



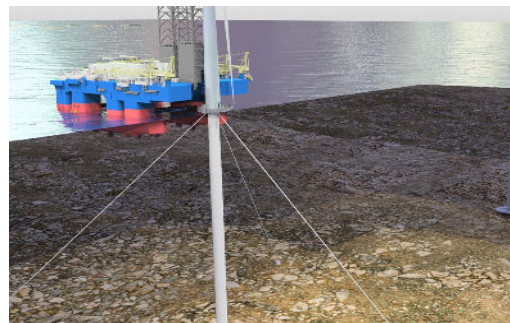
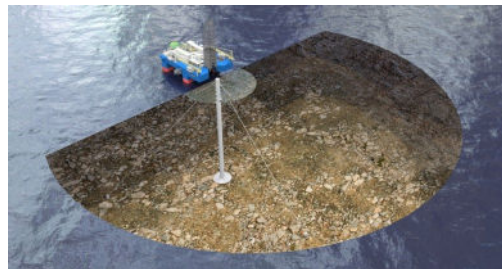
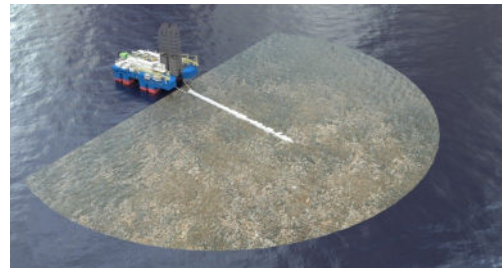
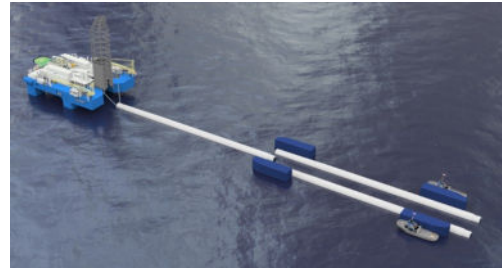
Technology Offshore Windfarm System

“TOWS”



© Hans Hillewaert / CC BY-SA 4.0

TOWS Process



TOWS Process

The TOWS installer approaches a submersible transport barge with four base units and connects to one base/foundation unit. Transport barge submerges to allow float off and transport barge moves away.



Base/foundation floats free and upending commences



TOWS base/foundation upended. Installer secures base to seafloor and disengages. Base floats free.



TOWS installer strings guy wire and secures guy anchors then takes up tension in the guy lines.



TOWS Installer approaches barge with wind generators on top end and secures wind generator



TOWS installer deballasts to lift top unit and move it to base unit to prepare to mate male top to female base.



TOWS installer position on top of ready base and ballasts to mate to base and secure it.



TOWS installer prepares for next installation

Solution Benefits

Objectives

- Cost Effective—Low \$/kWh compared to other systems
- Safety and ease of installation and maintenance
- The Buoyant Tower substructure is proven technology based on oil and gas Spar platform
- The design is flexible in terms of water depth and environment

Innovation & Impact

The TOWS solves the following key problems in deep water in wind turbine installations:

- Provides a safe, reliable, low cost deep water platform which is cheaper to build, install, and maintain
- Provides a platform which is scalable to larger turbines and deeper water (up to 300m)

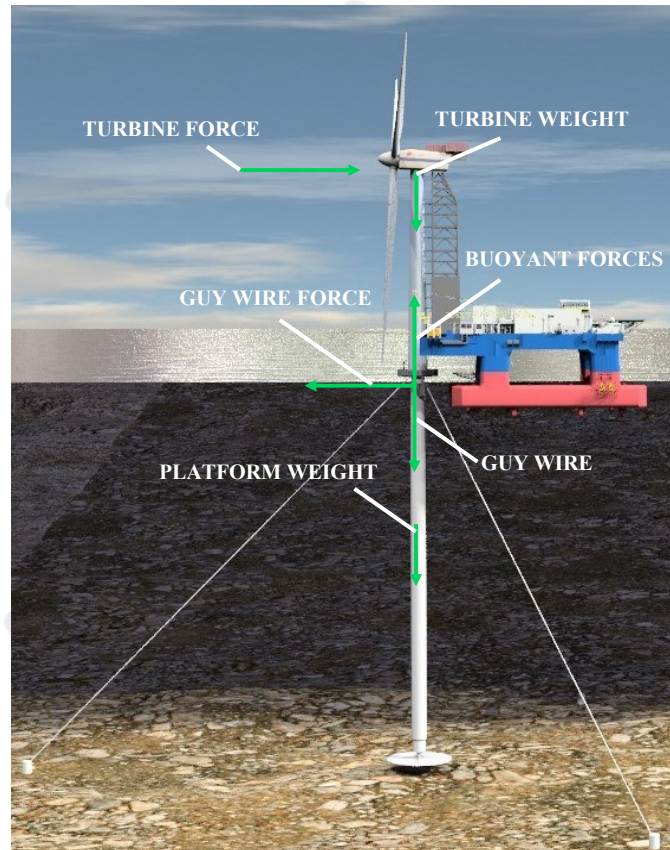
Key techno-economic challenges being solved:

- Varying depth tower design using ballast
- Flexible control system design which can be quickly adapted between different environmental conditions; tower, nacelle, and blade configurations
- Design of installation vessel which is flexible to support different offshore installations
- Design and analysis of taut guy mooring system
- Cost model development for various payloads (Wind Turbines) and water depths

Key Facts

- Tower is designed to be towed out in one piece
- Lower mass than a TLB, Spar-Buoy, or a Semi-Submersible
- Estimated each install offshore can be completed in less than one week
- Can be performed in an assembly line fashion
- TAI's patented technology

Internal Systems



Who We Are?

“Provide Solutions that Enhance Value”


TAI Engineers, LLC (TAI) was founded in 1993. With three decades of experience, we are a leading provider of maritime solutions known for our management expertise, technical excellence and innovative Maritime Solutions. TAI has brought numerous vessels to fruition and has more than 5,000 designs in its library.

TAI has a team of 110+ engineers, designers, and administrative personnel located in New Orleans, LA; Houston, TX; and Vizag, India. TAI's parent company S&B Engineers and Constructors group has more than 1,600 engineers who can be of assistance when needed to meet customer demands.

Scan to Watch TOWS in Action



TAI ENGINEERS, LLC

An  Infrastructure Company

2021 Lakeshore Drive, Suite 313
New Orleans, LA 70122

Phone: 504.282.6166
Email: Info@TAIEngineers.com

TAI Engineers, LLC.