

Wyssen Avalanche Tower LS12-5 and LS24-5



Safety through **innovation**

WYSSSEN *avalanche*
switzerland **control**

LS12-5



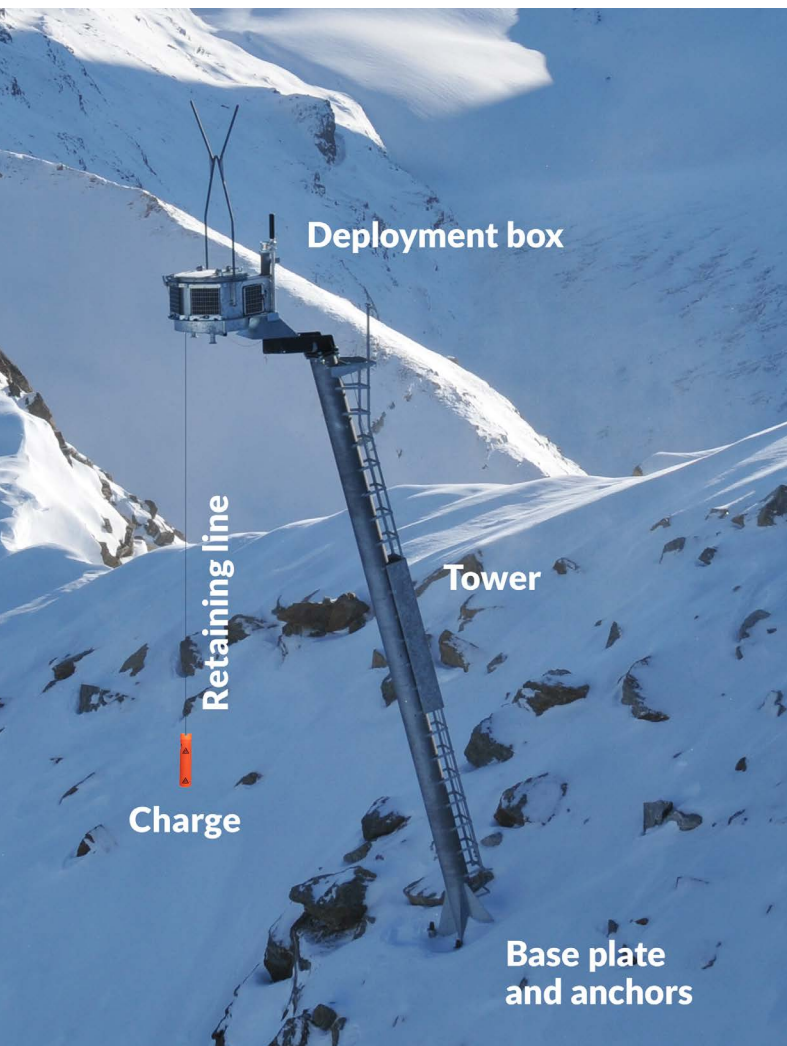
Safety through **innovation**

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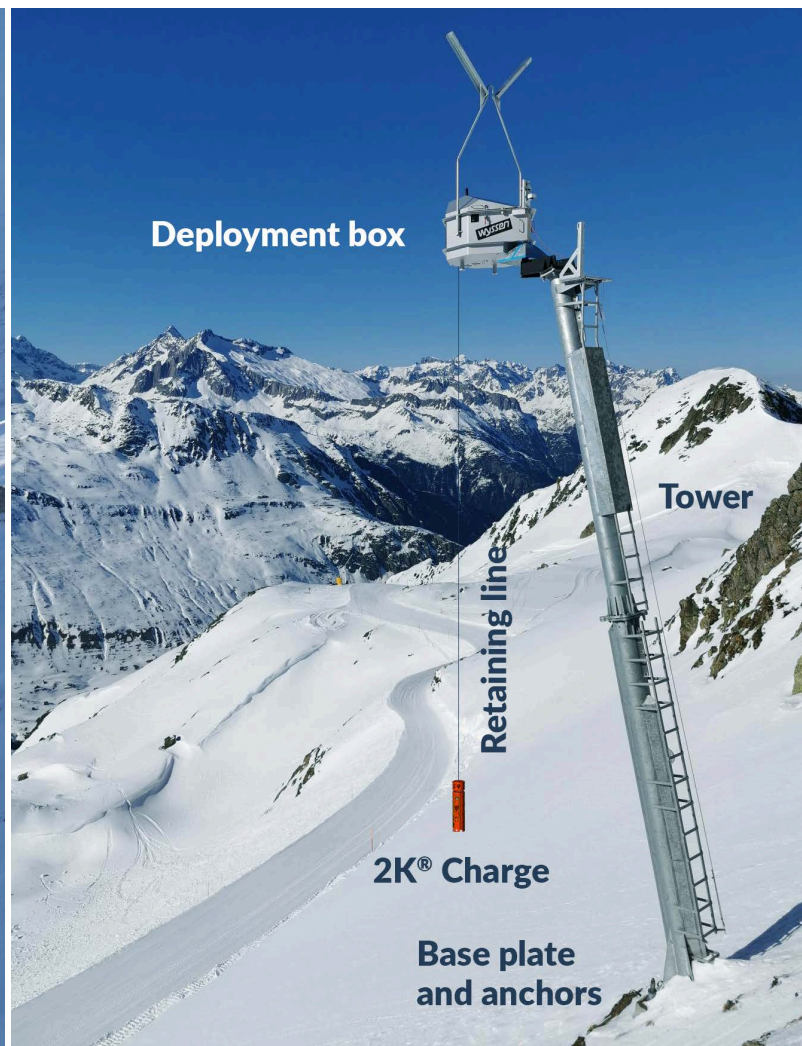
Set up and function

The Wyssen avalanche tower is designed to trigger avalanches proactively with remote-controlled blasting. To trigger an avalanche, a coded command is sent from the control center WAC.3® to the control system of the deployment box to initiate blasting. **The deployment box contains either up to 12 explosive charges or 12 Wyssen 2K® charges for the LS12-5 and up to 24 Wyssen 2K® charges on the LS24-5**, which can be individually deployed by remote control. When the explosive charge is dropped two igniters are pulled, and the explosion is set off after a time delay. The charge hangs from a cord about 2-3 meters (7-10 ft) above the snow cover, and the cord is dropped after blasting. To reload explosive charges the deployment box is lifted from the tower by helicopter and brought to a workshop or warehouse.

LS12-5



LS24-5



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Effectiveness

Practitioners have found that the greatest degree of success for controlled release of avalanches is achieved by a remote-controlled detonation of an effective explosive at the right time and in the right place.

From the avalanche operator's point of view, a blasting installation must be extremely reliable and effective as well as simple to operate and maintain. The installation in the terrain must be straightforward and the interference of the installation must have minimal impact on sensitive mountain environments. Wyssen avalanche towers are ideal for fulfilling these requirements.

Smallest residual risk thanks to the largest effective range

- Blasting above the snow with bigger charges (4-5kg / 9-11lbs) gives the maximum effective range up to 260m in diameter (850 ft)
- Explosives with high detonation speeds produce N-shaped pressure waves which have been proven to cause the best release effect, particularly at a greater distance from the detonation point
- Positioning a tower on a prominent terrain feature and including a 12m (39 ft) tower instead of 10m (33 ft) enables the effect to be reached in locations of pressure shadow (in couloirs, behind terrain ribs)
- Releasing smaller quantities of snow in increments, decreasing possibility for larger avalanches
- Very good stability test for assessment of the local avalanche danger

Highest reliability

- No critical or moving parts are exposed to the weather
- Solar power supply or wind generator avoids the necessity of vulnerable supply lines in the terrain
- Annual maintenance ensures maximum reliability

Reduced closure times thanks to rapid release, around the clock and in all weathers

- Remote-controlled installations allow operation around the clock
- Very rapid operation possible
- Short closure times
- Less time snow plowing as avalanches are released in smaller portions

Highest cost-effectiveness

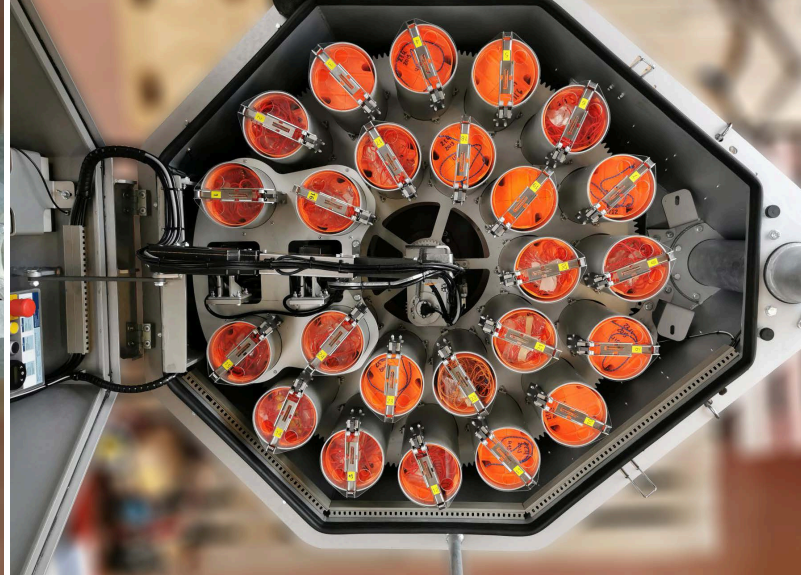
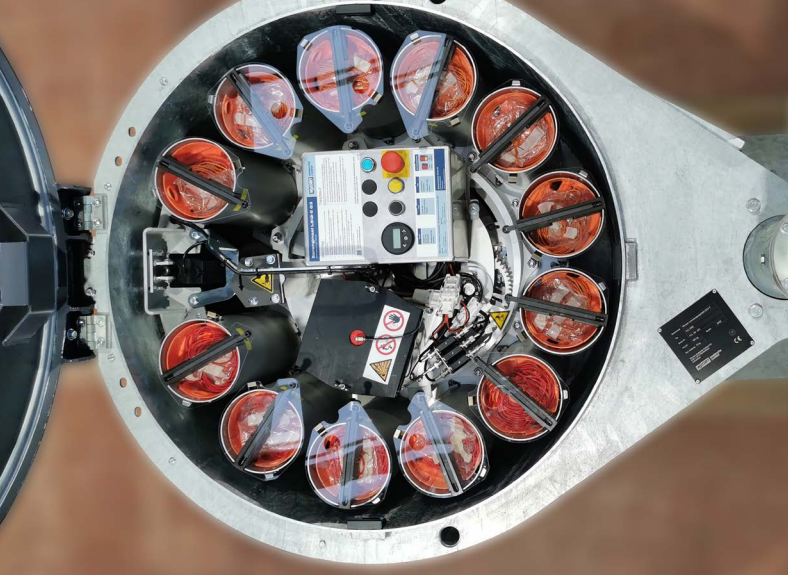
- Low investment and operating cost in comparison with permanent protective measures (snow sheds, bridges, tunnels)
- Lowest operational costs thanks to its ingenious system concept
- Damage to infrastructure is avoided by the release of smaller portions
- Economic benefits thanks to reduced closure times

Highest degree of safety for the operating staff

- No staff in the danger area thanks to remote-controlled release
- Preparation of the charges takes place in protected areas

Environmental stewardship

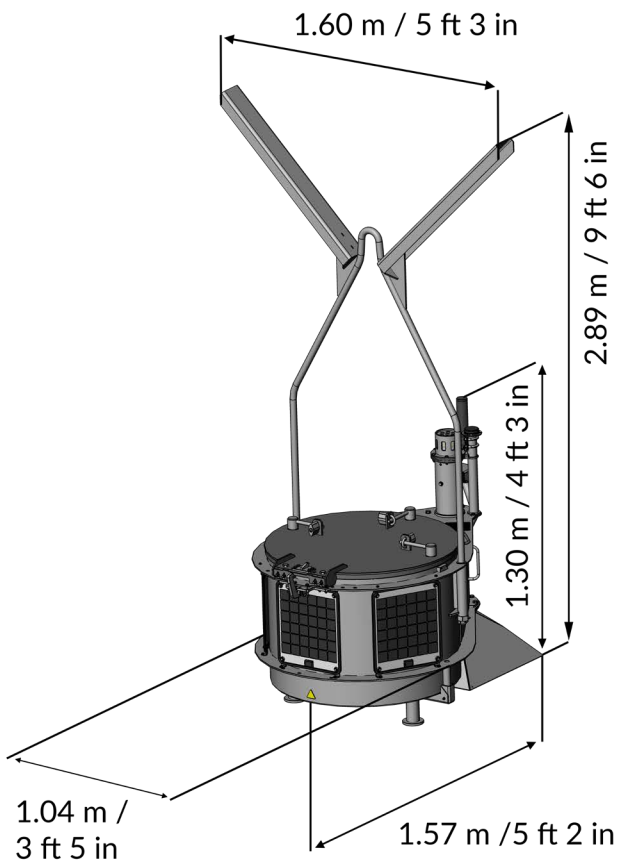
- Foundation Footprint is only 1m²
- Short construction times in the terrain simplify planning and implementation
- Blasting over the ground prevents damage to the vegetation cover
- Dismantling after operating life possible without any problems



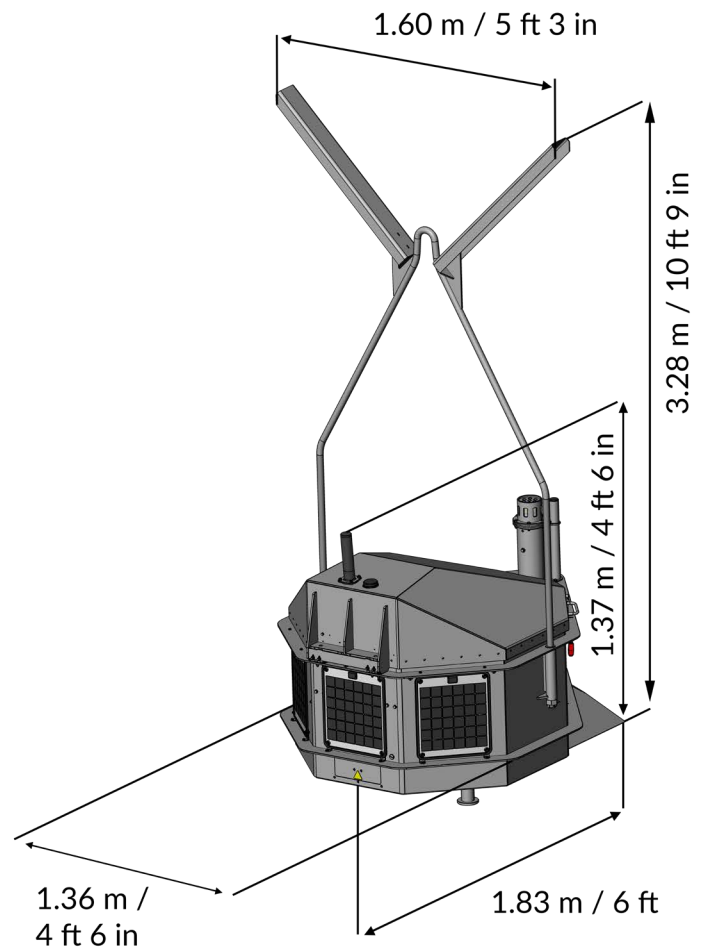
Deployment Box

The solar panels, antenna and flashing lamp are mounted on the outside of the deployment box. The dropping mechanism, the electronics, and 12 or 24 prepared explosive charges are on the inside of the box, protected from the elements. The compact and sealed design means that maximum system reliability is attained.

LS12-5



LS24-5



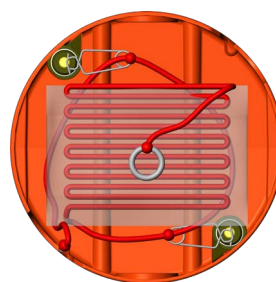


Charge 07

The explosive charge consists of two orange half-shells with pre-mounted percussion igniters, which are assembled with 4-5kg (9-11 lbs) of explosives. The charges are assembled by the operator on-site. Wyssen sells the charge containers and retaining cord (6.5m / 21 ft).

Explosives and other pyrotechnical elements are purchased directly by customers from the appropriate suppliers.

Use only with LS12-5 and LS6-5.



Wyssen 2K® Charge

Unlike conventional explosives, Wyssen 2K® is inert until the last moment before use. This creates an incredibly safe and easy to handle charge. Furthermore 2K® has many advantages during transport and storage.

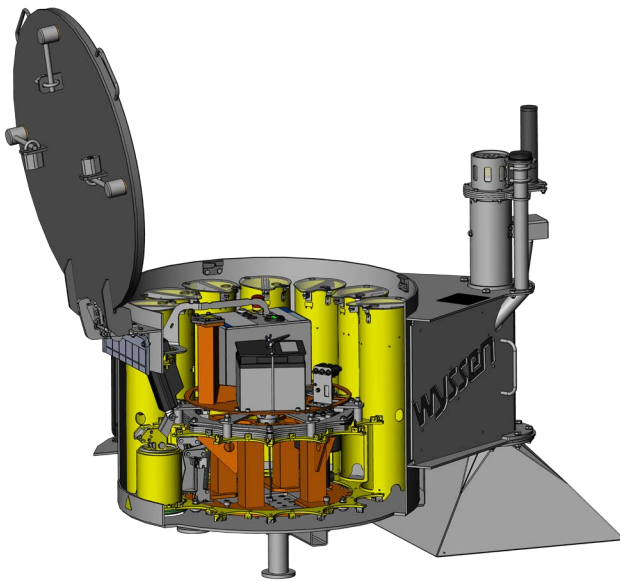
Can be used for all Wyssen deployment boxes.

Features Wyssen 2K® Charge

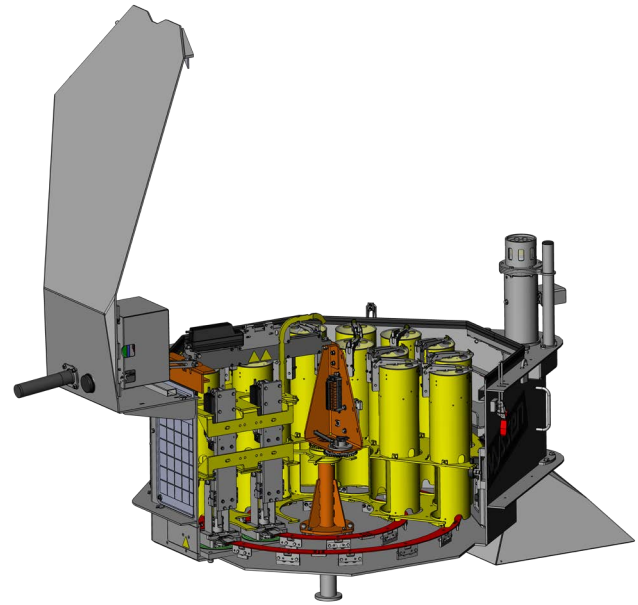
- ✓ Suitable for all Wyssen Avalanche Towers LS6-5, LS12-5 and LS24-5
- ✓ Total explosive substance: 4.2 kg (9.3 lbs)
- ✓ Detonation velocity approx. 4,200 m/s
- ✓ Ignition once mixed: Detonator Nr. 8, 2 per charge
- ✓ Increased safety due to contained safety fuse in the charge container
- ✓ Detonators face each other in order to mutually detonate themselves
- ✓ The charge becomes inert if there is no detonation
- ✓ Easy and safe transport
- ✓ Easy to mount and to handle

View of deployment box

LS12-5



LS24-5



Technical Data

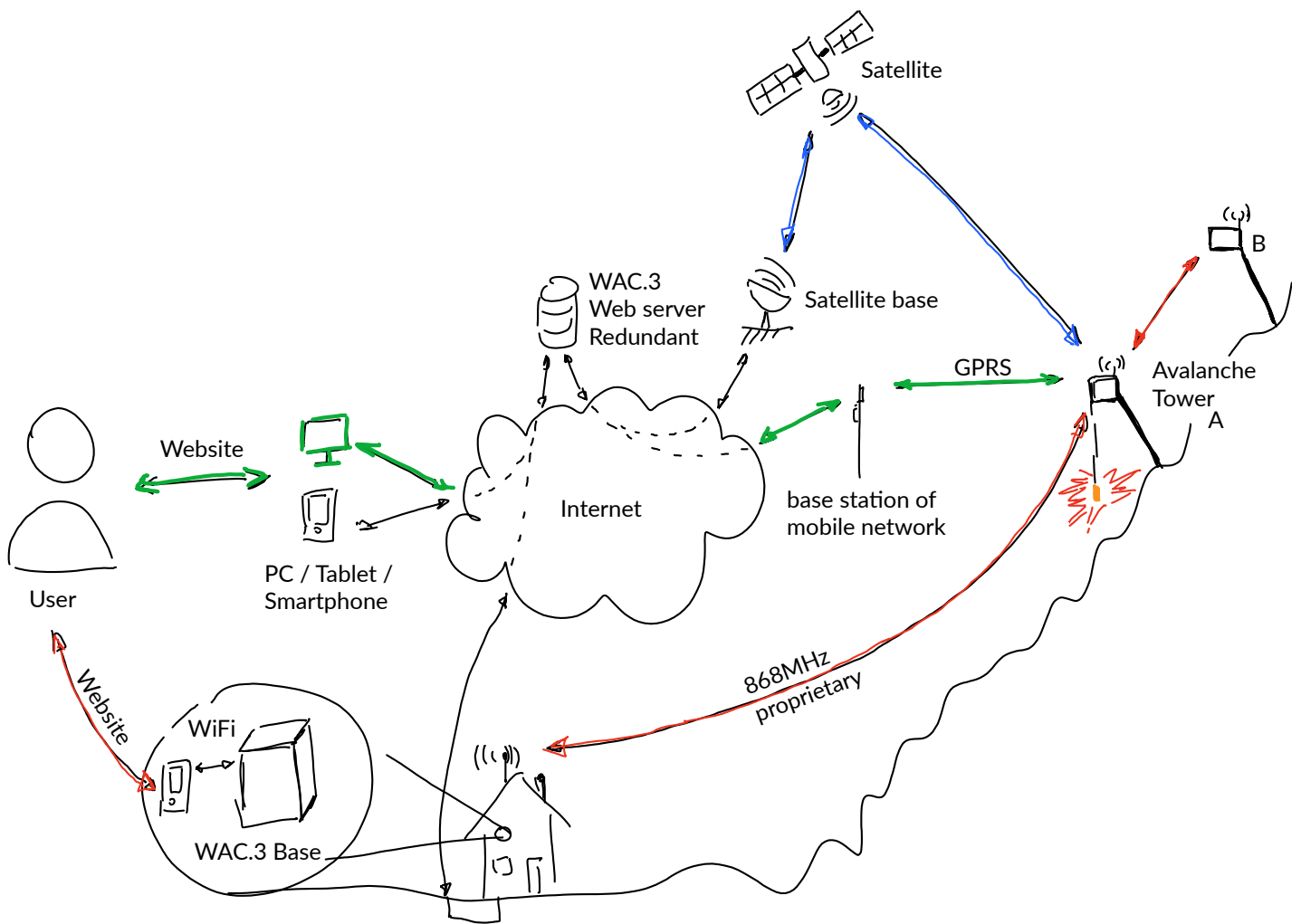
LS12-5

LS24-5

General information		
Weight deployment box incl. charges	530 kg (1169 lbs)	540 kg (1190 lbs)
Dimensions deployment box (l x b x h)	1600 x 1050 x 1200 mm (5 ft 2 in x 3 ft 5 in x 3 ft 11 in)	1830 x 1360 x 1300 mm (6 ft x 4 ft 6 in x 4 ft 4 in)
Dimensions of tower (h)	10 m or 12 m (33 ft or 39 ft)	
Inclination of tower	15° in direction of slope towards the valley	
Loading capacity		
Number of charges per launcher up to	12 pcs	24 pcs
Amount of explosives per charge	max. 5 kg (11 lbs)	4.2 kg (9.3 lbs)
Mechanism in the deployment box		
Drive unit	DC Motor	
Time for rotating one position	approx. 13 s	approx. 16 s
Power supply		
Battery in deployment box supplied by solar panel	12 V	



Functional principle Avalanche Tower

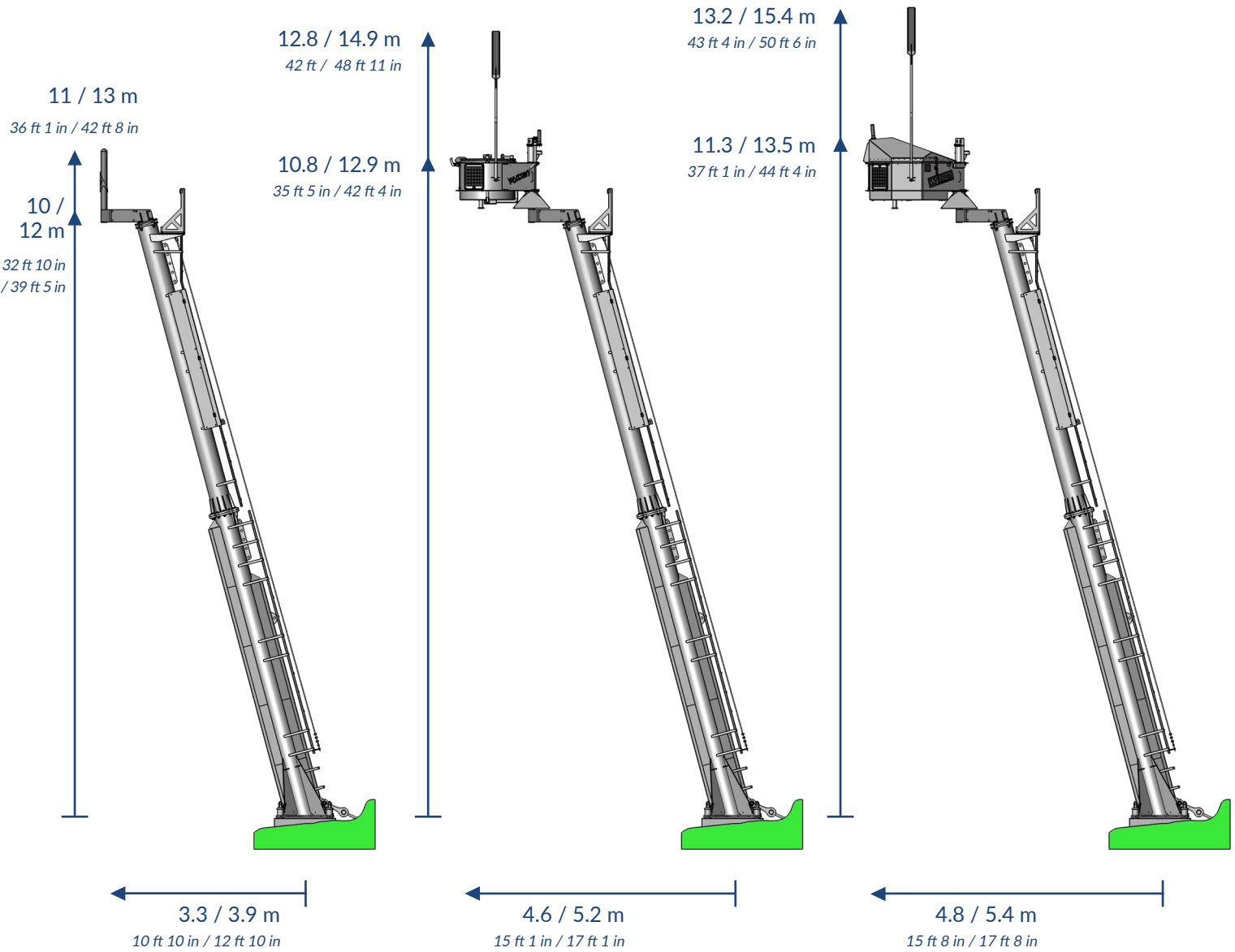




**Tower in the summer
without depl. box**

**Tower in the winter with deployment box
LS12-5**

LS24-5





Transportation by Helicopter

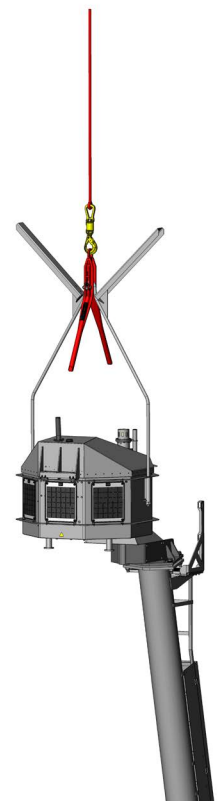
The deployment box is transported by helicopter to the towers in the terrain. Thanks to the guiding system the pilot is able to perform the placement on the tower on their own without a flight assistant. The deployment box orientates itself automatically into the correct position. A safety switch detects the correct position, after which the system becomes operational. The operation can verify the placement of the deployment box on the correct tower with the GPS receiver. The system will not be activated if placement is incorrect.

When all charges are used or at the end of the season, the deployment box is retrieved from the tower for reloading or to be stored in a safe location for the summer.

Safety regulations

In order to load and operate Wyssen systems, personnel must have attended a certified course by the company and possess a valid certificate for the artificial release of avalanches with explosives.

Approval for storing explosives: for each tower location authorization must be requested by the customer from the responsible authorities for storing explosives in the avalanche tower deployment boxes during the period of operation.

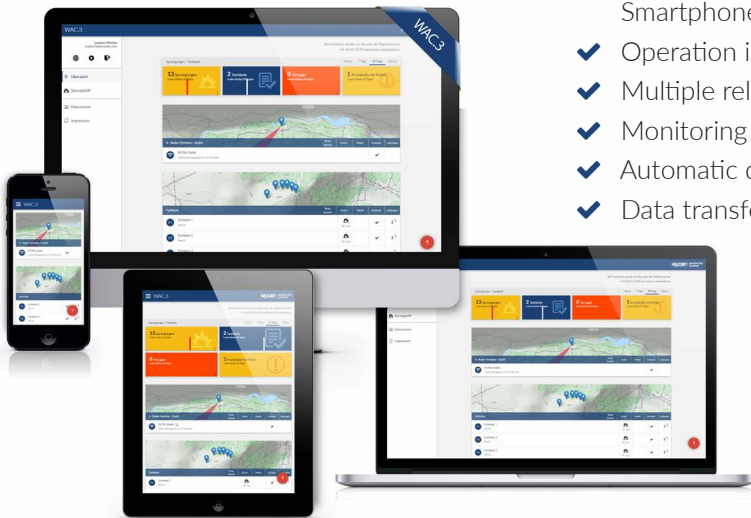




All in one online platform Wyssen Avalanche Control Center WAC.3®

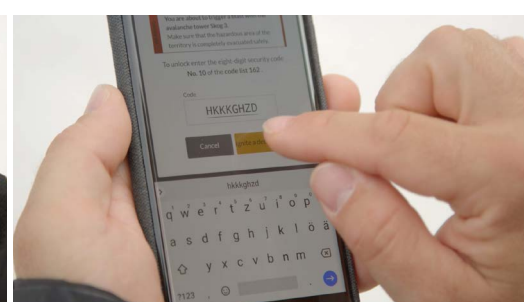
The latest software generation includes new hardware for operating, monitoring and data storage of the well-proven Wyssen Avalanche Towers, detection systems and weather stations.

- ✓ Intuitive web-based operating interface
- ✓ Operable from any web-enabled device (Computer, Tablet, Notebook, Smartphone)
- ✓ Operation independent of location
- ✓ Multiple release from Avalanche Towers possible
- ✓ Monitoring of systems 24/7
- ✓ Automatic documentation and archiving of activities and system data
- ✓ Data transfer via mobile network, radio connection or satellite



Extensive additional features

- ✓ ExploDoc
- ✓ RiskEval
- ✓ ComTool
- ✓ HeliTrack
- ✓ Weather stations etc.
- ✓ 3D snow height measurement via LIA® etc.



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