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Definition:

Rapid deployable Water Tower Kit, specifically designed to provide a water pressure distribution system, for example to be used with hospitals. The Water Tower Kit, composed of steel and aluminum elements, makes it possible to build a reliable and sturdy elevated platform at several heights (max. 5.7 meters) and is designed to carry 5000 liters of water. The kit has been developed to be positioned in any situation where water pressure and distribution is needed. Assembly is easy, by means of the specifically developed platform method, where parts of the kit are multifunctionally used as temporary construction platforms. With the kit an easy to understand manual is delivered, which makes it possible to assemble it within 4 hours without the need for heavy equipment.

Keywords:

Water Tower, modular, upgradable, rapid deployable, structurally reliable, low weight and volume, 5000 liter load capacity, 0.7m / 2.4m / 4.0m / 5.7 m height, upgradable



Specifications:

Surface (sqm):

9 m²

(max.) Shipment volume (m³):

1,23 m³

(max.) Shipment weight (kg):

549 kg

The Water Tower kit concept was developed as part of the S(P)EEDKITS project.
S(P)EEDKITS has received funding from the European Union's Seventh Framework



00 Characteristics

→ General Information:

The system is developed to provide a water pressure distribution system, for example to be used with hospitals. It comprises a robust and easy to assemble frame, made of steel and aluminum elements and a PVC grating as platform floor. The system provides the possibility to erect a tower with a platform at several heights (0.7m, 2.4m, 4.0m and 5.7m). The tower has a footprint of 2x2 m and a platform size of 3x3 m. The platform can be loaded with up to 5000 liters of water. All elements are well below 20 kg and can be manually lifted by 1 person. The total package weighs around 550 kgs (packaging included). Elements sizes do not exceed 2m for logistic reasons. A smart and intuitive connection principle is integrated to extend elements like platform beams up to 3 meters length. To limit assembly failures the design includes only a small number of unique components and is delivered with an intuitive and easy to understand manual.

The Water Tower Kit has been developed for quick set-up and potentially long use. It can however also be easily disassembled and reused in a different location. For long term use, a concrete slab or pile foundation is recommended, especially in case of weak soils. To prevent the tower from overturning in case of strong winds, it is possible to place a spare water tank underneath the platform as counterweight, or to brace it externally. A selection of functional and structural upgrades or ADD-ONS are available.

→ Requirements:

- Platform height at 0.7 / 2.4 / 4.0 / and 5.7 m
- Load capacity of 5000 liters of water
- Rapid and easy construction principle
- Structurally safe under extreme conditions
- Low weight and transport volume
- Applicability on all soils, including impenetrable and unlevel soils (with optional ADD-ON kit)
- Optional ADD-ON kits (see *01 Technical aspects*)

→ Applicability:

- Relief phase: Acute, Recovery
- Long lifespan
- Water container capacity: up to 5000 liters
- Wind speeds up to 31 m/s (basic wind speed at 10m height, 10 min average, 50 year ref. period, according to EN 1991-1-4)
- Soil types: all soils, from loose sandy to impenetrable rock, tarmac

→ Recommendations:

- In extreme climate situations apply additional kits for acclimatization or structural safety
- Regular checks for maintenance advised to maintain optimal use and safety

→ Related articles:

- Modular upgrade kits for added functionality (ADD-ON KITS) see list below at *01 Technical aspects*

01 Technical aspects

→ Dimensions:

- Foot print: 1.9 x 1.9m
- Platform size: 3 x 3m
- Platform height: 0.7, 2.4, 4.0 and 5.7 m

→ Material specs:

- Frame: Steel S235 / Aluminum EN-AW 6082 T6
- Grating: fibre reinforced PVC 25mm thickness

<ul style="list-style-type: none"> ○ Color: Light gray
<p>→ Structural Boundary conditions:</p> <ul style="list-style-type: none"> • Applicable up to wind speeds of 31 m/s (basic wind speed at 10m height, 10 min average, 50 year ref. period, according to EN 1991-1-4) • Calculation according to EN 1990 / EN1990 / EN1993 / EN1999
<p>→ Lifespan: 15 years</p>
<p>→ Compatibility & Modularity:</p> <p>The following upgrade kits have been developed to increase functionality or structural safety:</p> <ul style="list-style-type: none"> • ADD-ON 01: 1.7 m module to increase 4,0m tower to 5.7 m height • ADD-ON 02: Shade net addition for platform to prevent water heating • ADD-ON 03: Piping for water distribution up and down • ADD-ON 04: Foundation kit for impenetrable soils (big bags + ratchet straps) • ADD-ON 05: kit for connecting multiple towers to create a larger platform and connect water tanks • ADD-ON 06: Safety harness and belts for fall protection • ADD-ON 06: Cage ladder for increased climbing safety

02 Logistical aspects

<p>→ Scale: Container – Pallet</p> <ul style="list-style-type: none"> • Quantity/Unit: 2 pallet places (2 kits on 1 pallet)
<p>→ Packaging:</p> <ul style="list-style-type: none"> • Number of parcels/Unit: In crate: 1 Package Seperate bundles/boxes: 9 packages (5.7m tower), 7 packages (4.0m tower) • Dimensions: 0.5 pallet (2,10 x 0.80 x 0.73 m) • Identification Code: WTK-5M / WTK-3M
<p>→ Number of items / element: 162 (5m tower), small fixation parts excluded</p>
<p>→ Storage:</p> <ul style="list-style-type: none"> • Storage lifespan: > 5 years
<p>→ Ease of transport:</p> <ul style="list-style-type: none"> • Minimized volume / weight / element size (for various transport options: plane, boat, truck / pick up truck, cart) • max 20 kg per element (1 person)
<p>→ Time to set up:</p> <ul style="list-style-type: none"> • 4 hours (2-3 people) • Disassembly time: 2 hours (2-3 people)
<p>→ Advice for customs: No Stockpile, Protect form rain</p>

03 Social

<p>→ Skills requested + Man power:</p> <ul style="list-style-type: none"> • 2 (unskilled) people + 1 skilled supervisor • No heavy equipment, only basic manual tools, only safe climbing involved

→ Ease of use:

- Manual included
- Minimize chance of failure through standardization of elements and easy assembly process
- Only proven technologies are applied
- Applicable in all soils, from loose sandy to impenetrable rock
- Footings are adjustable in height to solve levelness issues

04 Coordination

→ Instruction for use:

- See manual for instructions on assembly and use

→ Maintenance:

- Monthly check on foundation status (anchoring and footing), check levelness of tower secure tension in wind bracing
- Ensure drainage of rainwater and spilled water in vicinity of foundation. Prevent soaking of soil near foundation and footing.

05 Environmental impact

→ Origin:

- Europe

→ Reusability:

- Reuse of packaging materials: Ability to pack again for reuse in other location
- Reuse of total tower structure possible, fully demountable and reusable.

→ Elimination method recommended + consequences:

- If relevant, the Water Tower elements can be fully reused in a new situation.

Logistic files and information:

Intuitive Manual included (examples below)

