Wind Energy Facts - Technology

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WIND TECHNOLOGY HAS COME A LONG WAY!

1980 QUESTIONS

- Will wind ever be sufficiently economic?
- Can it contribute significantly to national electricity demand?
- Can wind turbines survive 20 year lives in a challenging environment?
- Can electricity networks accommodate large amounts of wind capacity?

2009 ANSWER YES!
WIND TECHNOLOGY HAS A UNIQUE IDENTITY

STALL - disaster for an aircraft - often useful in a wind turbine

FATIGUE - motor car, lifetime operation = 4 months continuous - loving care wind turbine, 13 years or more of continuous operation - lonely life, six monthly visits
DESIGN OPTIONS – Blade number?
DESIGN OPTIONS – Horizontal or vertical axis?
WIND TURBINE – WHAT’S INSIDE?
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WIND TURBINE – E 126 - Largest in the world
GROWTH CURVES

LARGEST WIND TURBINES

LARGEST AIRCRAFT
WIND TURBINES

How big will they get?
ROTOR SAFETY – VITAL!

DOUBLE THE WIND SPEED – EIGHT TIMES THE WIND POWER

PITCH CONTROL – VARIABLE SPEED

STALL REGULATION – FIXED/TWO SPEED

PITCH CONTROL
TESTING

Essential for sound products
OFFSHORE WIND – DRIVING THE TECHNOLOGY
THE FUTURE – Floating in the sea or up in the air?
WIND TECHNOLOGY HAS COME A LONG WAY!

- Increasingly significant contributions to national electricity supplies
- Advanced design tools, testing facilities and certification procedures
- Striving to establish the technology offshore and access more resource
- Much active innovation continues driven by the challenges of offshore and cost reduction