



**SIEMENS**

# Siemens Wind Power Division

*“PLM as a business process transition tool  
– from technical implementation to business  
process re-engineering”*

PLM Nordic 2012

# Recognized Leader with 30 Years of Experience in the Wind Industry



## Siemens Product Portfolio Track Record<sup>1)</sup>

### MW Class

CombiStall Technology

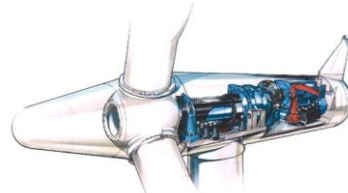
- SWT-1.0-54: 356 WTG
- SWT-1.3-62: 1,545 WTG
- SWT-2.0-76: 165 WTG
- SWT-2.3-82: 503 WTG



### Multi-MW Class

Pitch Technology with Variable Speed

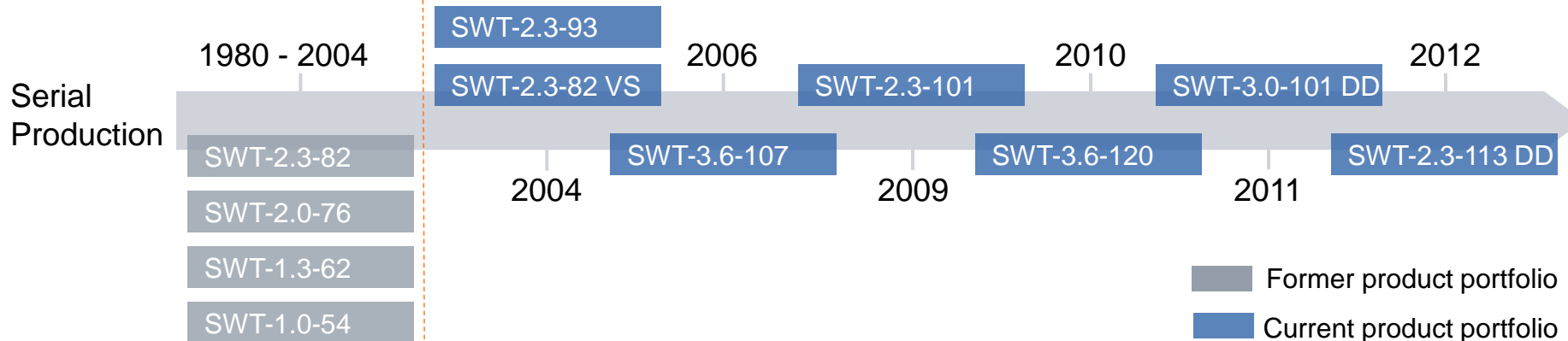
- SWT-2.3-82VS/93/101: 4,074 WTG
- SWT-3.6-107: 344 WTG
- SWT-3.6-120: 30 WTG



### Multi-MW Direct Drive Class

Direct Drive Technology with no Gearbox

- SWT-3.0-101 DD: 17 WTG
- SWT-2.3-113 DD 2 WTG
- SWT-6.0-120/154 DD testing



**Installed Base Worldwide: > 10,600 turbines with > 15,800 MW capacity**

1) June 2011

# Siemens Wind Power Facts at a Glance



## Siemens Wind Power Facts

One of the world's leading suppliers of wind power solutions

Acquired Danish wind turbine manufacturer Bonus Energy A/S in 2004

Installed Base: > 10,600 turbines with > 15,800 MW capacity<sup>1)</sup>

Installed in 2011: > 2,900 MW

More than 8,000 employees globally

Record order backlog of ~ € 11 billion

Revenue in 2011: ~ € 3,9 billion<sup>2)</sup>

1) December 2011

2) consolidated on Renewable Energy Division level

## Project Facts

### Project Focus...

No 1.: Try – "it works in automation, it works here"

No 2.: Try – "It is just tool replacement..."

Current: "PLM - a strategic choice"

- **Content Management**  
(in a single department – approx. 12 users)
- **Document Management**  
(in a business unit – approx. 500 users)
- **CAD Management**  
(approx. 500 users)

### Locations in phase I

- India
- USA
- Denmark
- China

A total of 8 sites.



Prototype installation Høvsøre, Denmark

## Change in Focus in Wind Power PLM

- Focus on the **long term target** or “simply why do it?”
- Do not under-estimate the **change management** task
- It is a partnership - **build trust**
- The **holistic** approach (incl. IT-landscape)
- Consider PLM projects as **programs**:

“...A project is unique and is of definite duration. A program is ongoing and implemented within a business to consistently achieve certain results for the business...”



Nysted Offshore Wind Farm, 72 units 2.3 MW, 165.6 MW, SWT-2.3-82

## The Strategy – The Why!

**Maximizing Life-cycle Revenue**

**Intellectual Asset Management**

**Business Process and System Integration**

**Dynamic Collaboration**

Ventus (Teamcenter) is chosen as platform for the collaboration backbone on all product related information throughout the entire product lifecycle...

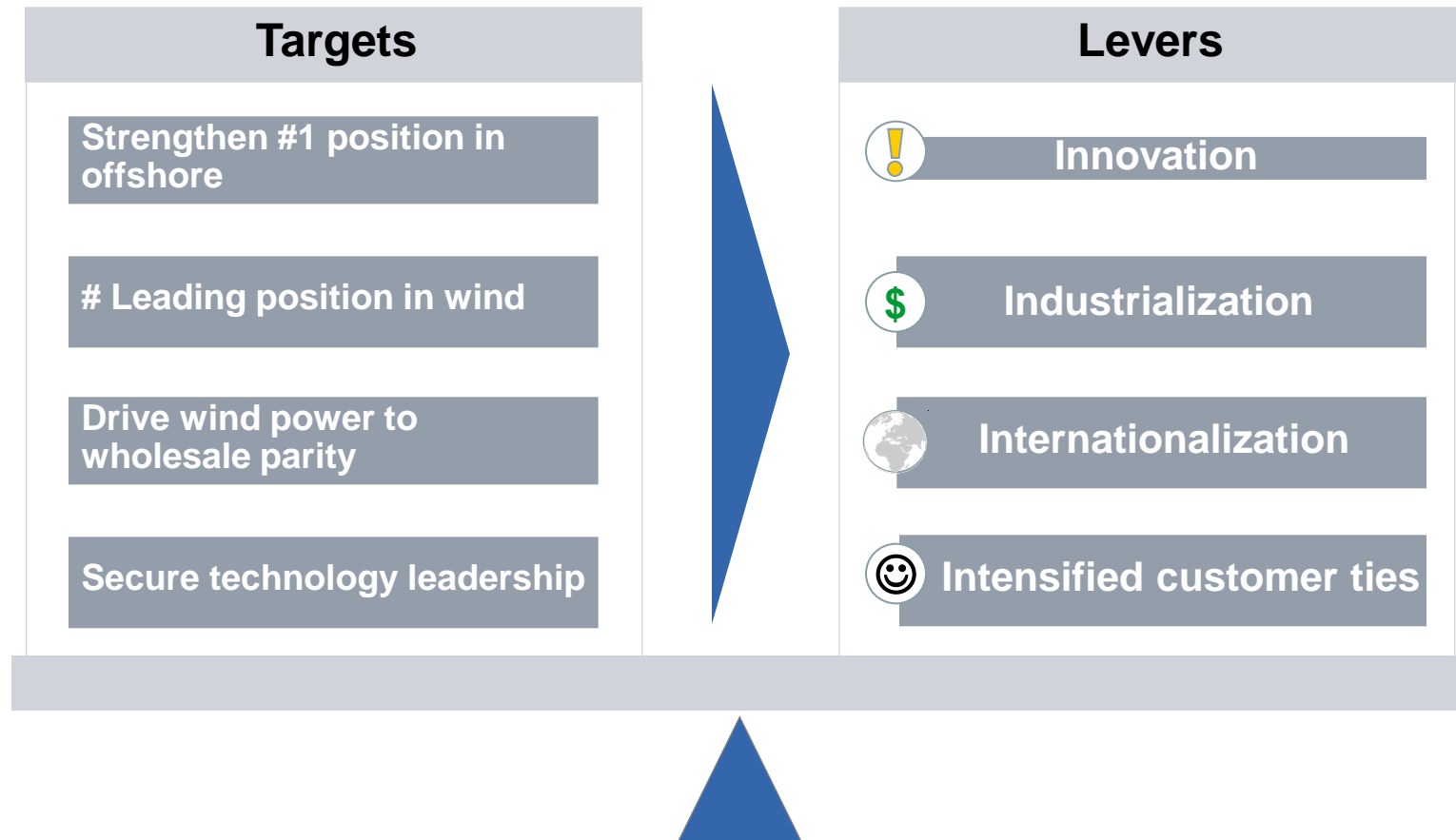
**Modularization**

**Reduce Time to Market**

**Single Source of Truth**

**Minimizing Cost of Development**

## Siemens Wind Power – the 4i's



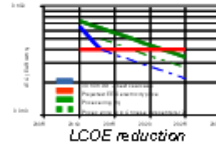
## Business Enablers

### Innovation



Support the target of parity through shorter lead time in innovation projects through greater re-use of data.

### Industrialization



Enable greater re-use across product platforms.  
Strengthen standardization efforts.  
Reduce lead time in processes through improved structure and smart workflows.

### Internationalization



Enable collaboration throughout the entire product lifecycle globally, without jeopardizing our intellectual property and secondly our target as cost efficient product foundation.

### Intensified Customer Ties



Enable quicker response to customer requests, re-using information generated earlier in the product life-cycle.

**Use the tools that “fit the purpose”**

**– Systems can max. increase efficiency in already efficient processes!**



## The “Structure of 5”

### Organization

- From “Engineering to Order” to “Configure to Order”

### Product

- Master Assemblies of Wind Turbine Families
- Configuration of Customer Specific Solutions
- Variant creation based on both features and parameters
- Standard libraries to optimize re-use

### Process

- Collaboration with Global teams/units/externals
- Process re-use
- Sustainable success

### People

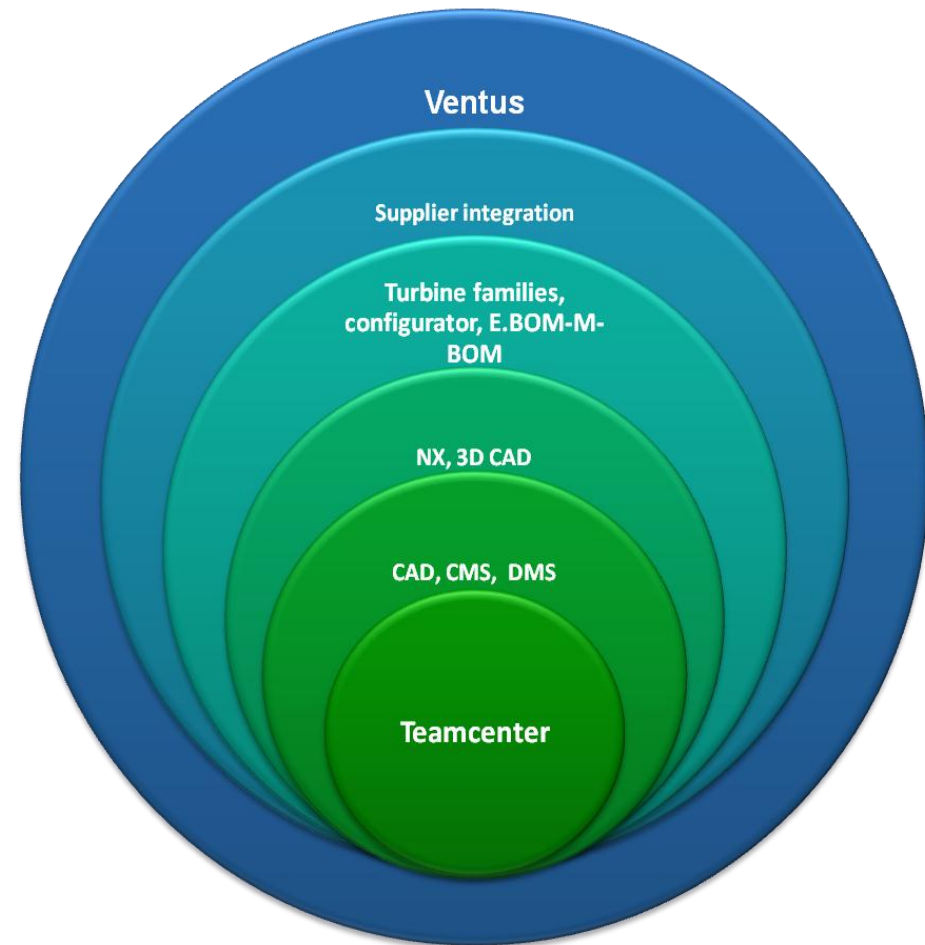
- Global collaboration
- Role based curriculums to quickly satisfy the demand for competency
- Confidence in common ways of working

### Tools

- One platform for Global Collaboration
- One platform for one knowledge sharing
- Role based approach for advanced design & modeling capabilities

## Successful – so far!

- The right mix of competencies
- The right "spirit"
- The right attention – at the right time

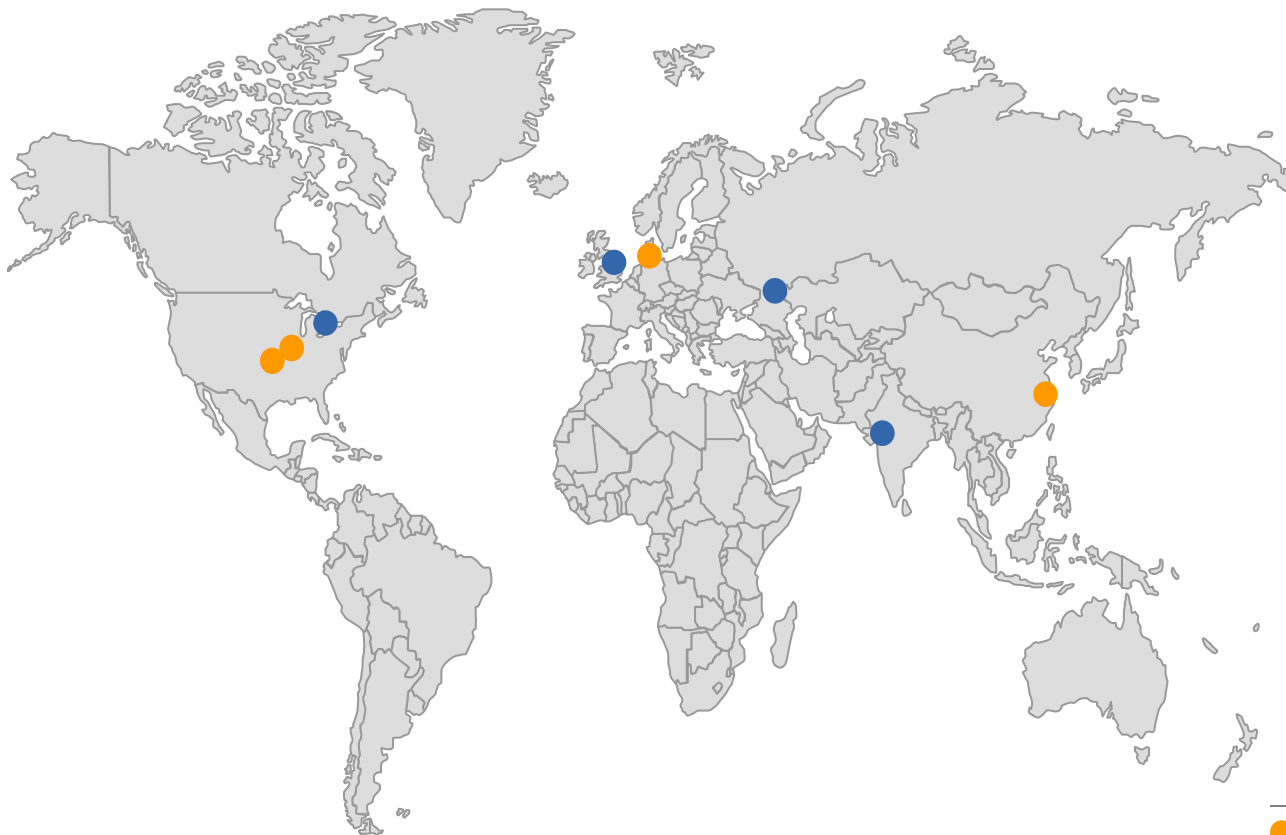


**Thank you very much for your attention!**



## Global Ramp-up Continues

### Regionalization of Supply Chain



- Currently, Siemens Wind plans has **seven manufacturing locations** in Denmark, the US and China. In 2004 we had only one.
- New factories** will open in Canada, the United Kingdom, India and Russia.
- Furthermore, we will **expand our existing factories** as the demand grows.

● Existing ● Planned

# The New SWT-6.0-120 Wind Turbine

## A Combination of Innovative Direct Drive and Proven Rotor Technology

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### SWT-6.0-120

- Direct Drive wind turbine with 6 MW rated power and a 120/154 m rotor diameter designed specifically for the harsh offshore environment
- Simple and straightforward design based on and benefiting from experience with smaller Siemens Direct Drive turbines
- Towerhead mass less than 350 tons – a new low-weight standard for offshore turbines. This will contribute significantly to reduced cost of offshore wind energy, including Balance of Plant
- Low-risk approach by reusing well-proven key technologies such as the B58 blade from SWT-3.6-120 and standard NetConverter



Prototype installation Høvsøre, Denmark

# Program Delivery Matrix

