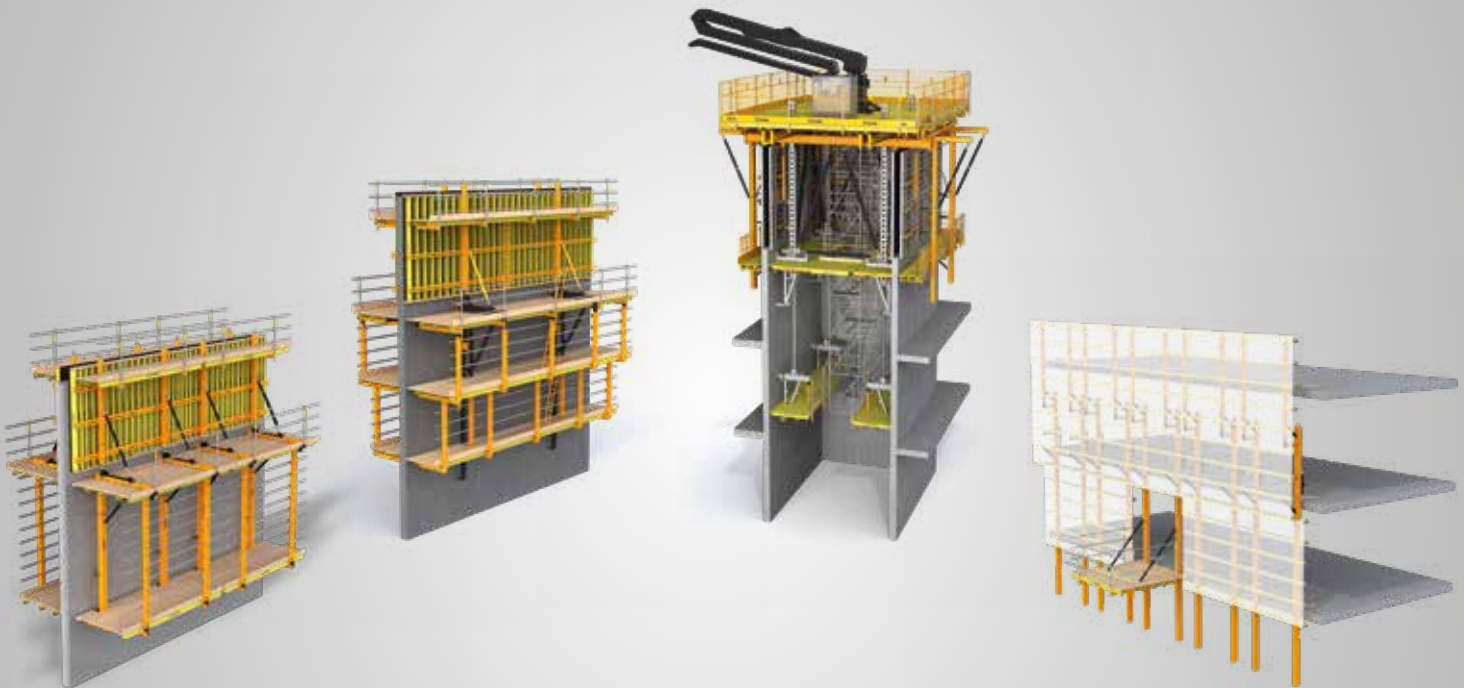




SELF-CLIMBING SYSTEMS

High efficiency for
highrise construction





HWS Hydraulic Windshield System

Features

Safety Protection for Highrise Construction.

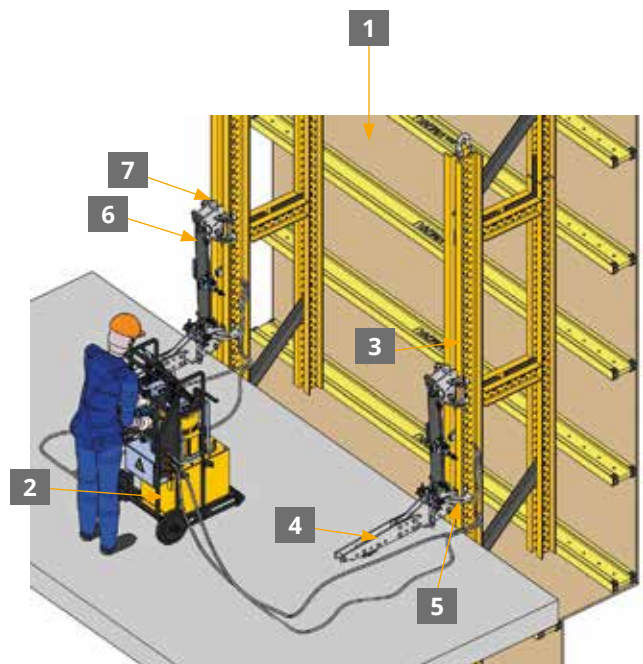
Covers the floor under construction and the floors immediately below.

Based on MK system (standard walers with simple connecting elements). Adaptable to different geometries and configurations according to requirements.



Main system components

- 1 Protection screen with different enclosures
- 2 Hydraulic power unit
- 3 Mast
- 4 Slab bracket LT HWS
- 5 Head LT HWS
- 6 Cylinder HWS
- 7 Climbing Head HWS





Benefits

- **Prevents** people or objects **falling** from the slabs.
- Excellent **protection against inclement weather**.
- Protects against workers experiencing fear of heights.
- **Flexibility** of the MK system.
- **Configurable cross-section:** various dimensions, working platform levels, material unloading platforms and types of protective sheathing.
- Range of **panels:**
 - **Telescopic** perforated steel panels.
 - **HWS Panels** (opaque or semi-transparent, stiff or elastic, etc.).
 - **Corner Panels.**
- Allows for the use of **exterior material lifting platforms**.
- **Provides access** between the final storeys of the building.
- **Platform for work** on the slab edge.



Self-climbing system, hydraulic power unit and cylinders



On-site placement of HWS panel with platform

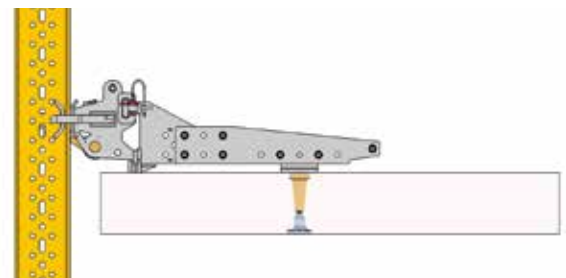


Telescopic HWS panels installed on site

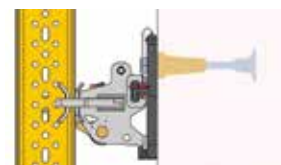
- **Hydraulic self-climbing system** operates without crane assistance. Hydraulic cylinder lifting capacity: 50 kN.
- **Can be anchored to slab or wall.**
- **Adapts well to the geometry of irregular slabs.**
- Completely encloses the entire perimeter.
- Accessories shared with other MK solutions.

• Anchorage of HWS to slab or wall:

- Slab anchor system



- Wall anchor system

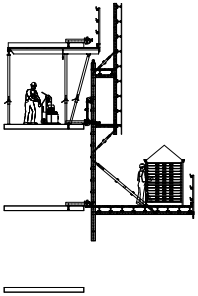


Manual sliding of telescopic panels for on-site placement

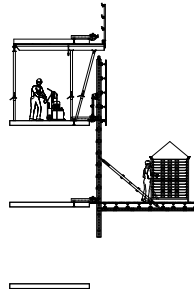


Solutions

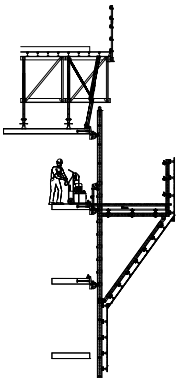
- HWS with **material storage and lifting platforms** at different levels, and **working platform**.



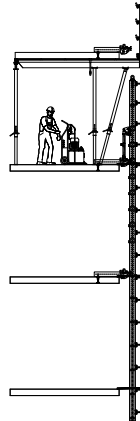
- **Basic cross-section with platform** for material unloading.



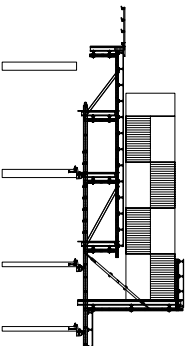
- **Debris section:** slab extension for use as perimeter working platform and material storage area. Prevents debris from falling during formwork table removal and provides a large advertising area directed toward the street below.



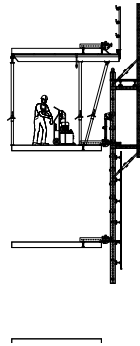
- **Straight cross-section of telescopic panels.**



- **Access stairways** in HWS protection.



- HWS with **working platform**.





RKS Rail Climbing System

Features

It enables the climbing of the panel without separating the structure from the wall.

Ensures safe lifting operations in any weather conditions. Rail climbing system for the forming of cores, shear walls, and perimeter walls using hydraulic lifting mechanisms, with crane lifting optional.

Single lower platform for anchor recovery.

Adjustable to different pouring heights, with a standard range from 2.7 to 5 m.

Hydraulic cylinder lifting capacity: 50 kN.

Formwork roll-back distance: 70 cm.



Main system components

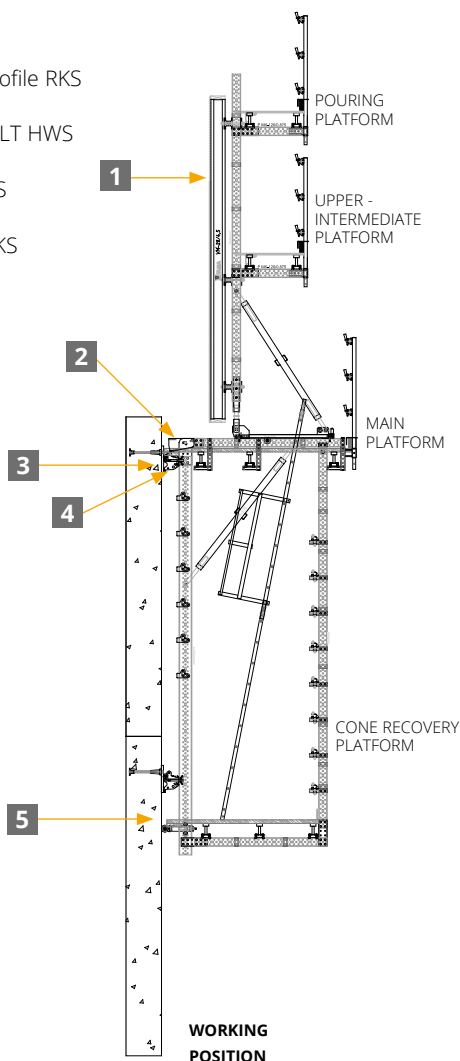
1 Formwork

2 Additional profile RKS

3 Wall bracket LT HWS

4 Head LT HWS

5 Mast shoe RKS



1 Vertical waler

2 Mast

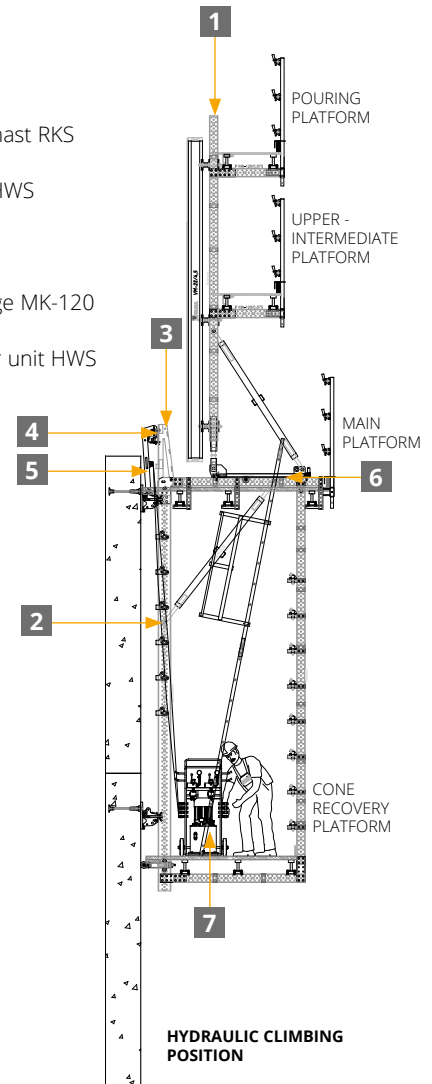
3 Initial pushing mast RKS

4 Climbing head HWS

5 Cylinder HWS

6 Roll-back carriage MK-120

7 Hydraulic power unit HWS





Benefits

- **Configuration optimised to obtain high levels of efficiency** on-site.
- **Single-point rail anchors.**
- **Safe climbing at height** ensured by rails attached to wall.
- **Versatile and adaptable** (based on MK system).
- **Large and secure platforms,** with customisable configurations.
- **Lifting without crane assistance.**
- Lifting of climbing assemblies by means of a portable hydraulic unit and cylinders. The hydraulic unit drives up to 4 cylinders simultaneously.
- Lifting under **adverse weather conditions.**

Solutions

Great versatility, different types of solutions depending on features of the system.

- **Inner cores construction.**

Inexpensive system for cores construction without requiring a crane and protecting the workers against the inclemency of the weather.

- **Construction of buildings with perimeter walls.**

Large formwork areas with guaranteed safety and high performance rates.

- **Construction of partial walls in combination with the HWS Hydraulic Windshield.**

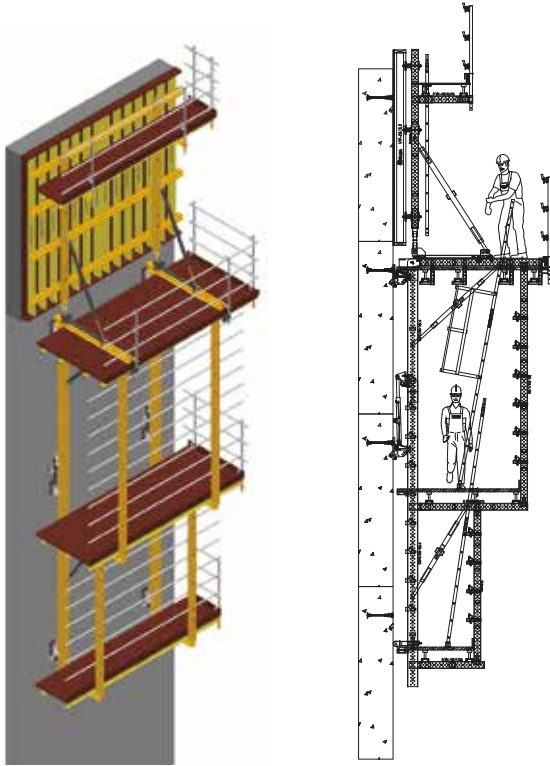
Complete enclosure of the building perimeter for safe formwork solutions in wall areas or columns at the slab edge.



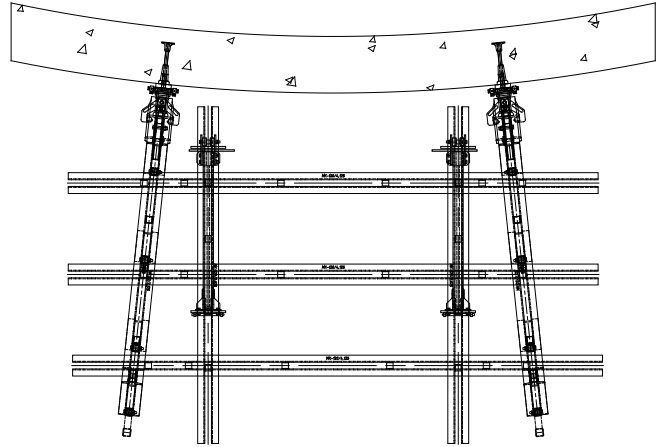


• Construction of walls with long RKS.

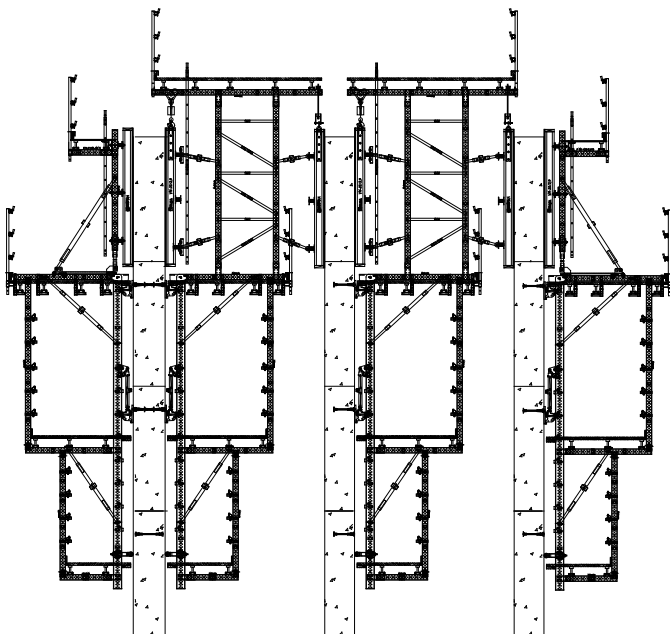
Used in case of strong winds or on facades with window hollows.



• Curved walls.

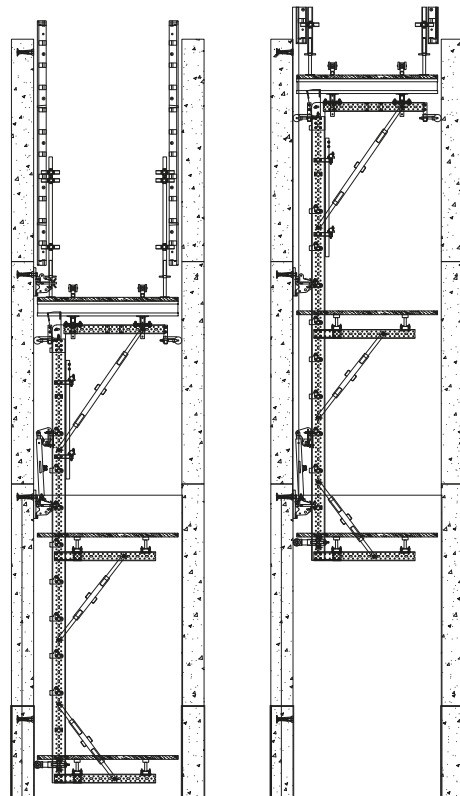


• Construction of hanging internal shafts.



• Construction of small shafts with RKS Shaft solution.

It is used in small interior shafts where the formwork cannot be stripped enough to place the anchor on hold.





ATR Self-Climbing Systems

Features

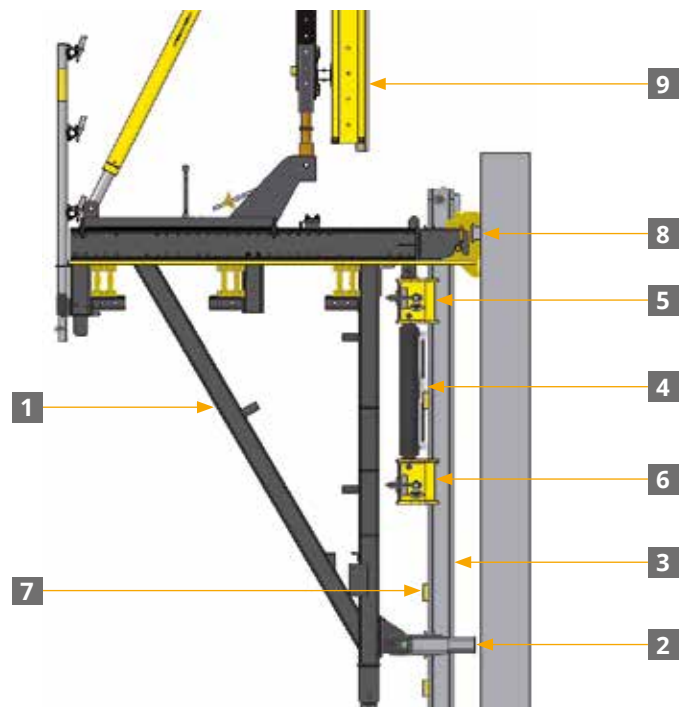
Formwork support structure for the construction of walls and other vertical structures without crane assistance (driven by hydraulic and mechanical mechanisms).

The climbing process consists of the successive elevation of the mast and the climbing bracket-formwork-set along the wall surface.



Main system components

- 1 Self-climbing bracket ATR
- 2 Self-climbing bracket shoe
- 3 Mast
- 4 Cylinder
- 5 Upper climbing head
- 6 Lower climbing head
- 7 Support block
- 8 Anchor bracket
- 9 Formwork





Benefits

- **Flexible and versatile** for all requirements in highrise construction.
- **Versatile, thanks to MK system** components: complex wall geometries, platform configurations, closures, optimised formwork configurations, safety, workspaces between wall and formwork, cone recovery.
- **Not dependent on crane assistance:** formwork, working platforms and boom concrete pumps can be simultaneously lifted.
- **Hydraulic climbing:** superior performance compared to conventional climbing with crane. **Very fast construction pace.**
- Operational even **in adverse weather conditions.**
- **Safe lifting and handling** at height.
- Adaptable to complex wall geometries.
- **Large and protected working platforms.** Safe access.
- **Hydraulic system fully configurable** to construction needs. Hydraulic cylinder lifting capacity: 130 kN.



- **High load-bearing capacity. Large formwork assemblies can be lifted easily.**
 - Hydraulic power unit operates up to 12 cylinders simultaneously.
 - The working load of each cylinder can be controlled separately.
- **Roll-back system** allows work to be performed between formwork panels.
- Main accessories are shared throughout the entire ATR product range.
- **Compatible with all vertical formwork systems and the MK system.**



/ ATR-B SELF-CLIMBING BRACKET

Self-climbing **bracket configuration.**

Formwork panel equipped with roll-back carriages (70 cm) set on the bracket itself.

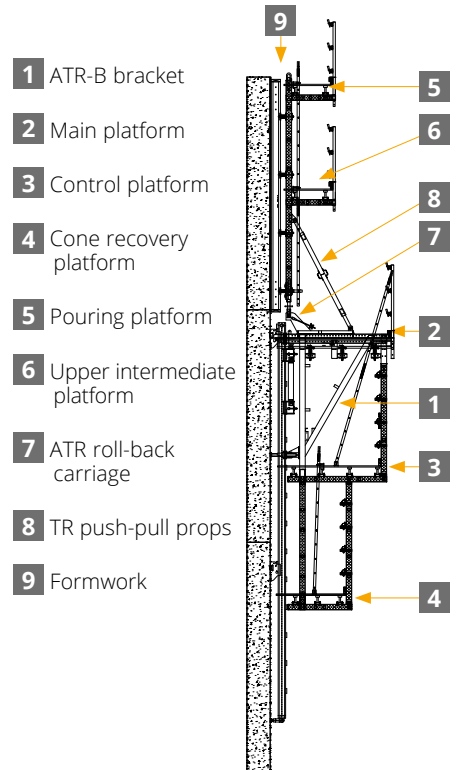
Includes components to position and plumb the formwork both horizontally and vertically.

Two platforms: a main working platform (2.5 m wide) and a platform for hydraulic system operation.

Up to three optional platforms for pouring, material recovery, and other tasks.



• **Main ATR-B system components**



/ ATR-N NARROW SELF-CLIMBING BRACKET

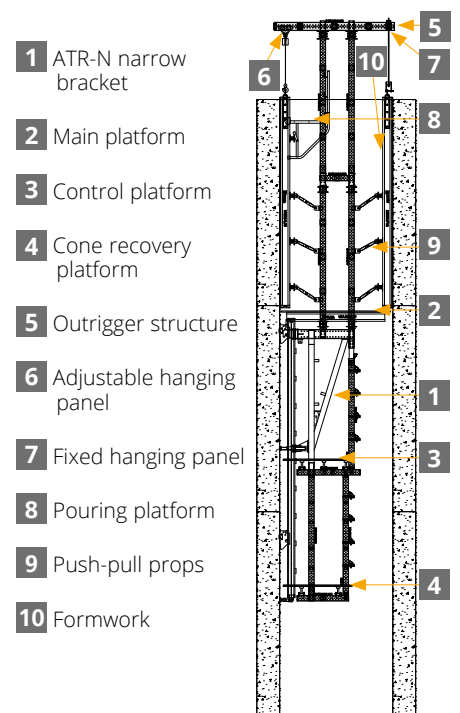
Used in narrow spaces between walls.

Widths between 1.75 and 2.5 m.

Formwork is hung from a structure above to facilitate stripping, roll-backs, and positioning.



• **Main ATR-N system components**



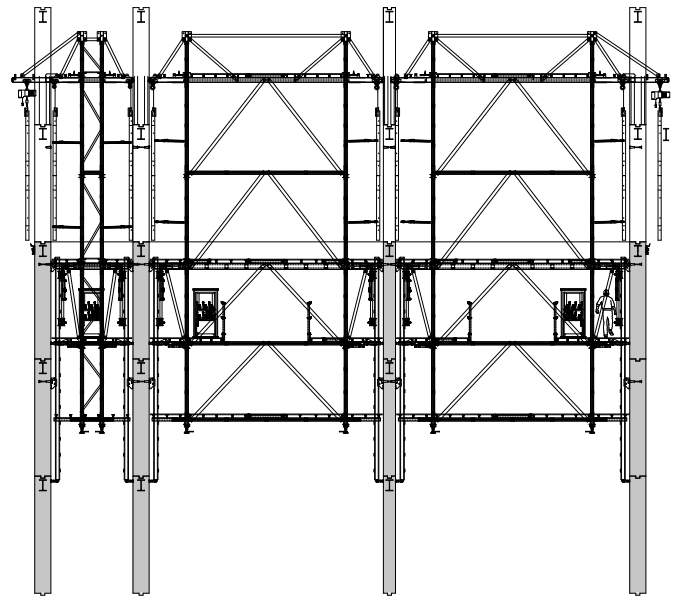


/ ATR-P SELF-CLIMBING PLATFORM

Platforms used in large spaces when required for reasons of size, loads, or shape.

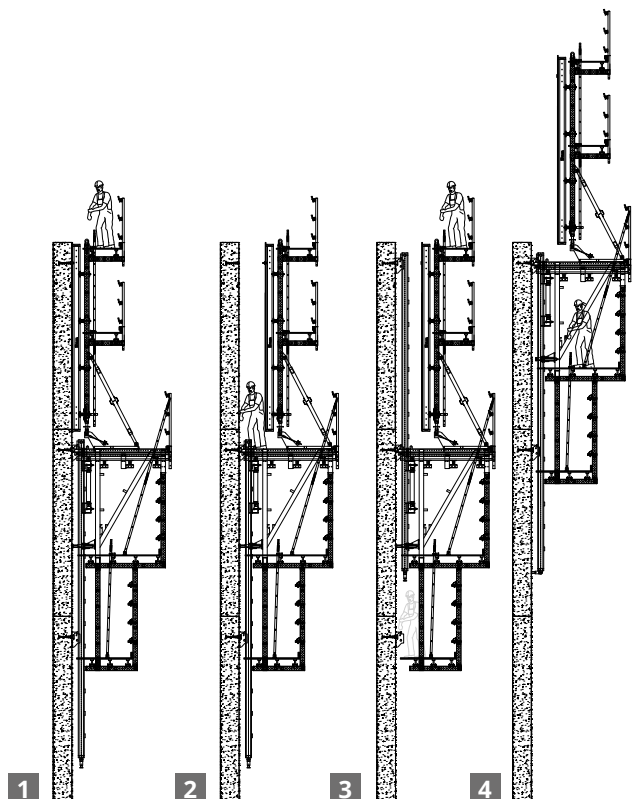
Allows for the installation of boom pump support structures.

Structure based on MK system. Adjustable to fit different geometries and formwork roll-back systems (carriages or outrigger structures).



/ ATR self-climbing system lifting sequence

- 1 Pouring
- 2 Stripping
- 3 Placing of anchors
 - Mast elevation
 - Lower anchor recovery
- 4 Structure elevation





Solutions

- **Complex geometries:** based on the MK system, it easily adapts to the building geometries. Customised access, working and storage areas can be configured. They cover the entire perimeter and provide completely safe working areas.



Building irregularly-shaped cores



Lifting auxiliary elements such as boom concrete pumps or small cranes

- **High capacity self-climbing structures for interior shafts:** enables the simultaneous construction of slabs and walls thus reducing material and avoiding the otherwise required connection.



Exterior formwork and platforms hung from the MK structure above



Adaptable to construction methods for slabs and walls



- ATR system used in pier construction



Exterior and interior formwork free from interferences above



Guaranteed safety on all working levels



ATR used in inclined pylon construction



ATR-SC Heavy duty self-climbing system

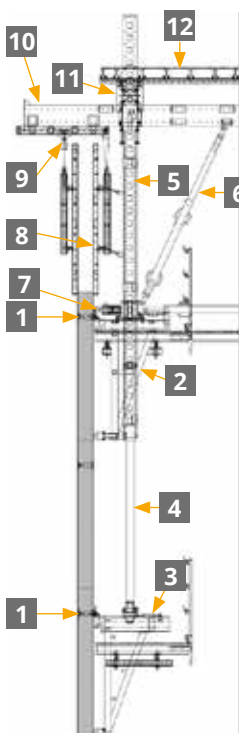
Features

Heavy duty self-climbing system (400 kN per Cylinder) for use in the construction of **large sky-scraper cores**, designed to **minimise the handling** of the formwork system on site.

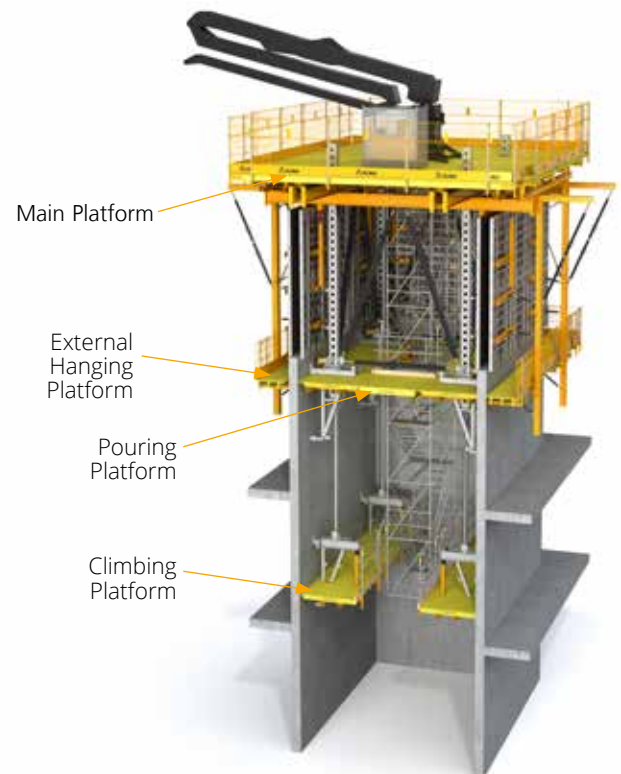
The system is lifted continuously by a single stroke cylinder, without any need for any rail, simply being **supported and guided by the previously executed walls**.



Main system components



- 1 Anchor
- 2 Working Bracket
- 3 Climbing Bracket
- 4 Cylinder 400 kN
- 5 Tower
- 6 Push-Pull Prop SC
- 7 Wheel
- 8 Formwork Panel
- 9 Formwork Outrigger System
- 10 Main Beam DUPN-400
- 11 Secondary Beam DUPN-400
- 12 Pouring Platform

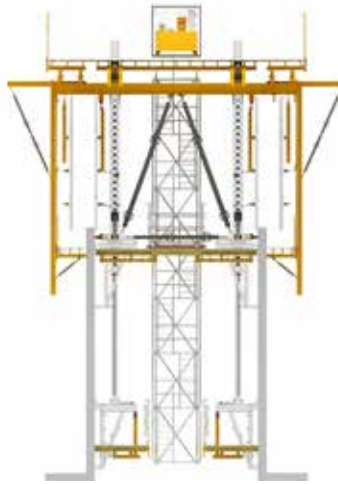




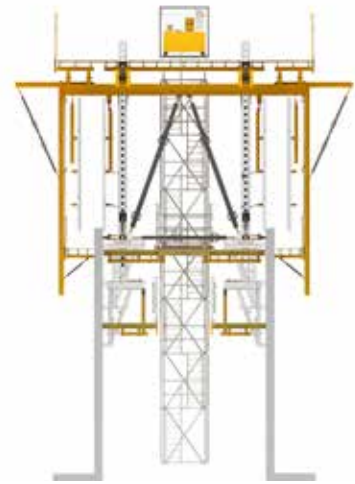
/ Working sequence



Placing Concrete



Lifting of main structure



Climbing platform recovery

| Benefits

- **High load capacity** with the possibility of housing a concrete placing boom.
- **Fast installation** of the system on the wall, as it comprises **pre-assembled gangs**, which can be transported directly to the site.
- **Highly efficient** hydraulic system thanks to the simultaneous drive of the cylinders.
- **Cones can be reused** during the climbing process.
- **Fast and safe stripping** using stripping corners with hydraulic drive.
- Platforms with **large and safe working areas**.
- **Minimum handling** of climbing component and anchors.
- **Safe access to ladders and working platforms** integrated in the climbing structure.

| Solutions

- It can be adapted to **different construction methods** such as the core ahead of the slab or the simultaneous slab and wall methods, thus minimising materials and subsequent joining tasks.
- Based on the **MK system**, the system adapts to the **geometry of the core** and to the **pouring height required** thanks to the flexible upper structure.
- **Wall thickness changes** are carried out by horizontally adjusting the working and climbing brackets.





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