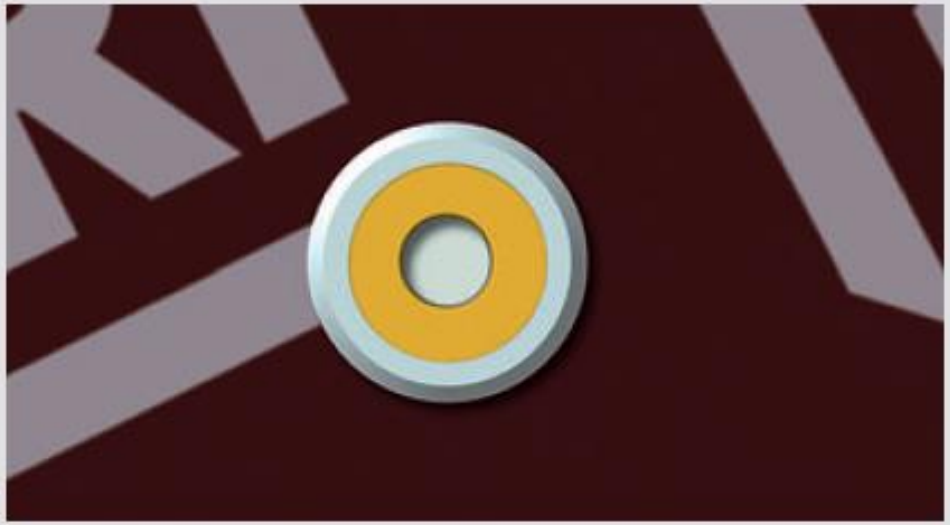
- Standard most commonly used 15mm deep cone.



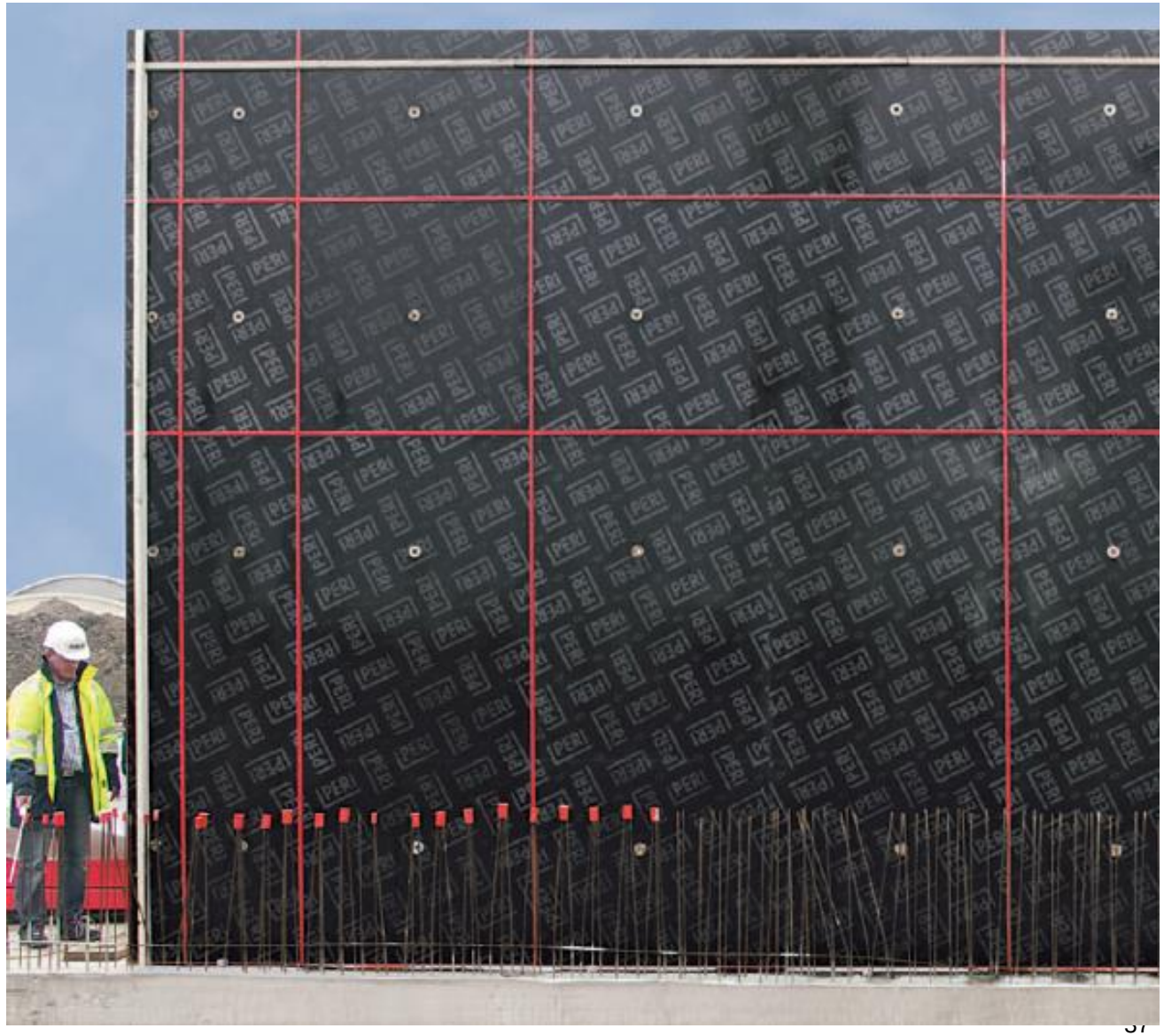
Tie locations

- 15mm cone later filled

MAXIMO Ties



MAXIMO tie point.

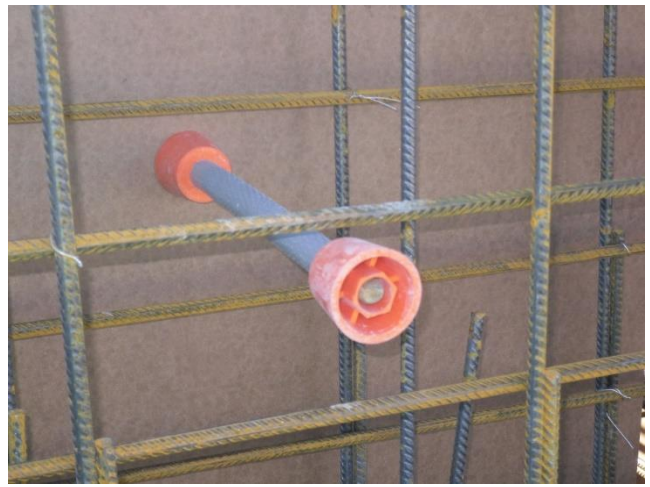


DK / SK Cones.

DK / SK Cones.

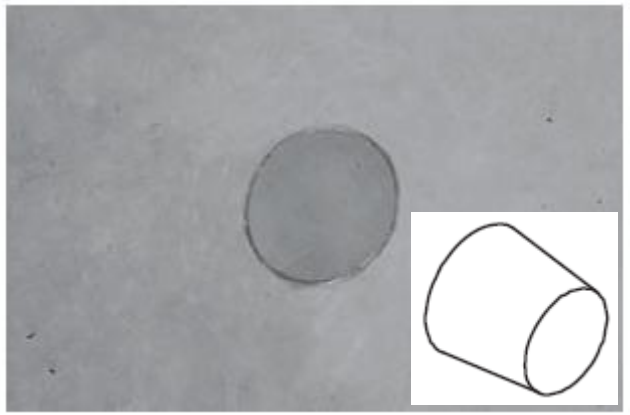
- **The DK and SK tie systems serve to ensure subsequent, reliable sealing of tie points. The tie points are sealed with concrete cones using a specially-developed 2 part sealing compound.**

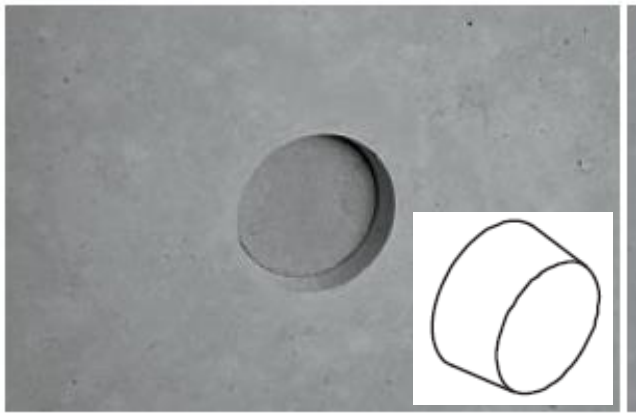
- The PERI DK sealing cone system is:
- Waterproof
- Gas impermeable
- Fire-resistant
- Soundproof
- Suitable for architectural concrete

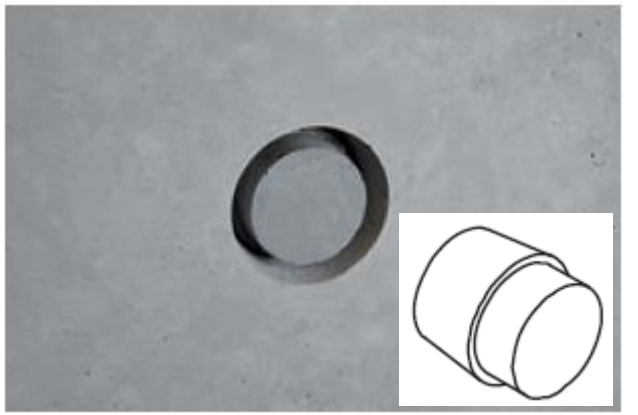


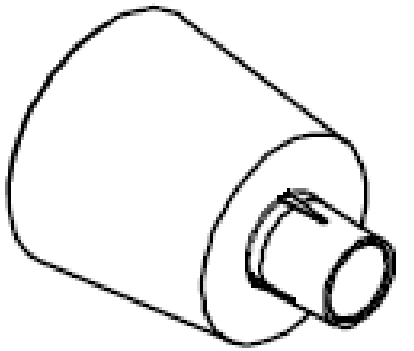
DK / SK Cones.

- **The DK cones are suited to the use of Architectural Exposed Concrete.**
- **Flush, Recessed or Shadow Gap concrete cones can be provided.**

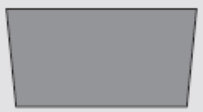


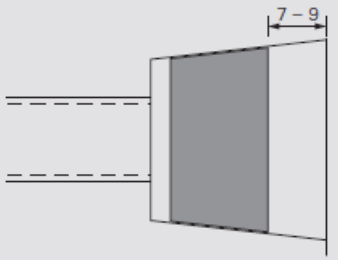






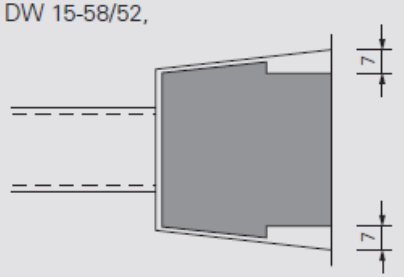
DK Concrete Cone DW 15-58/30,
Item no. 031642

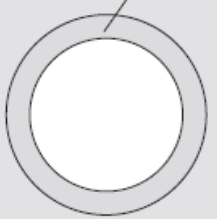


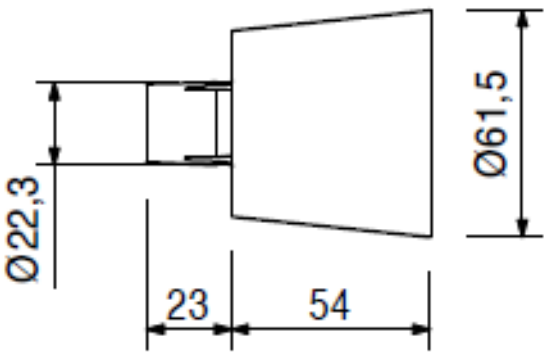


Concrete cones with shadow joint glued in place.

DK Concrete Cone Architectural 01 DW 15-58/52,
Item no. 031641







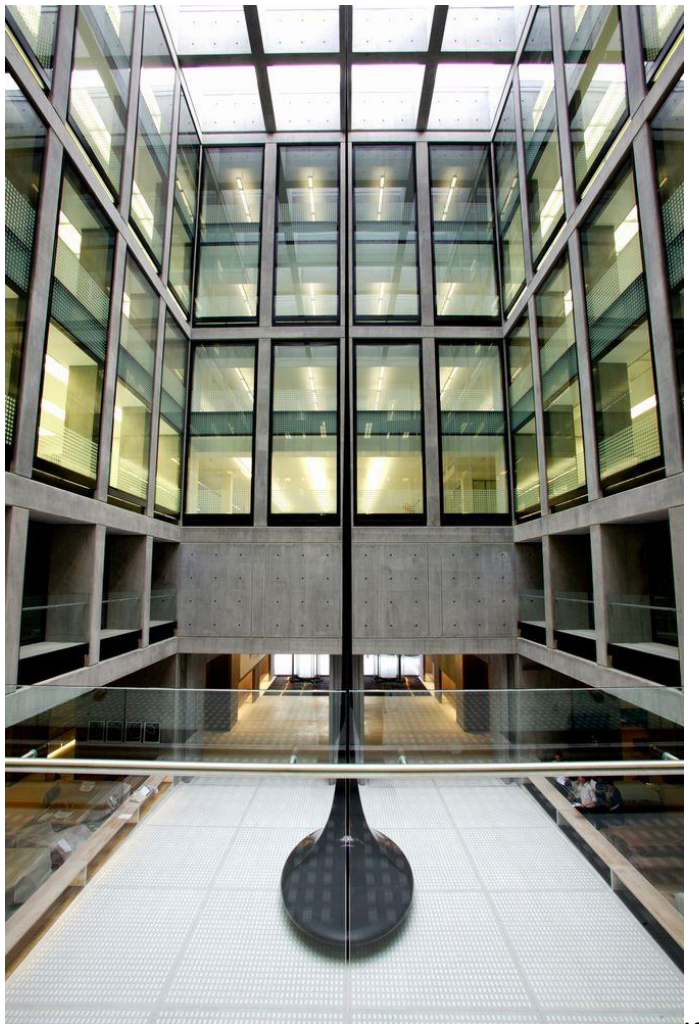
Plywood Layout

- **Plywood layouts**
- **Determined / Reviewed by Architect to make sure that the formwork drawing meets the required specification.**
  - The review process can take time and delay the construction onsite
- **Not all layouts are possible.**
  - Corner Panels where ties must be placed
  - SCC Concrete. Extra Material. Extra Walers/Ties
  - Oversize Plywood sheets or undersized sheets equals cuts
- **Be aware of tolerances within the product.**
  - - Length= l ± 3mm
    - Width = w ± 2mm
    - Thickness: for t ± 0.5 mm

Early Engagement with PERI

Project Examples. Angel Building London. UK

- **PERI - VARIO, PERI - DK Cones, PERI - MDO333 Plywood and SCC Concrete.**

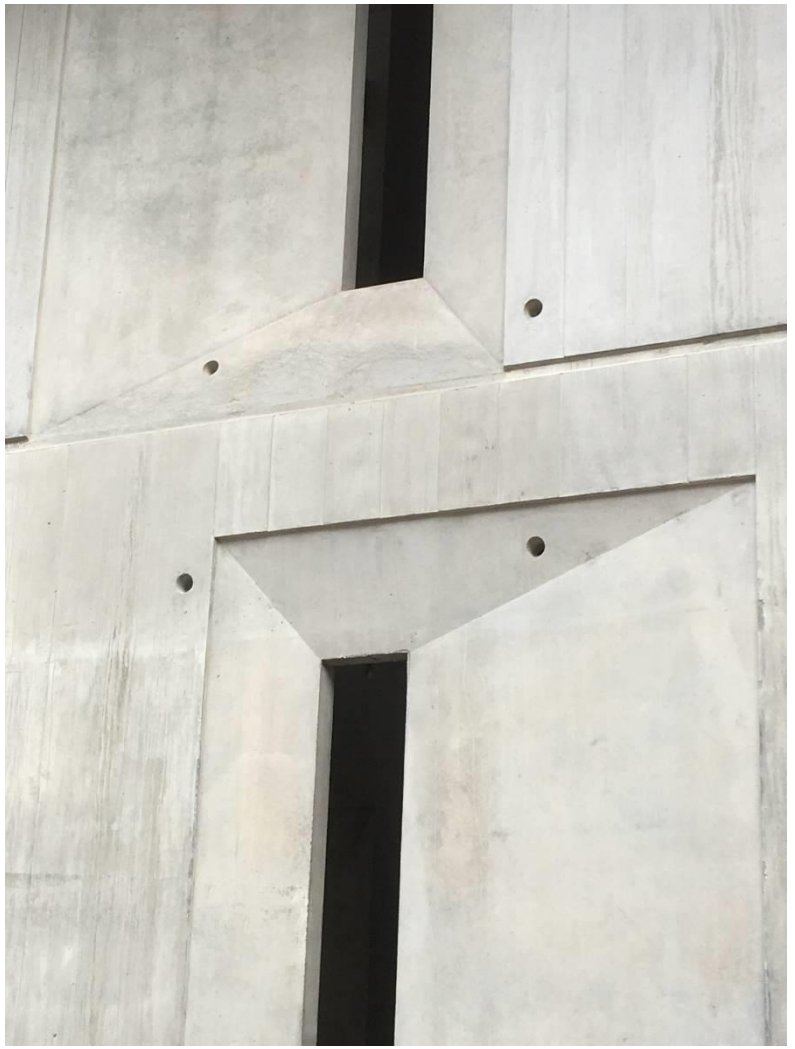


Project Examples. Angel Building London. UK

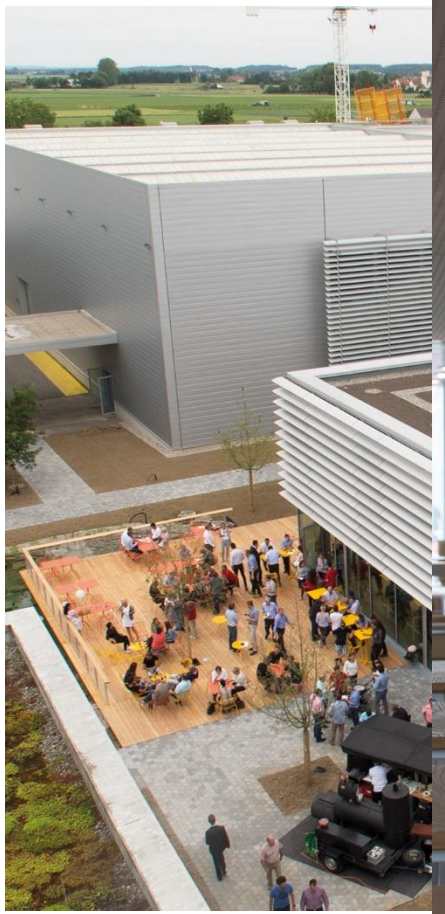
- **PERI - VARIO, PERI - DK Cones, PERI - MDO333 Plywood and SCC Concrete. Angel Building London. UK**

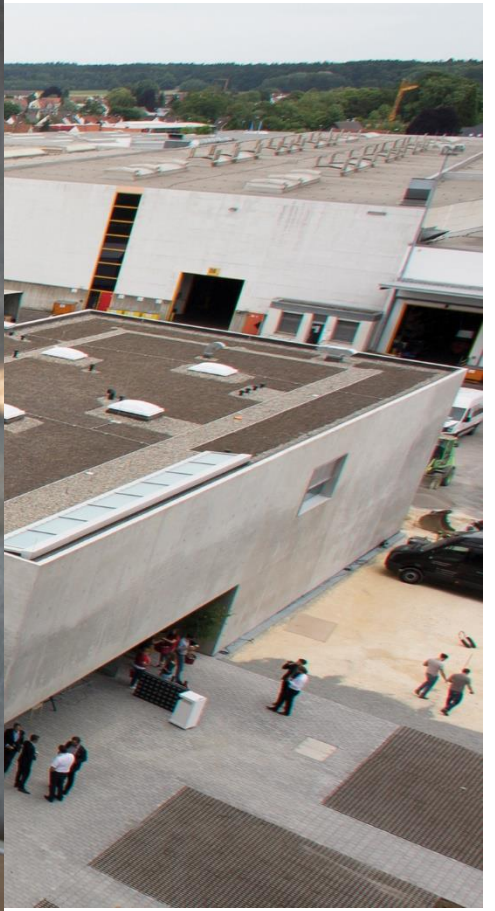
Project Examples. BBC, London

- **PERI - VARIO, Double Sided PERI Feature Wall – Reckli Liner/former.**



Project Examples – PERI Headquarters Germany, Weissenhorn - Canteen





Successful construction with PERI

Formwork
Scaffolding
Engineering

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