OFFSHORE WIND POWER SYSTEMS OF TEXAS LLC

Product/Service Information

The Future of Offshore Wind Energy is dependant on a good foundation.

The Titan 200 is Solid Footing to Build Upon

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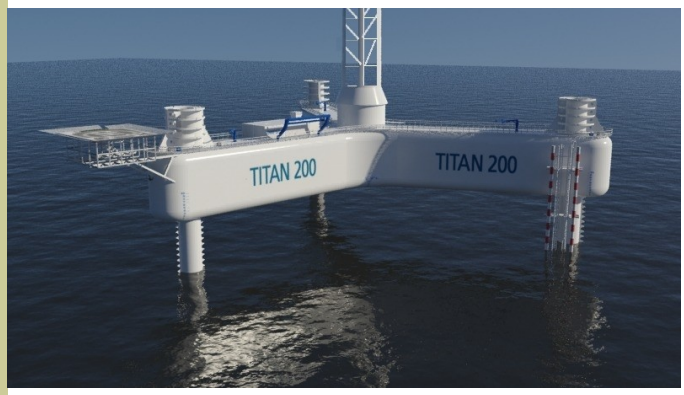


The Titan Wind Measurement Platform System (WMPS) is an integrated offshore wind and wave measurement system. The wind measurement tower can reach to a height of 200 meters, which is adequate to analyze the potential energy production for the full tip height of the industry's largest offshore wind turbines.

The WMPS consists of a self-installing three-legged jack up platform, capable of standing in as much as 100 meters of water as either a permanent or temporary station. The system can be quickly and efficiently relocated as many times as required, without requiring cranes or expensive specialized vessels. Power generation is installed to keep the system self sufficient without the need for long haul cabling.

The Titan WMPS will be assembled dock side where the cost of assembly will be much more economical. Assembly at sea and over-the-water construction is effectively eliminated. Once assembled, the entire system will be jacked up and fully tested near shore, then jacked down and floated to the site to become immediately operational. Self-installation at the site can be completed and the unit can be operational in a single day. The system can be easily relocated if problems are encountered under the sea bed.

This unique foundation design allows the met tower to be fully supported with guy wires connected to the platform structure, allowing for maximum stability during storms. The jack up legs will penetrate the sea bed to the necessary depth to ensure stability under maximum rated loads. Since the foundation's hull sits 20 meters above the water's surface, storm waves pass harmlessly beneath the Titan, thereby minimizing wave loading and fatigue on the structure. The Titan WMPS is designed to survive Cat 5 storms.

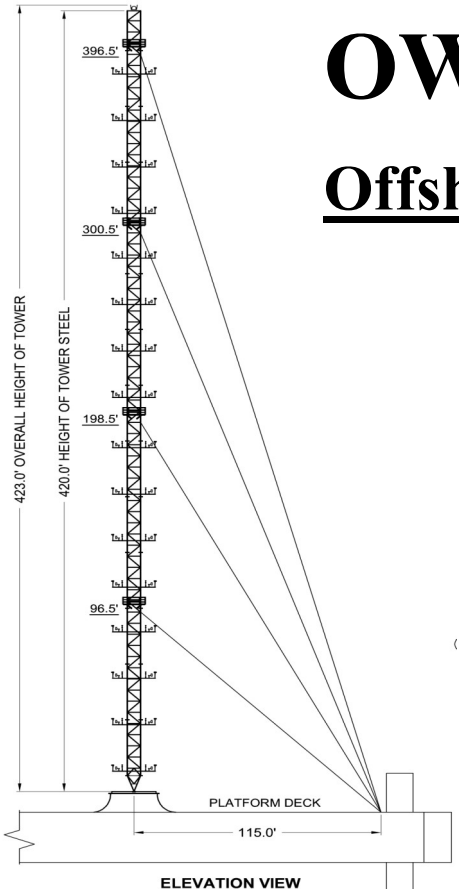
At the end of the measurement program, the Titan WMPS can be removed from the site, leaving absolutely no impact to the sub-sea environment. The system may be stored or relocated to another project. Alternatively, the Titan 200-A can be modified to a Wind Turbine Support Structure, allowing a significant portion of the initial capital investment to be reused in construction of the wind farm.

The Titan WMPS represents the next generation of one of the most well-proven offshore platforms in the world. Our unique system is much more affordable than the traditional one-time-use structures currently employed. This is a low risk, high yield investment for today's offshore wind farms.

OWPST

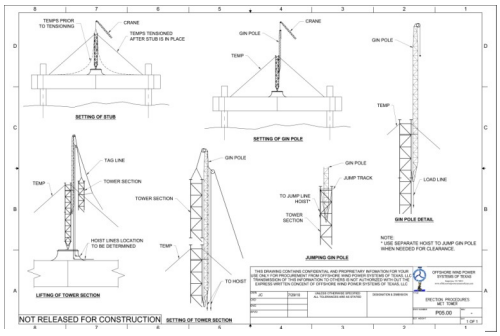
OWPST

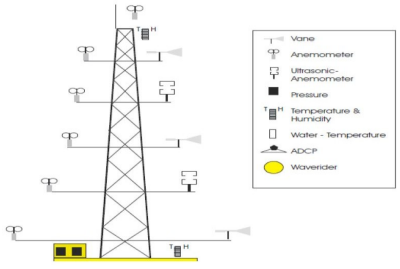
Offshore Wind Measurement Systems



Mobile Self Installing Platform and Tower for Offshore Wind Measurement

OWPST system enables the FULL Blade height to be measured and monitored to capture the Full Energy Production of the site, with towers self supported at 5 MW full height the true energy potential and economic value can be recorded and certified for project funding, ROI, benchmark testing and performance evaluation.





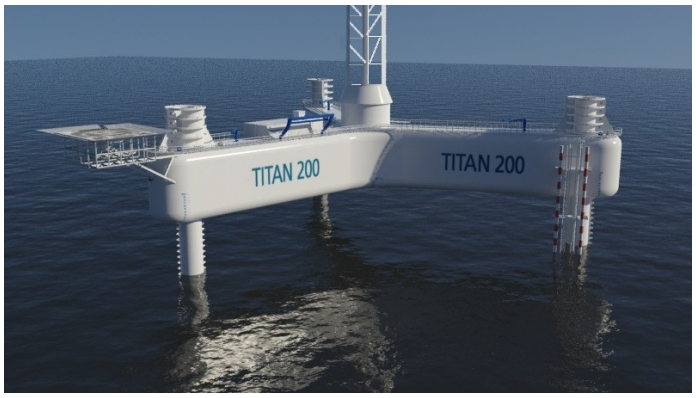
1. The tower is a guyed, triangular, non-insulated, open face structure.

2. The tower is designed in accordance with ANSI/TIA 222-G-2005 including addendum 1, 222-G-1, dated 2007, for the following parameters and equipment:
Structure Classification II
175 MPH 3-second gust basic wind speed with no radial ice
100 MPH 3-second gust basic wind speed with 1.0" basic radial ice thickness
Exposure Category D
Topographic Category 1
Climbing and Working Facility Class B
Equipment
a. One (1) FAA red obstruction lighting system.
b. Sixteen (16) weather monitoring levels, located every 25' between the 25' and 400' level inclusive. Each level consists of temperature, wind and/or pressure measurement devices with a maximum of two (2) ½" diameter cables per level for transmission of data. Maximum of thirty-two (32) ½" cables are supported on six (6) ¾" rigid conduit to varying heights.
c. Four (4) wrap-around work platforms, one (1) located above each guy level.
d. One (1) inside climbing ladder with cable type safety device.

3. All material is hot dip galvanized after fabrication and coated with a non-corrosive epoxy based paint, approved by manufacture for marine use.

4. The following material is supplied with the tower:
a. All tower steel, hardware and guys.
b. Four (4) wrap around work platforms.
c. All conduit for cable support.
d. Inside climbing ladder with safety climb.
e. Mounts for sixteen (16) levels of weather monitoring equipment.
f. One (1) FAA red obstruction lighting system.

5. All side mounted antennas and associated mounts must be erected and accessed by using climbing attachment anchorage on the tower. No provisions have been made to use side mounted antenna mounts as climbing attachment anchorage points. Refer to Section 12.0 of ANSI/TIA 222-G for additional information.
6. It is recommended that the tower owner place a sign at the base of the tower indicating that this tower has been supplied as a Class B climbing and working facility and only competent climbers, as defined in ANSI/TIA 222-G, shall access the tower. It is also recommended that the tower owner purchase a copy of ANSI/TIA 222-G and place a copy of Section 12, Climbing Facilities, in a water proof container/envelope at the base of the tower.



OWPST Titan 200 WMPS

The technical and economical solution to offshore wind resource measurement

CAPACITIES

Platform MW Rated …….	5 MW
Max Water Depth ……..	60 M
Draft ……	4.47 M
Tow ……	Restricted
CG to MC ……	3.04 M
Max Wave ……	20 M
Storm (Cat) ……..	5 Rated
Class ……..	ABS

Optional Equipment

Helipad
Crane upgrades
Soil core sample package
Solar panel power package
Mini-turbine power package
Storage battery package
Aux– Monitoring control room
Aux– Quarters & Office

Standard Equipment

Re-deployable hull(30 year design life)
Installation equipment set
- Jacking system
- Control room
  - Marine communication
  - Marine Monitoring
  - Wind Monitoring
  - Wave Monitoring
  - Ballast system
  - Temporary Office/quarters
- Power Unit house
  - Generators (2)
  - Hydraulic Power Unit
  - Air Compressors
  - Motor Control Center
  - Pump & Valve systems

5 MW tower configuration
- 200 meter tower
- Full instrumentation package

Platform lighting package
Wave / water monitor tower
- Full instrumentation package

Service boat landing package
Service Cranes (4)

ABS Certification to Class for Offshore Wind Turbine Installations
Other: ISO, DNV, IEC, GS, Geo-Tech

Full System Testing & Commissioning
Deployment & Maintenance services

Shipyard fully Assembled & Tested

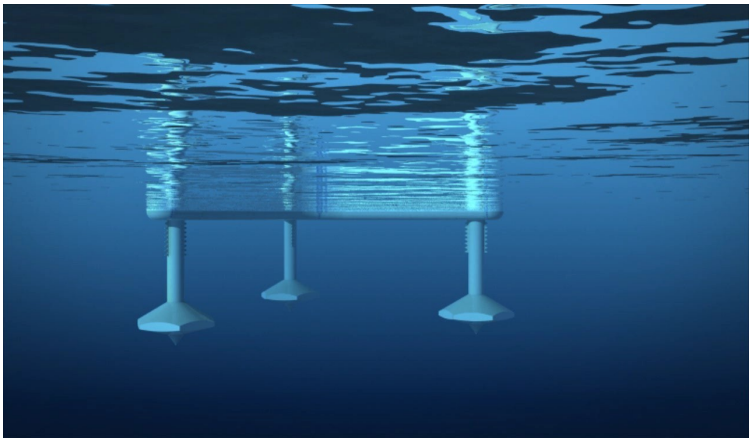
All series of Titan platform foundations are completely assembled and tested within the shipyard; avoiding costly and hazardous at sea assembly.
All auxiliary systems are fully commission tested prior to sea worth certification is issued.

Because the work is carried out in the shipyard no expensive offshore heavy lift cranes are required.
Operations insurance cost is lower, with work being preformed on layout slabs, dry docks or dock side.
Units can be mass produced.

Simple Tow to the Site

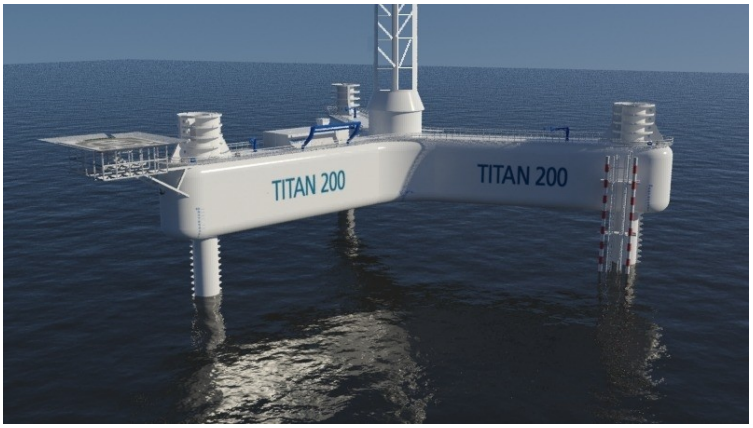
After commissioning test are complete the Titan requires a simple tow to the site for installation.
Towing and installation can be carried out year around, weather restricted operations are avoided and accelerated production of the overall site is significantly improved as compared to conventional methods.

With the platform designed to be self installing a single tow vessel is all that is needed.



Installation w/o Support Vessels

Once on site the state of the art controls take over the installation process, legs are automatically lowered to the sea floor, monitoring of the seabed surface and subsurface is preformed to avoid obstructions during the process. Ballast water is brought onboard to enable the spud-can (s) to penetrate the seafloor and stabilize the platform. As the platform raises above the sea surface the entire platform is maintained level automatically within 0.010 degrees of tolerance. The platform is raised above the highest recorded storm wave conditions and then locked in place. The sea floor is barley disturbed.



Ready to go to Work in One Day

Once the platform is stable all auxiliary subsystems are activated. This normally takes place within a 24 hour period enabling the platform to perform work task immediately thereafter.

The platform can be removed and relocated to another area by simply reversing the process. Saving the cost of fixed platform installations, typically $5 Mil USD.
Wind, water and soil measurement is all accomplished and the capital cost is significantly reduced.