



Petrofac 

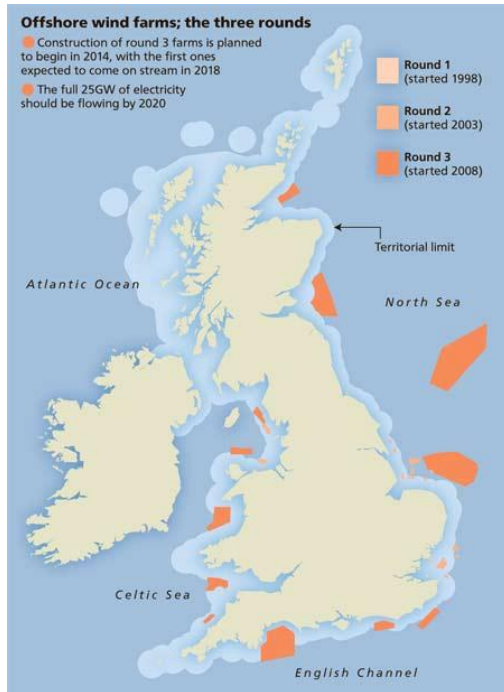
Andrew Donaldson, Renewables Director, Petrofac.

# Synergies between Offshore Oil and Gas and Offshore Renewables

# Is Offshore O+G any different to Offshore Renewable?

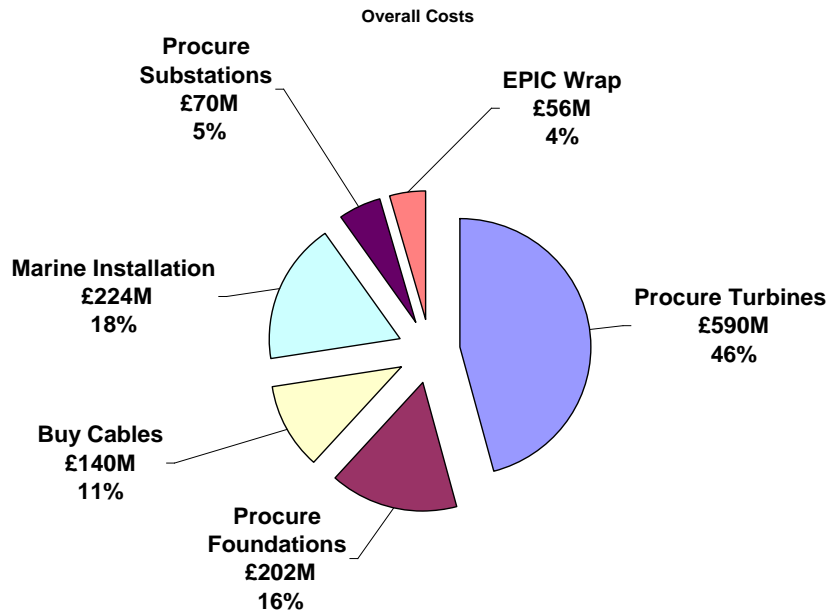
<b>Sector Characteristics</b>	
<b>Oil and Gas</b>	<b>Offshore Wind/Marine</b>
<b>Mature Global Industry</b>	<b>New EU industry</b>
<b>Clients understand offshore environment</b>	<b>Clients have limited offshore experience</b>
<b>Shorter duration vessel charters</b>	<b>Longer duration (36 months) charters</b>
<b>Unique and limited number of activities</b>	<b>Simpler but very repeatable activities</b>
<b>Deep water</b>	<b>Shallow water</b>
<b>Requires frontier technology to succeed</b>	<b>Requires a manufacturing mindset to succeed</b>
<b>Want low cost solutions</b>	<b>Needs low cost solutions</b>

# What is Different about Round 3 Offshore....?



- Sites are NOT coastal they are OFFSHORE.
- Assets and Personnel cannot run for harbour.
- Sea and wind conditions are much harsher.

# What can Oil and Gas Do?



Cost Distribution for a Typical UK 500 MW Round 2 site

Petrofac and other O+G players have the business systems and personnel that deliver mega projects.

52% of the Project Value is what oil and gas contractors do every day.

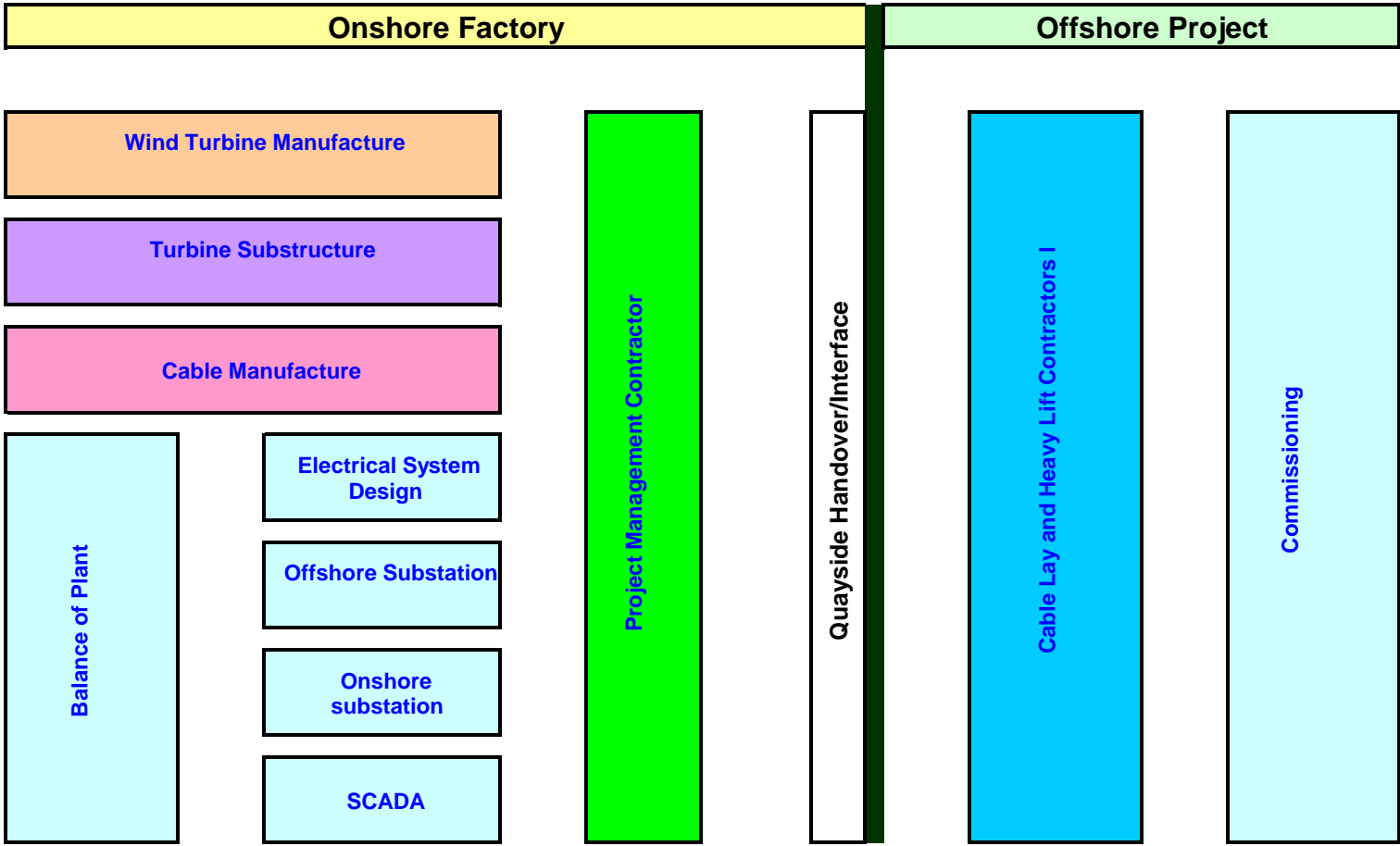
- Build Offshore Structures.
- Install Structures.
- Lay Cables.
- Hook Up Equipment.
- Commission Equipment.



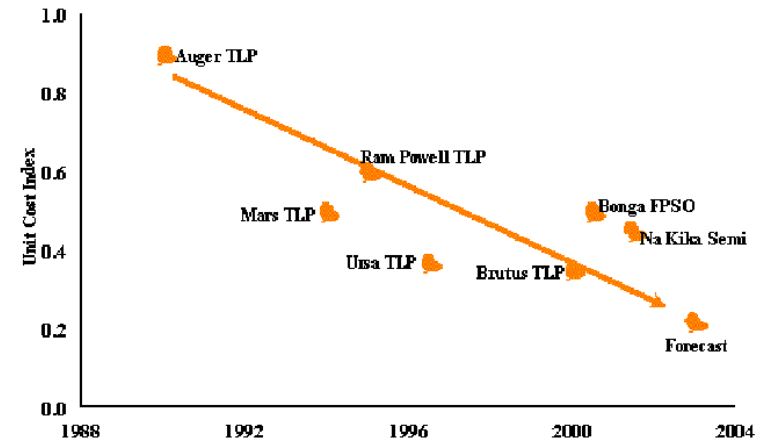
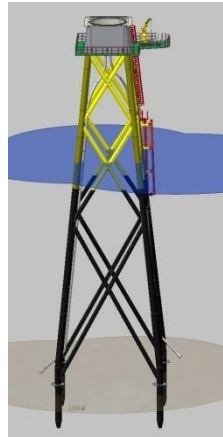
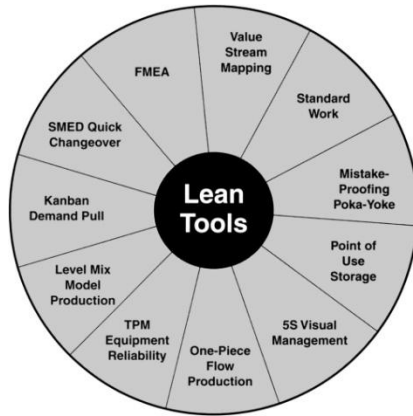
# Competencies Required to Deliver Offshore Renewable Energy Projects

<b>Power Systems Engineering</b>	<b>Major Capital Projects Management</b>
<b>Offshore Engineering + Construction</b>	<b>Design for Manufacturing</b>

# An Integrated Delivery Model that marries the best from each sector.



# Synergy on Cost Reduction



Cost Reduction = Innovation+ Standard Design+ Volume Production.

The Cost Reduction Marriage:

- Power Industry OEM's understand design for manufacture.
- Power Industry OEM's understand LEAN.
- O+G Contractors know how to deliver mega offshore projects on time and budget.
- O+G Contractors understand the offshore environment.

SUCCESS WILL COME FROM TEACHING EACH OTHER IN JV's and ALLIANCES.

# Conclusions

- Offshore Renewable Energy Projects are not easy and they are not cheap.
- Both Power Industry OEM's and O+G Contractors can teach each other a lot.
- When you truly study core competencies there are very few areas of overlap between the two sectors.
- Without cost reduction offshore renewables does not have a future.
- The future lies in close cooperation between major Power OEM's and Major O+G Contractors.