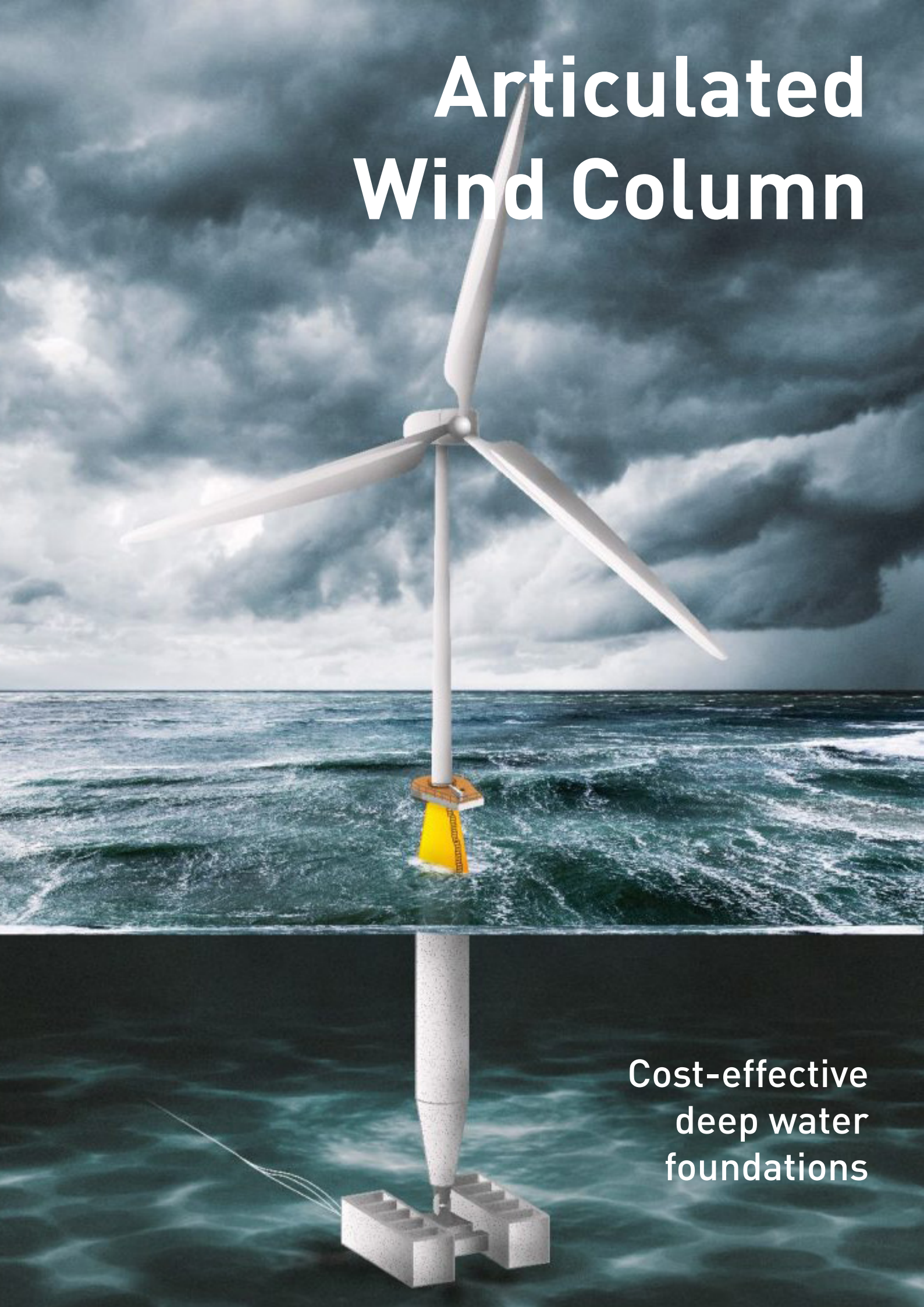


Articulated Wind Column



Cost-effective
deep water
foundations

Robust and proven technology

The Articulated Wind Column (AWC) is an innovative floating foundation technology which enables the economical development of offshore wind farms in deeper waters with higher wind speed.



The technology's robustness has been illustrated by its longevity in harsh conditions. The AWC foundation is based on technology repurposed from the offshore oil and gas industry where, for over the past 50 years, 13 articulated wind columns have withstood the harsh deep water conditions of the North Sea.



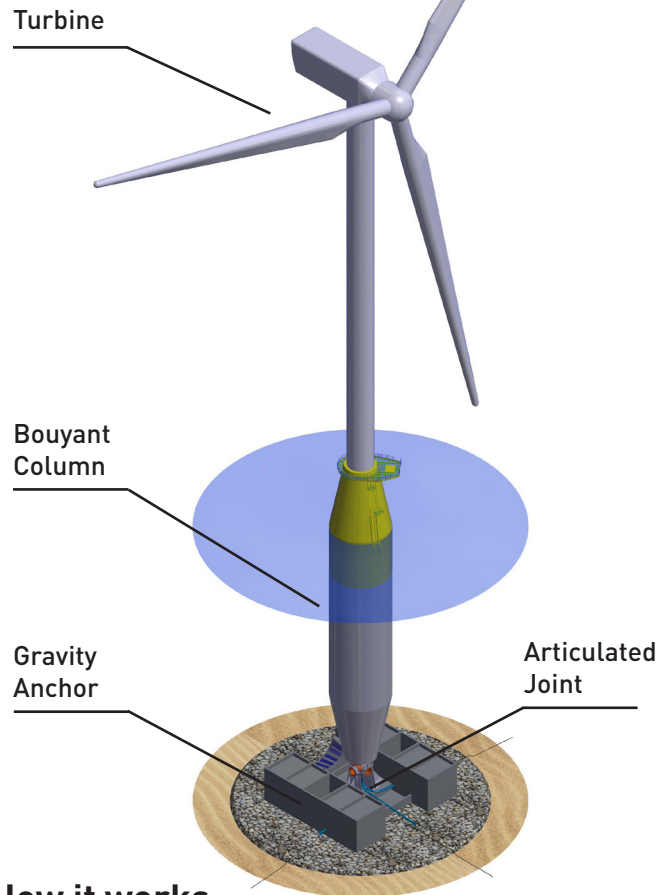
The technology not only proved itself stable and durable, but it also required little maintenance during its operational life.

Construction

The preferable material for the AWC's construction is concrete, but steel is a viable option based on factors such as local availability and commodity prices.

Produced in a batch-manufacture process, production level volumes are expected to be one unit per week with up to four units produced at any one time.

The AWC is suitable for wet winter storage and is easily transportable to offshore construction sites.



How it works

The articulation at the base of the AWC provides a compliant column with reduced forces with the buoyancy and hydrodynamic inertia providing stability.

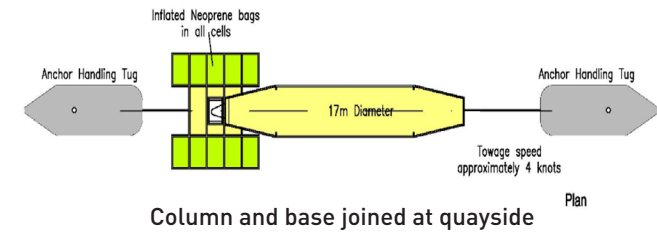
The AWC is optimised for water depths between 70m and 250m. As the diameter is adjusted to suit the water depth and the relative environmental conditions, the column becomes thinner. Consequently, the cost profile is flat across a range of water depths.

The AWC is largely insensitive to soil conditions and out-of-level seabed.

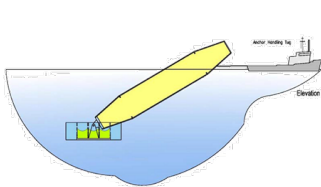


Simple Installation

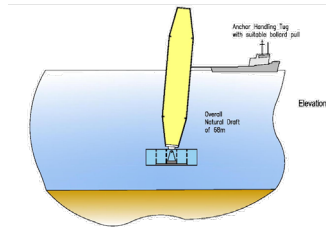
The AWC offers quicker, simpler and more environmentally friendly installation



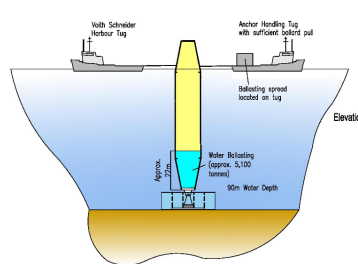
- Requires minimum seabed preparation
- Can accommodate an uneven seabed
- Foundation stability is unaffected by scour
- No piling required, and less effect on marine life
- Small footprint allows for through fishing



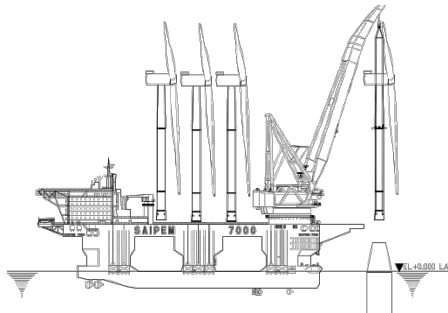
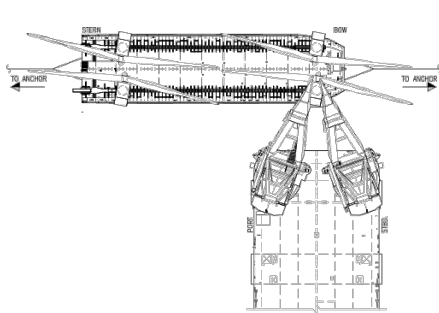
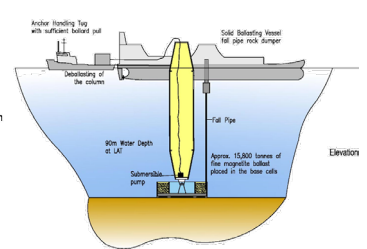
Tugs tow to site and ballast with seawater



Controlled lowering to seabed, column part filled with water



Dredging vessel pumps ballast into base and removes water from column



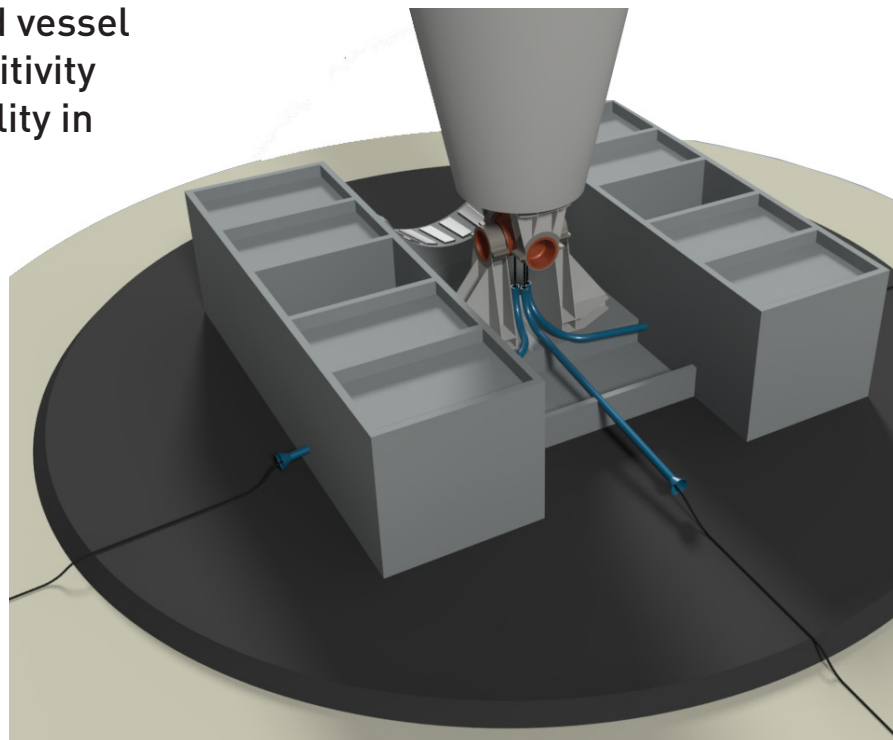
Once the AWC foundations have been installed, the heavy lift vessel comes onto site with pre-assembled turbines. These are installed in a single lift. The heavy lift vessel is re-stocked by barge as-required during assembly, avoiding the need for the heavy lift vessel to move from its location.

The lack of piling lowers seabed and marine impact whilst reduced specialised vessel need, and the foundation's insensitivity to soil conditions, provides flexibility in construction.

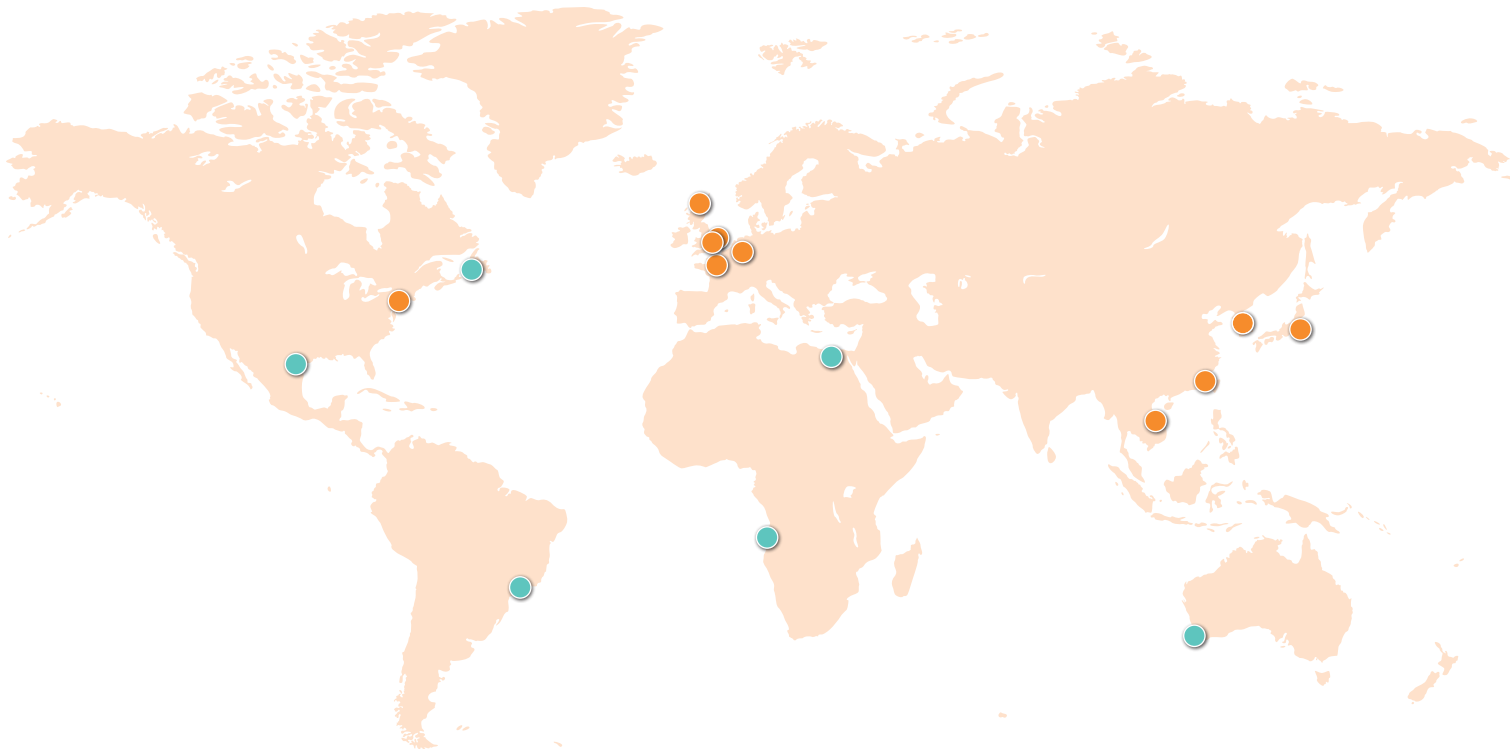
Cost-Competitive

The AWC offers a cost-competitive alternative to other deep water solutions.

- Simple slip-form concrete production process
- Foundation can be manufactured locally
- Dry dock is not required for construction
- Suitable for very large turbines
- Ideal for areas of high wind speed
- Long life allows for re-powering



The Articulated Wind Column reduces the development cost of deep water sites using a simple, mass-produced foundation that is quick and easy to install.



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