

# *Benchmarking Reliability and Industry Activities*

AWEA O&M Working Group

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# Definition of Reliability

- The ability of an item to perform a required function under stated conditions for a specified period of time.
- The probability that a functional unit will perform its required function for a specified interval under stated conditions.

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# How to measure availability?

- Definition - the degree to which a system or component is operational and accessible when required for use.
- Limitations to measuring

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# Moving from kW to MW

- What are the needs for the industry ?
  - Larger mechanical components
  - Moving from more mechanical system to more control system.
  - Keeping Reliability in focus

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# From Wind farms to Power Generation Plants

- First Goal - Dominate Technology
  - Asset Management
    - Information of all assets and the changes in a defined way
  - Maintenance Management
    - Maintenance Process, improvement of tasks and cost efficiency

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# From Wind farms to Power Generation Plants

- 2<sup>nd</sup> Goal - Maximize economic Performance
  - Production Management
    - Quantify lost energy and identify the causes
  - Operation Experience Feed Back
    - Root cause analysis and design changes to increase reliability

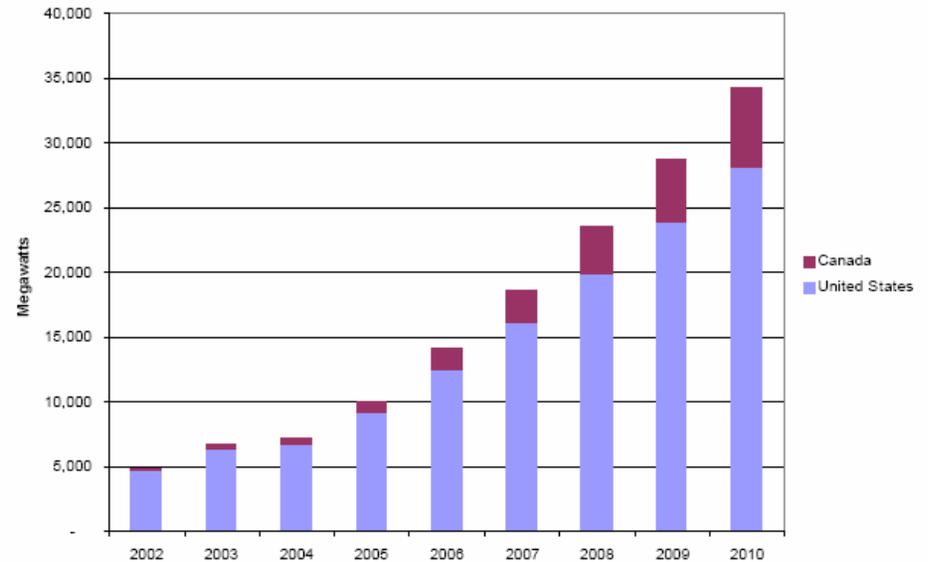
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# Tremendous growth

- How do we locate O&M resources?
  - Capital
  - Components
  - HR



Note: Figures denote cumulative wind power in service as measured by rated capacity

Source: Emerging Energy Research

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# Programs within AWEA

- Safety
- Operation & Maintenance
- Training/Certifications

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# Programs within AWEA

- Safety
  - Created as a working group in 2004
  - Committee Status – February, 2006
  - Safety Committee Officers
    - Chairman -Harold Romanowitz, Oak Creek Energy Systems
    - Vice Chairman - Scott Meador, Shermco Industries
    - Vice Chairman – Gary LeMoine, PPM Energy

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# Programs within AWEA

- Operation & Maintenance
  - Created as a working group 2006
  - Conference Call October 11<sup>th</sup>
  - Meetings:
    - AWEA Wind Energy Fall Symposium, December, 2006
    - AWEA Asset Management Workshop, January 2007

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# Programs within AWEA

## Formation of Users' Groups:

- 3 meetings each year in conjunction with;
  - **AWEA Wind Energy Fall Symposium**
  - **AWEA Asset Management Workshop**
  - **WINDPOWER 2007 CONFERENCE & EXHIBITION**
- Each Users' Group will have a specific topic, possibly;
  - Gearboxes
  - Generators
  - Blades
  - Electronics
  - Safety

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# In Cooperation with stake holders

- Owners/Operators
- Turbine Manufacturer
- Component Manufacturer
- Research Institutes
- Education Establishment

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THANK YOU!

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