Making the Transfer from Oil and Gas to Offshore Wind: Our Experience

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**Timeline**

**1966**
- Offshore grouting is developed by Wimpey
- First grouting project: Zakum Oilfields, Middle East

**1970**
- Offshore grouting technology transferred to the North Sea
- 1974 - BP Forties Field Development

**1986**
- 300th Project completed

**2003**
- Grouting of first monopile at Arklow Bank

**2006 – 2010**
- Development of Recirculating Jet Mixers
- 25-30m³/hr for OPC
- 2010 - Grouting of first jacket offshore wind farm - Ormonde

**2013 – Present**
- Development of Super Pan Mixer
- 12m³/hr output for high strength materials
- Offshore Windfarms grouted: Gwynt y Mor, Nordsee Ost, Borkum West, West of Duddon Sands, Humber Gateway
Why make the transfer to offshore wind?

- Offshore wind developments on our doorstep
- Lack of key service providers in the industry-including offshore grouting contractors
- Competition encourages innovation, resulting in better products and services
“Any right thinking engineering company asks what the market needs and how it can improve things for the customer and that’s what we did”
Was it worthwhile?

Move has required substantial investment in materials and equipment.
Transferring best practice between industries:

- Offshore wind is a relatively new industry – there are still many lessons to be learnt from Oil and Gas.
- Offshore Wind industry focused on installation costs and working hard to be as cost efficient as possible, habits that can be of benefit to Oil and Gas.
- Optimising offshore performance is an area they can both learn from each other.
Facilitating Innovation

Increased mixing rates of ultra high strength grout to 12m³/hr, compared to previous rates of 6m³/hr.

Can be mixed using FoundOcean’s Recirculating Jet Mixer, achieving rates of >20m³/hr.

Safer  Cleaner  Faster

2013

2014

Rapid Strength Development

Shorter weather windows

Valuable offshore operation days saved

Grouting Rate

FoundOcean

RJM
Super Pan Mixer
New Material Development

- Quayside storage in all weathers
- No requirement for bag or container lifting during grouting operations
- No requirement for container lifting during material resupply
- 2” hose lines increase deck layout flexibility and rapid development of hoses
- Hose lines can be stored on reel for rapid deployment
- No need for crane operator or rigger

Delivering significant and quantifiable improvements in productivity and safety when grouting offshore wind turbine structures
Offshore Wind - an Enabling Industry

Vibro-Piling with the acquisition

Strengthening Modification and Repair

Facilitated expansion
A number of firsts......

Omonde – first jacket structure used in OW

Energy Park Fife 7MW Turbine

West of Duddon Sands

Gwynt Y Mor
**Offshore Renewables**

**Pre Energy Market Reform (Nov. 2013)**

- **RE: Sales Pipeline (Unweighted)**
  - 2013: £0.0m
  - 2014: £20.0m
  - 2015: £40.0m
  - 2016: £60.0m
  - 2017: £80.0m

**Breakdown of Current Global Opportunities**

- **Americas: RE: Sales Pipeline (Unweighted)**
  - 2013: £0.0m
  - 2014: £5.0m
  - 2015: £10.0m
  - 2016: £15.0m
  - 2017: £20.0m

- **Europe: RE: Sales Pipeline (Unweighted)**
  - 2013: £0.0m
  - 2014: £5.0m
  - 2015: £10.0m
  - 2016: £15.0m
  - 2017: £20.0m

**Post European Energy Market Reforms (Sept 2014)**

- **Total RE: Unweighted Sales Pipeline**
  - 2013: £0.0m
  - 2014: £20.0m
  - 2015: £40.0m
  - 2016: £60.0m
  - 2017: £80.0m

- **Europe: RE: Sales Pipeline (Unweighted)**
  - 2013: £0.0m
  - 2014: £5.0m
  - 2015: £10.0m
  - 2016: £15.0m
  - 2017: £20.0m
Lessons Learned

- Political aspirations have created aspirational pipelines
- European government policies continue to nurture uncertainty

**However...** The supply chain continues to work hard tendering and planning against projects that are not financed

**So...** Do not look too far into the future

To understand **future revenues**, in order to develop **strategies**, one must consider the likelihood of a positive **financial investment decision** on each of the individual projects within one's future pipeline...!

Good Luck with that!
Uncertainty

- Lack of confidence in materials
- Limited track record
- New, unproven techniques
- Decline in number of new developments

What does the future hold?
Conclusion

Transfer to Offshore Wind has provided exciting opportunities for innovation and collaboration.

BUT

Opportunities have not been as expected.

- Initial government investment has not been as expected.
- Reduced confidence within the industry.
- Limited track record.
- Lack of confidence in materials and techniques.
Thank you