



# Floating Offshore Wind Engineering

We're on a mission to support the offshore wind industry with advice, insight and technical know-how.



---

# Introduction



As boundaries are pushed with larger turbines in deeper water and further from shore, the technical challenges increase, sometimes exponentially.”

“Offshore wind is important. To address the Climate Crisis we must switch from fossil fuels to renewable energy. Offshore wind is one of the few technologies demonstrated to meet this demand at scale. But it’s not going to be easy.

Ours is a relatively young industry, which continues to evolve at an astounding pace. As boundaries are pushed with larger turbines in deeper water and further from shore, the technical challenges increase, sometimes exponentially. As a business, we take great satisfaction in assisting our clients to overcome technical adversity.

At Empire, we take a collaborative approach with our clients. We also place value on speed. Empire can respond swiftly and safely. We are never reckless. I am proud of EACH MEMBER of my team who between them have decades of experience in not just structural engineering but specifically in the challenges that are unique to offshore wind. As we look to the years ahead, the global commitment towards net zero emissions places yet more importance on the need to deliver renewable energy at the macro scale. At Empire, we are committed to providing the expert support and advice that is needed to realise collective vision.

For a technical company, keeping up with all the industry developments is not undertaken lightly. It’s a huge challenge... and we love it.”

**Cover image:** WindFloat Atlantic (25 MW, Portugal) a project owned by Ocean Winds



**Karl Davis**

Founder and Managing Director,  
Empire Engineering



---

# Our Values

Our core brand values are the beliefs that we, as a company, stand for. They serve as the compass that guides your brand story, actions, behaviors, and decision-making process.



We are dedicated



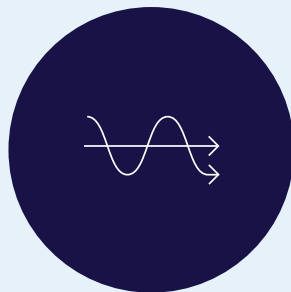
We place an emphasis  
on reliability



We focus on clear  
communication



We are passionate  
about what we do



We like to keep  
things simple

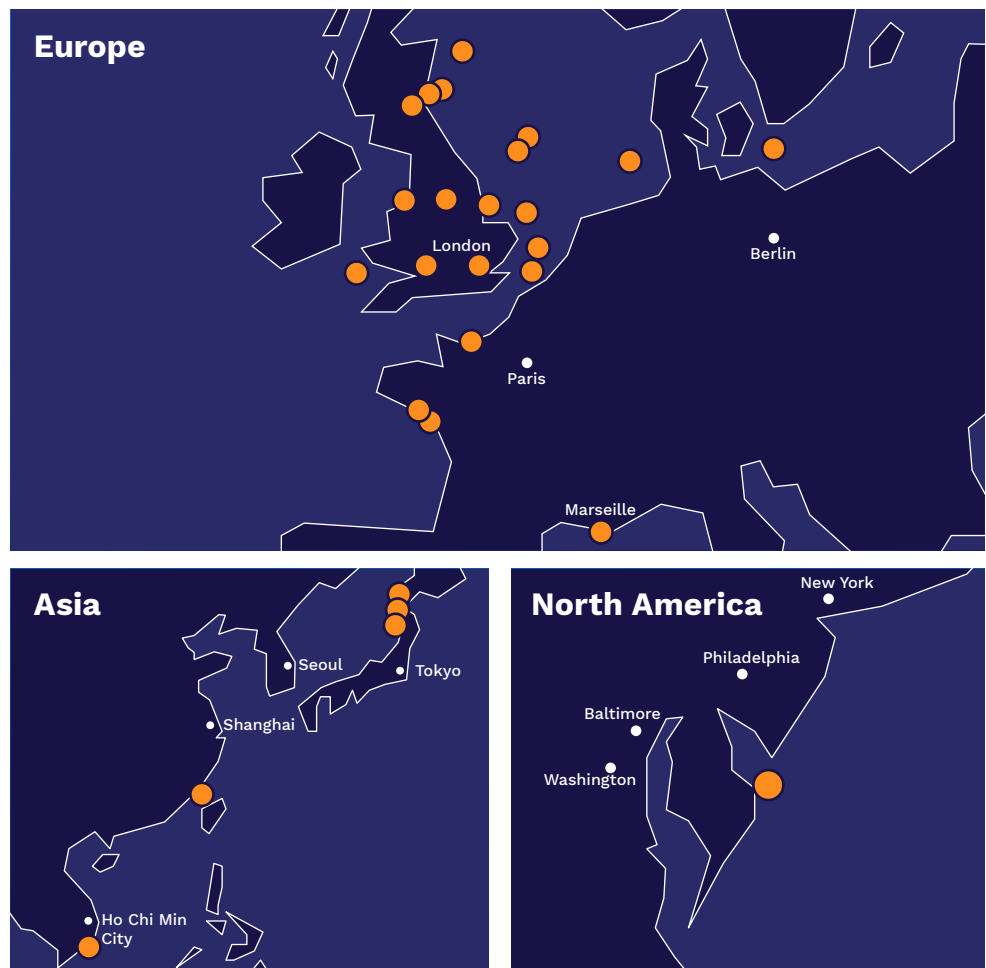


We are approachable

---

# Global Experience

Empire Engineering has been involved in fixed and floating wind projects across the globe. Our team is ready to be deployed either remotely or in person to provide the technical input required to keep your project on track.



# Our view of the floating wind market

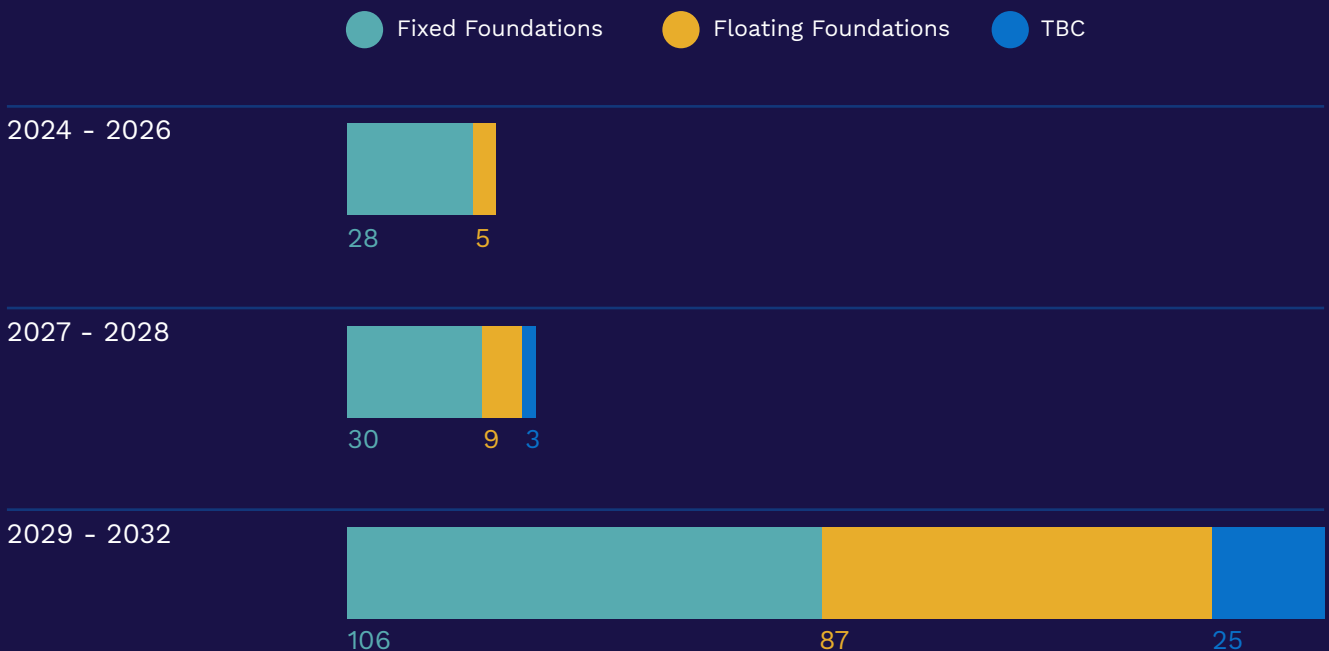
# 80%

of the global offshore wind resource is located in water depths of over 60 metres.

At Empire Engineering we have studied global market trends in offshore wind. The next 20 years is set for a substantial increase in installed capacity. Within that, Floating Wind is undergoing a transformation from demonstrator to large-scale commercial projects.

The market is growing and Floating Wind's share of the market is set to increase over time. Approximately 80% of the global offshore wind resource is located in water depths of over 60 metres.

Here is just one snapshot of our findings, looking specifically at Europe. This is the number of projects going to the construction phase in Europe over the coming years.



---

# Our Engineering Capabilities in Offshore Wind

The era of commercial scale floating wind is here. In order to best serve developers and EPCI contractors, we have developed and refined our floating wind capabilities into three core services.



Owners Engineer



Floating concept evaluation and review



Integrated assessment of turbine, floater and mooring system

▼ Our expert team are ready to add value to your projects







# Owners Engineer



You benefit not just from a single pair of hands but also from the back up of the wider expert team.”

As a developer, there is a significant responsibility in delivering complex projects with multiple stakeholders to satisfy, and numerous deadlines to meet. Set against this, internal resource can be in short supply, with key staff fully utilised many months in advance.

We understand the challenges of pulling it all together on time, on budget while not compromising quality or safety. Bringing support on at the right time can be a crucial ingredient for success.

We offer an Owners Engineer service for floating offshore wind projects. Our clients benefit from having access to skilled engineers at short notice. When hiring Empire Engineering, you benefit not just from a single pair of hands but also from the back up of the wider expert team.

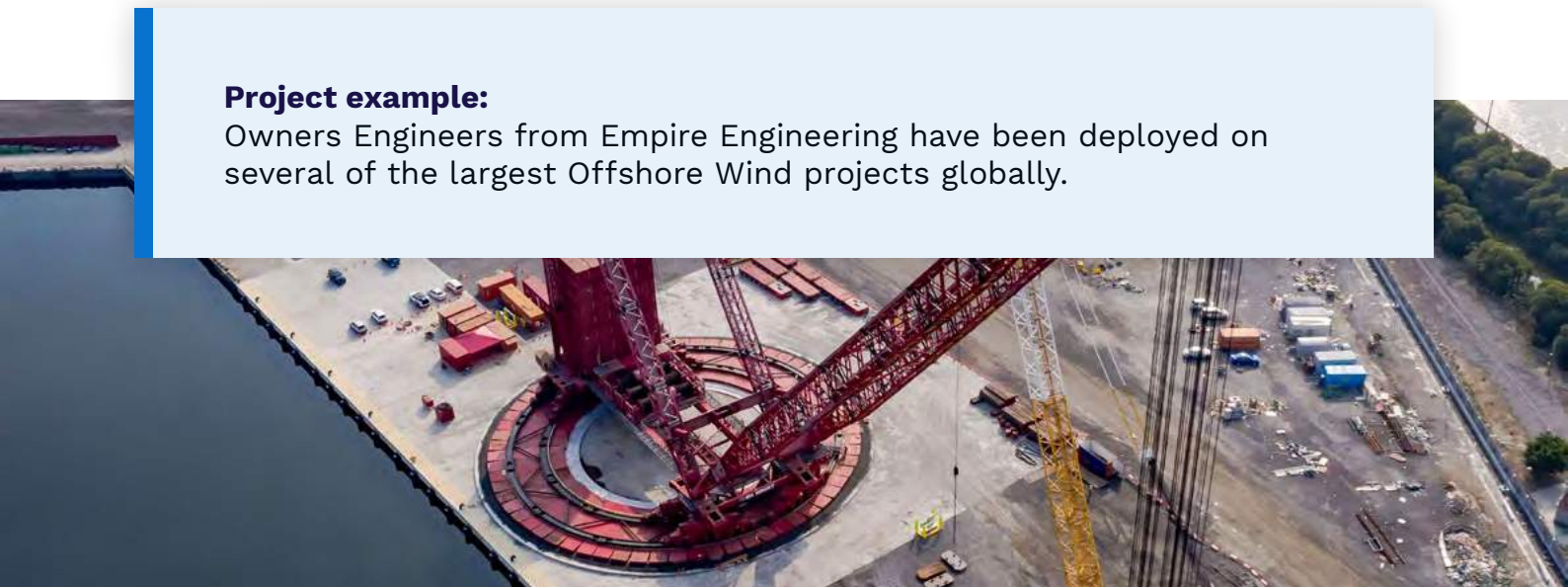
## WHAT'S INVOLVED:

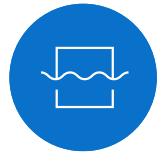
---

- Hands-on support from experienced team players
- Direction and analysis for key decision making
- Supply chain analysis
- Transport and Installation engineering
- Health and Safety best practices
- Package management
- Access to expert input from across Empire Engineering

### Project example:

Owners Engineers from Empire Engineering have been deployed on several of the largest Offshore Wind projects globally.





# Floating concept evaluation and review



We can help protect you from information overload and guide you towards the suitable options for your project.”

There are more than eighty concepts for floating foundations available in the market. How can you navigate through this selection, pick out a suitable short list for your site and in doing so de-risk your decision making?

We have built up considerable expertise across the range of commercially viable floating wind concepts and can bring this knowledge to benefit your project.

We can help protect you from information overload and guide you towards the suitable options for your project. Our high level quantitative floating concept review is specific to your site and operational criteria, and will provide you with the confidence to make better informed supplier decisions.

## WHAT'S INVOLVED:

- List extensive number of available options
- Short list options for further investigation
- Agree a project and organization specific ranking criteria with the client
- Provide in-depth commentary on each of the top ranking options
- Logistics and harbour recommendations
- Techo-economic studies
- Clear recommendations for what you should do next.

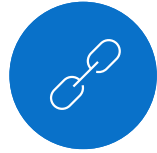


### Project example:

Completed a comprehensive review of 80+ concepts for a Celtic Sea project on behalf Morwind in 2022







## Integrated assessment of turbine, floater and mooring system



“Empire have developed a bespoke integrated analysis toolset.”

Floating offshore wind developers have to address a broad range of technical challenges. Within that, there can be highly specific and complex modelling requirements relating to turbine, floater and mooring system. To properly assess and de-risk floating projects, developers need access to expert capability.

To address this need, Empire have developed a bespoke integrated analysis toolset for combining the turbine, floater and mooring system.

These tools address the need to review a system design at a high level, or challenge the claims of a floater supplier.

Our capabilities encompass all of the major technologies, and can be deployed at a level appropriate to the stage of the projects development. We view these as necessary tools to ensure the success of a floating offshore wind project.

### **Project example:**

Completed assessment for a confidential client in Asia in 2022.

---

# Contact us

Empire Engineering

Deep Thinking

[Contact@empireengineering.co.uk](mailto:Contact@empireengineering.co.uk)

## OFFICE LOCATIONS

### **Bristol Head Quarters**

+44 (0)117-435-0125  
151 Whiteladies Road  
Bristol  
BS8 2RD  
United Kingdom

### **London Office**

+44 (0)203-283-4103  
1st floor, 3 More London  
Riverside  
London  
SE1 2RE  
United Kingdom

### **Edinburgh Office**

+44 (0)131-718-6000  
9-10 St Andrew Square  
Edinburgh  
EH2 2AF

### **Delft Office**

Delftechpark 11  
2628 XJ Delft  
Netherlands

### **Marseille Office**

19 Quai de Rive Neuve  
Marseille  
13007  
France

### **Beijing Office**

+86 186 1400 0999  
[scao@empireengineering.co.uk](mailto:scao@empireengineering.co.uk)  
6th Floor, Weiya Tower  
No.29 Suzhoujie Haidian  
District, Beijing  
China

北京市海淀区苏州街29号维亚  
大厦6层