

# Subsea energy hub maximises uptime of floating wind farm while reducing complexity and cost

seaway<sup>7</sup>  
**SIEMENS ENERGY**

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## Introduction

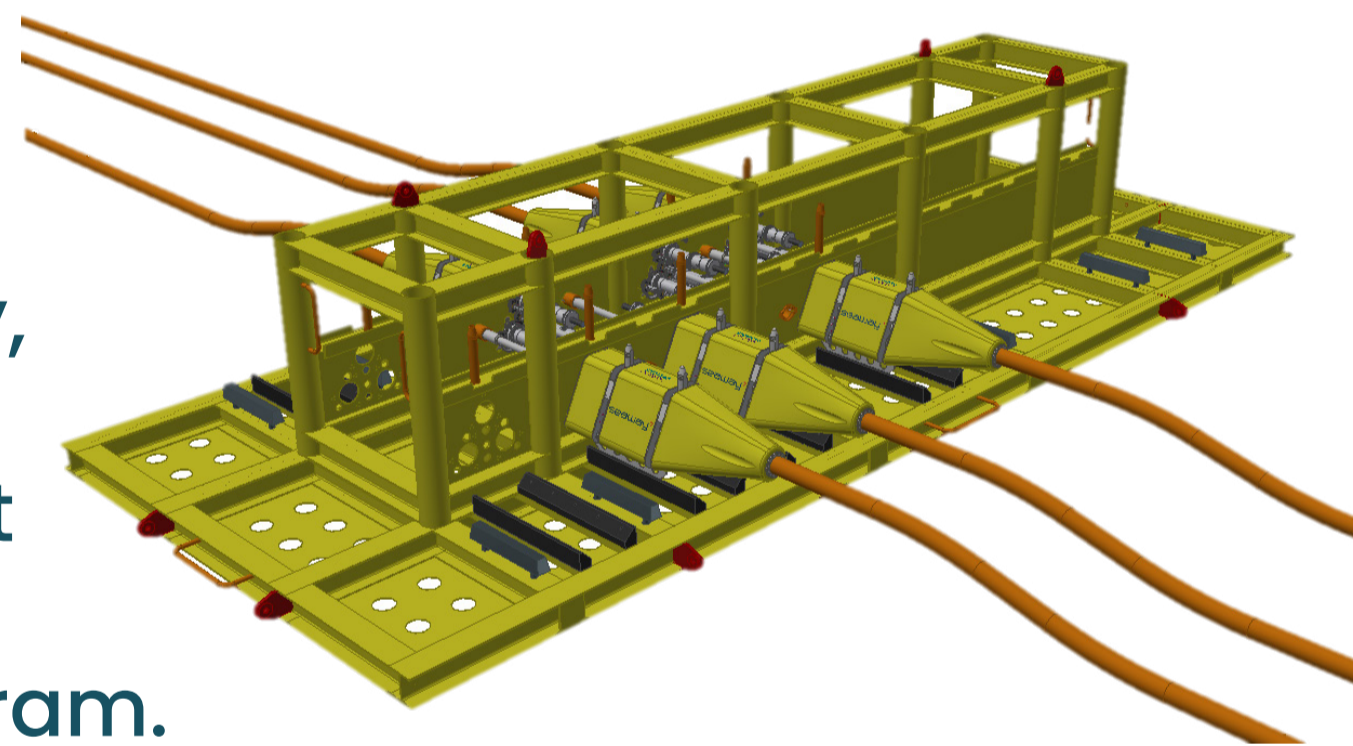
Floating Offshore Wind poses huge challenges including a high levelised cost of energy, tow to port requirements, installation efficiency and production downtime. The inter-array electrical architecture is something which could be simplified and make a significant improvement to potential projects.

## Method

- Compare a star architecture with a traditional radial architecture and prove its benefits.
- Develop a plug-and-play Subsea Energy Hub using 66kV wet-mate connectors.

## Results

The Subsea Energy Hub development is a collaboration between Seaway7 and Siemens Energy, utilising field proven offshore technologies from two market leaders. Resulting in an optimised development program.

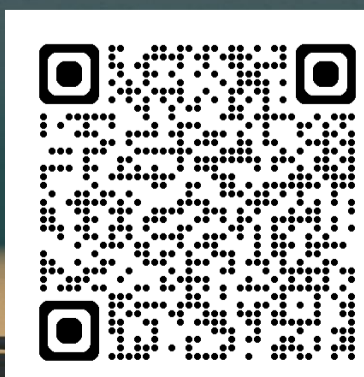
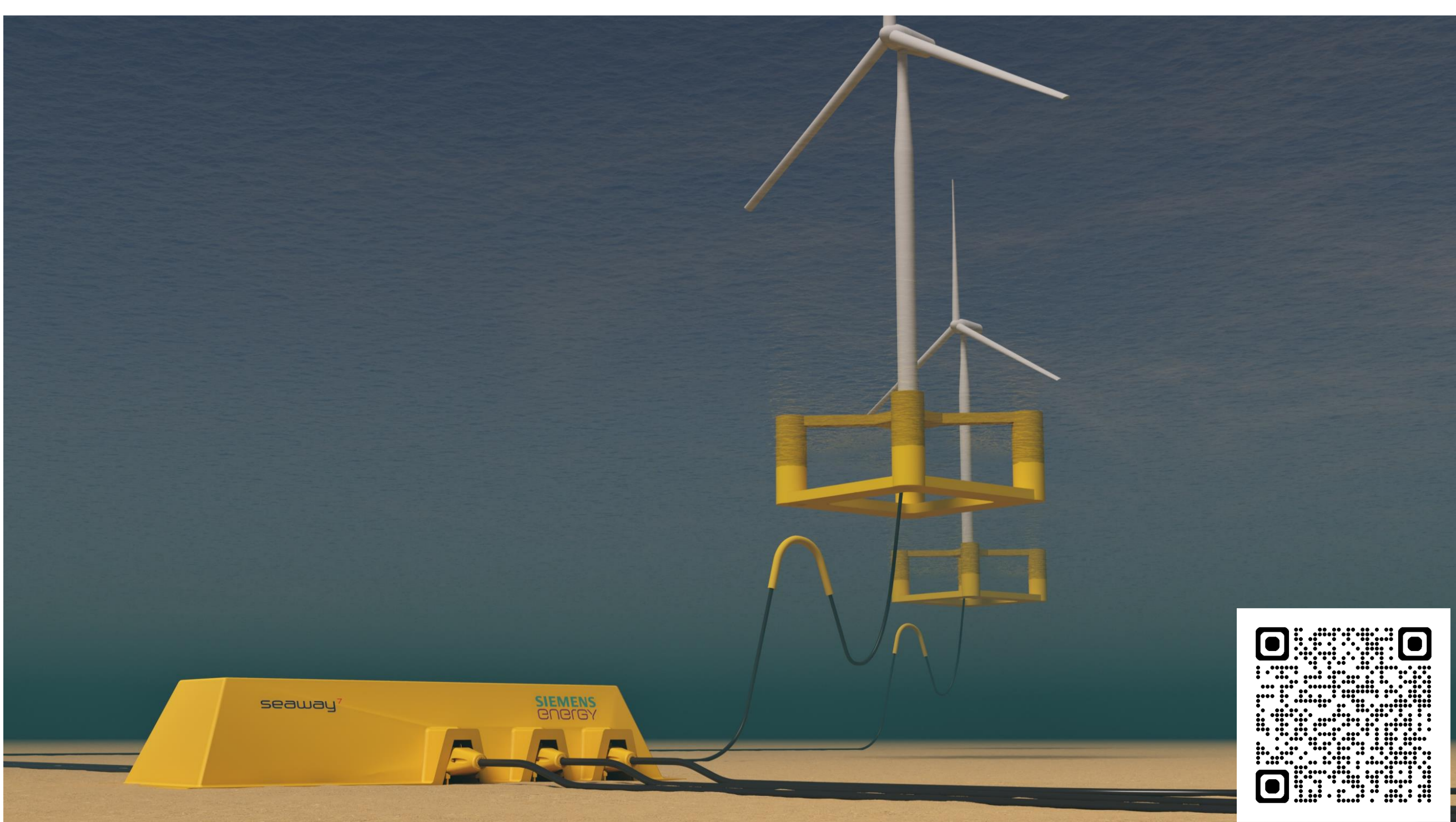


The benefits of a star architecture using the Subsea Energy Hub in comparison with radial:

- 50% less dynamic cables and risers
- All subsea end terminations are undertaken offshore
- Turbines are independent from each other
- Farm can be developed in phases

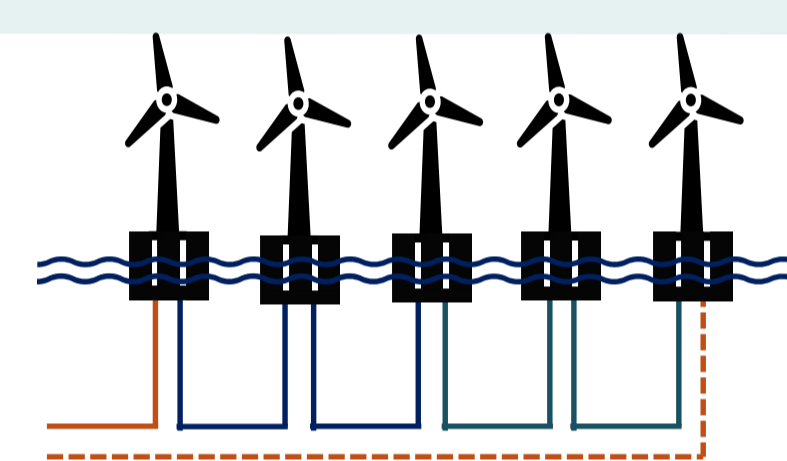
## Conclusions

The Subsea Energy Hub reduces costs and complexity of inter-array architecture, while maximising the windfarm uptime.

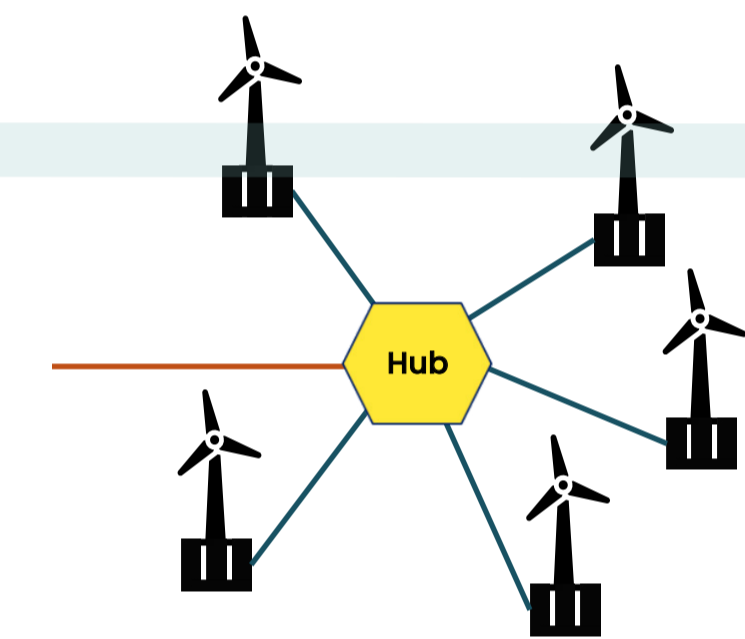


## Objectives

- To reduce the cost and challenges associated with Floating Offshore Wind by creating an alternative electrical architecture.
- Wet-mate connectors provide the opportunity to create a star architecture.



Radial Architecture

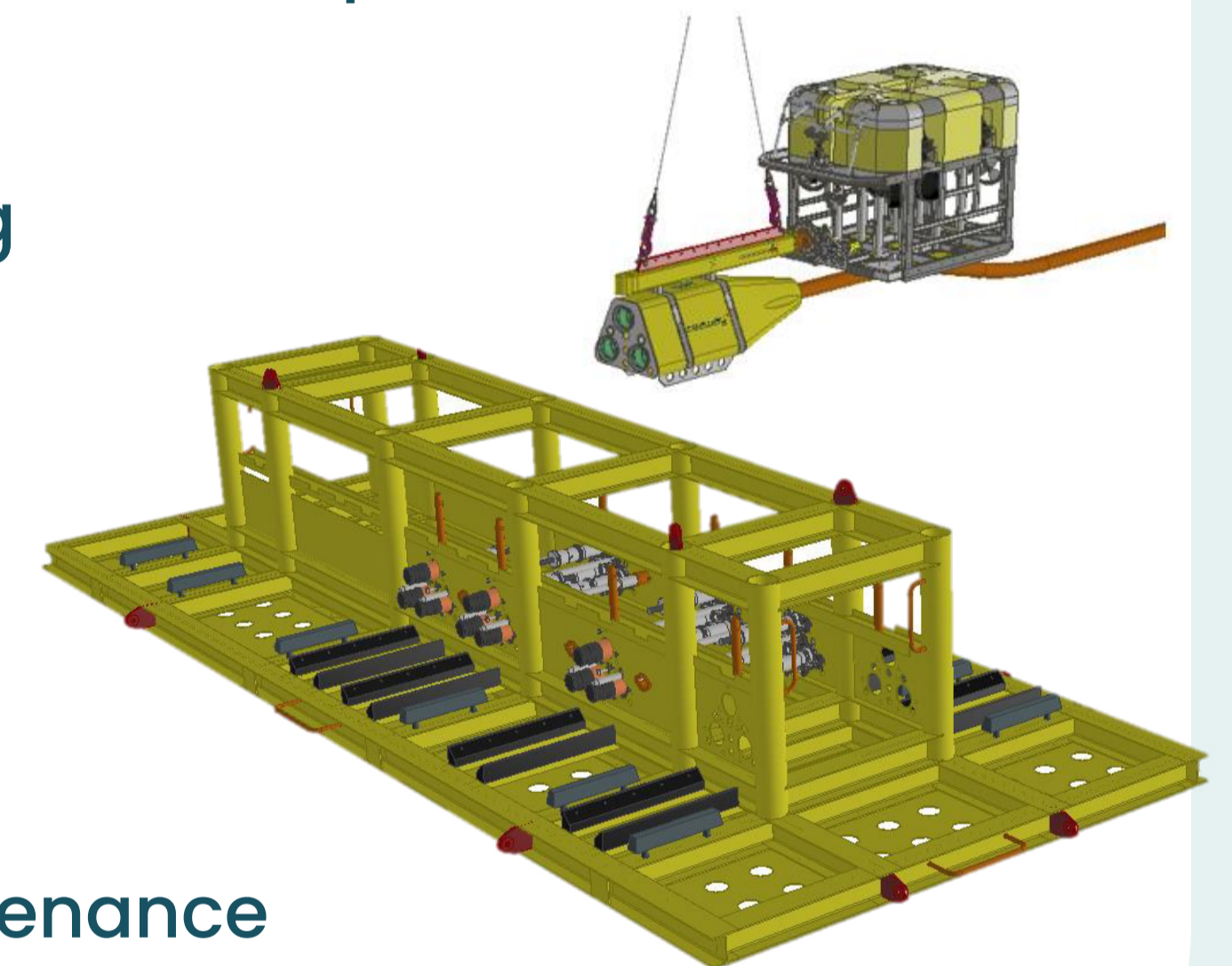


Star Architecture

## Novel Technology

Innovative technology enables the connection of multiple wind turbines into one subsea hub for export to an offshore substation or shore.

- 36/60(72.5)kV voltage rating
- Compatible with wide range of cable cross-sections
- SpectRONnx66 wet-mate connector
- Wet-mate fiber optic connectors
- Road transportable
- Passive design for low maintenance
- Modular design – 3 to 8 connection bays



## Key Benefits

- ★ **Simplified Architecture** Only one dynamic riser is required per turbine, reducing field complexity
- ★ **Lower LCOE** Reduced cable cross section plus 50% less dynamic risers to procure and install
- ★ **Eased Tow-to-Port** For the heavy maintenance of the FOWT
- ★ **Increased Farm Uptime** Single FOWT disconnection minimises the impact to the other connected FOWTs
- ★ **Phased Development** The architecture allows for phased installation to accelerate first production
- ★ **Industrialised Product** Designed for easy mass production, ideal for large projects
- ★ **Reduced Project GHG Emissions** Reduced fabrication and installation scope means lower emissions