Offshore Wind – Making a Material Difference

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UKRenewables
Credibility
Credibility
Why Wind?

- **Fastest** growing sector of the power generation industry – $40bn/yr
- **Big** technology challenges remain (10%+ learning rate)
- **Big** user of materials
Why UK Wind?

- UK 4th most **attractive wind market**
- **No.1** offshore wind market
- **Greatest wind** resource in EU
- Spend **£60bn+** by 2020
- Massive supply chain **growth** required
- UK has **opportunity** to industrialise
• Happening **here, now**
• Rest of **EU and world will follow**
What’s in a wind turbine?

£1.2m/MW

Blades
Generator
Gearbox
Hub
Yaw system
Tower

Control system, converter & transformer
And rest of the wind farm...
1. Blades – from 10m to 60m length in 15 years
2. 100 x manufacturing cycle time decrease
3. Composites to replace metals – fatigue applications
4. Vestas - UK links, also Boeing
5. Fundamental R&D, applied R&D and demonstration

Materials development: Composites
# Steel and Concrete

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<td>Fatigue / extreme allowables</td>
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Hi-tec to big industrial to sustainable

1. Ceramic hybrid 4-pt contact ball bearings
2. Ceramic sealing solutions
3. Sensing materials – control and condition feedback
4. Heat treatments
5. Castings technology
6. Permanent Magnet technology
7. Sustainable materials – bamboo, hemp, flax & reusing/recycling composites
Prospects

1. Got UK RD&D expertise
2. Big UK players involved; wind industry keen to engage
3. Clear route to (home) market
4. Global export potential
5. Good synergies exist between wind and the needs of other sectors – not “wind research”
6. Materials RD&D funding will make a difference
Wind – leaving others in its wake