



Wassara

STRAIGHT FORWARD DRILLING



WATER-POWERED DRILLING TO THE RESCUE OF CAPSIZED COSTA CONCORDIA

The salvage of the cruise liner Costa Concordia is estimated to cost €200 million. An important part of the work is to secure the wreck, keeping it from sliding further down the slope it lies on. A vital part is played by the Wassara DTH hammer when drilling for the anchoring foundations.

The water-powered percussion drilling is the only feasible method for drilling in the Marine National Park with its coral reefs.



A well-known wreck...

Costa Concordia is well known to the public after it capsized in Italy on January 13, 2012. The ship, 290 meters (950 ft) long and twice the weight of Titanic, is now about to be salvaged and scrapped. The salvage is estimated to cost €200 million.

...in a marine national park

The environment in the area is a Marine National Park with coral reef and a popular tourist attraction. Major focus is set to minimize any environmental impact. The drilling technology is powered by high-pressure water instead of compressed air. It has been selected to drill the holes for the anchors needed when securing the wreck

Securing the ship

Ten platforms will be installed on the bedrock by drilling 12 pieces of 15 meter (50 ft) deep holes and installing anchors that's grouted firmly in the rock. After this, several wires will be connected to the platforms and under the ship to the port side as a counter hold. This will keep the wreck from sliding further down the slope it lies on.

Environmental friendly drilling

Thanks to Wassaras environmental friendly drilling technology, the highly sensitive seabed environment is spared. As the water-powered percussion drilling does not use any oil to lubricate the hammer, there is no risk of any pollution in the borehole. And unlike compressed air, high-pressure water is incompressible and loses its power after leaving the drill bit, much like a garden hose. This minimises the risk of causing damage to the formation.

A drilling technology developed in Swedish mines

The technique of powering the DTH hammer with high-pressure water was invented for the Swedish mine company LKAB as they needed a more efficient drilling technology in their mines. The water-powered technology gives several benefits; one is that it is capable of drilling in difficult formations and is not affected by water in the borehole or formation. Another advantage of the technology is the straight holes, provided by greater precision.



CASE STUDY

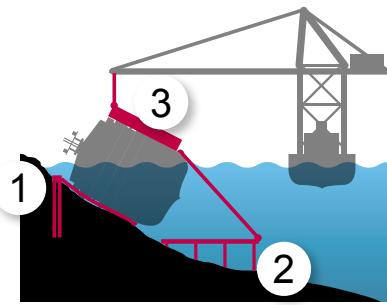
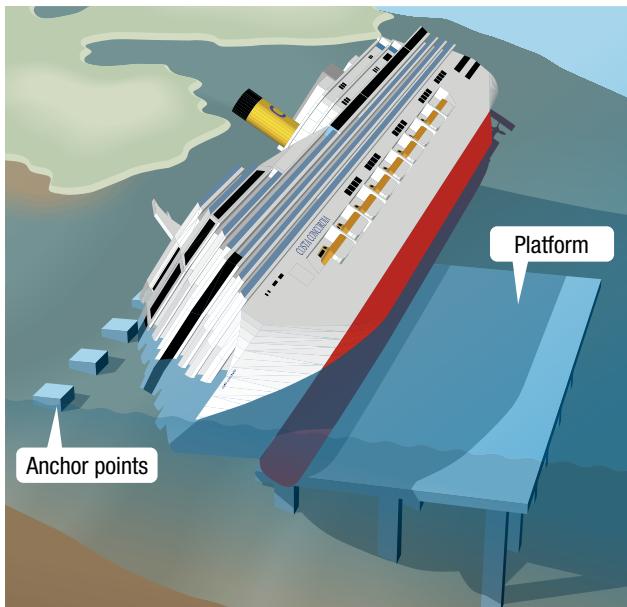
WATER-POWERED DRILLING TO THE RESCUE OF CAPSIZED COSTA CONCORDIA

Ten platforms will be installed on the bedrock by drilling 12 pieces of 15 meter (50 ft) deep holes and installing anchors that's grouted firmly in the rock. After this, several wires will be connected to the platforms and under the ship to the port side as a counter hold.

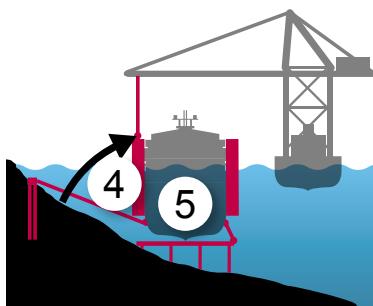


| Equipment used | |
|--------------------|----------------------------|
| DTH hammer | Wassara W150 |
| Drill bit | Wassara drill bit, Ø203 mm |
| Pump | WASP 150 Diesel |
| Drilling fluid | Sea water |
| Rig | Solimec |
| Borehole length | 15 meters (50 ft) |
| Scope of drilling | 1 800 meters (5 900 ft) |
| Geologic formation | Coral and bedrock |

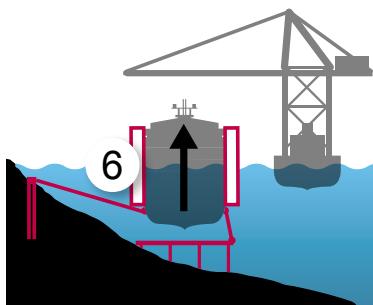
January 2013



1. The ship is secured to the anchor points.
2. A platform is constructed.
3. Large floating pads of steel, filled with water are attached to one side of the ship.



4. The ship is erected to stand on the platform.
5. Large floating pads of steel are attached to the other side of the ship.



6. The water is pumped out from the floating pads. The ship will now float and can be towed away for scrapping.

CASE STUDY