

# Execution according to plan – More to come

Markus Tacke, CEO Wind Power and Renewables  
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# Wind Power and Renewables is a crucial pillar of the Siemens energy portfolio – High mutual benefits with other Siemens businesses

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Key figures FY 2015: €6.1bn Orders | €5.7bn Revenues | 2.8% Margin | 12,800 Employees | 5 to 8% Margin target

## Wind Power and Renewables Division

## Mutual benefits within Siemens AG

### Onshore



**Geared Platform**



**Direct Drive Platform**

- ~15,000 turbines or 27GW installed until H1 FY16
- 37 years of experience in onshore wind
- 56% of Revenue H1 FY16

### Offshore



**Geared Platform**



**Direct Drive Platform**

- ~2,100 turbines or 7GW installed until H1 FY16
- 25 years of experience in offshore wind, clear #1 with 58% of global capacity installed
- 44% of Revenue H1 FY16

**Order backlog H1 FY16: €15bn (largest ever)**

### Service

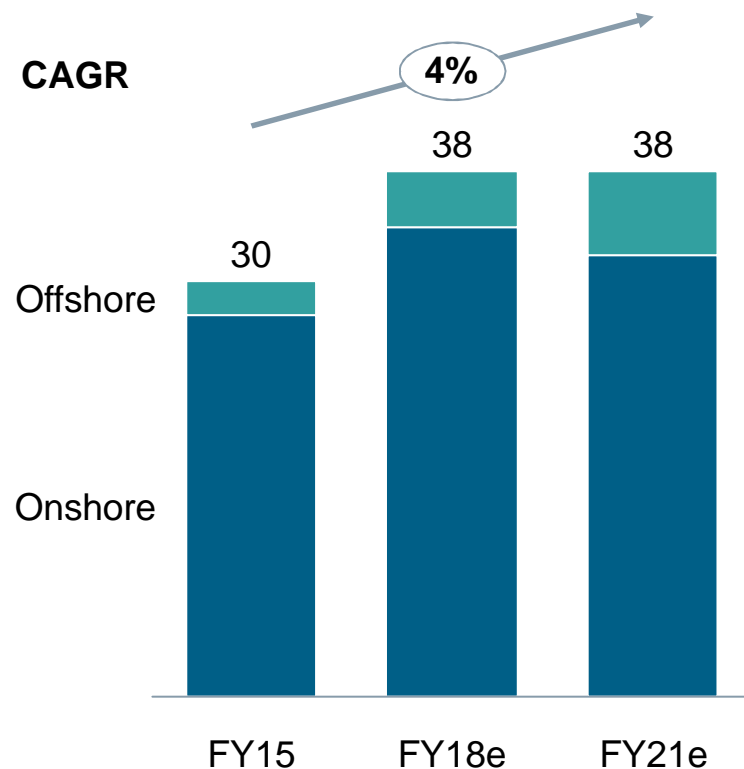
**~34GW installed base by H1 FY16 – ~160% growth since FY11**

- **Full-fledged energy solutions for customers**  
e.g. Egypt deal together with **Power & Gas** and **Energy Management**
- **Financing solutions**  
e.g. participation of **Siemens Financial Services** in Gemini offshore project
- **Joint R&D efforts**  
e.g. new offshore grid access solutions with **Energy Management**
- **Utilization of wide array of internal suppliers**  
e.g. gearboxes from **Winergy**, generators from **Process Industries and Drives**

# Renewables gaining momentum worldwide – Policy changes and declining costs making wind power more attractive

## Wind Power market (FY15 – FY21e)

Orders (in GW)<sup>1)</sup>



## Market development

### Renewables as affordable mainstream energy

- **COP21** setting ambitious targets towards climate change and decarbonization
- **Levelized Cost of Energy (LCoE)** of wind decreased by ~25% since 2010<sup>2)</sup>
- **Global renewable power investments** growing in 2015 to a new record of US\$329bn<sup>3)</sup>, nearly six times its 2004 total
- **World's largest nations** driving further renewable deployment through policy: e.g. China: 15% non-fossil energy by 2020, USA: PTC/ITC extension, India: Renewable target: 175GW by 2022
- **Increasing number of emerging countries** starting to deploy renewable policy, e.g. Egypt, Mexico

### Stable wind market, selected pockets of growth

- After record year in 2015 (incl. >30GW new installation in China), onshore market will remain stable
- Three main growth pillars: **Offshore**, **emerging markets** and **service**

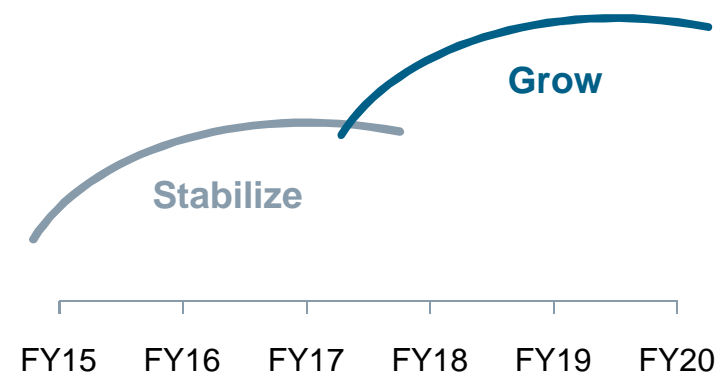
1) Excluding China – served through license partner 2) Bloomberg New Energy Finance – onshore wind LCoE 3) BNEF

# Wind2020 program launched in 2015 – Execution according to plan

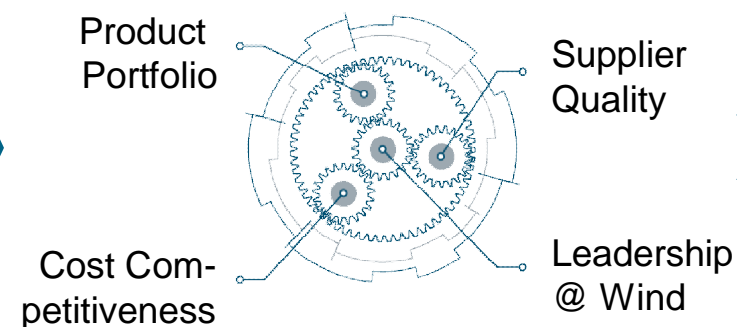
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## Wind2020

Sustainable return to target range



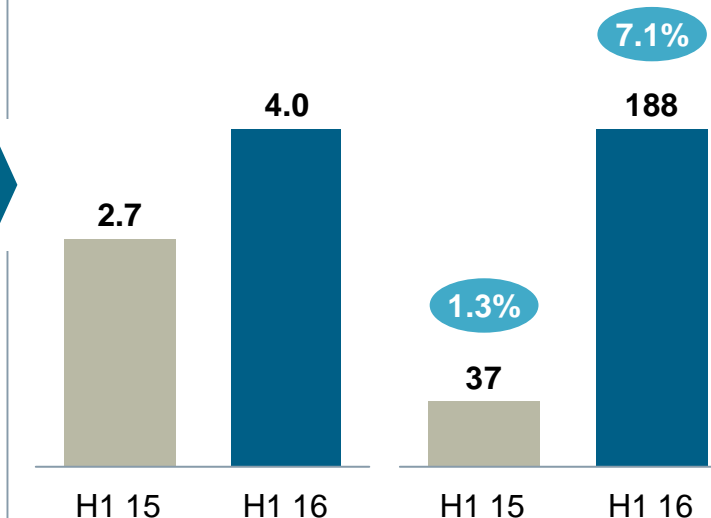
## Priority topics



## Financial performance

Orders (in €bn)

Profit (in €bn)



Execution according to plan – Ahead to deliver sustainable returns



x.x% Profit margin as reported

# Significant progress on quality visible in better margins – High focus on next generation products

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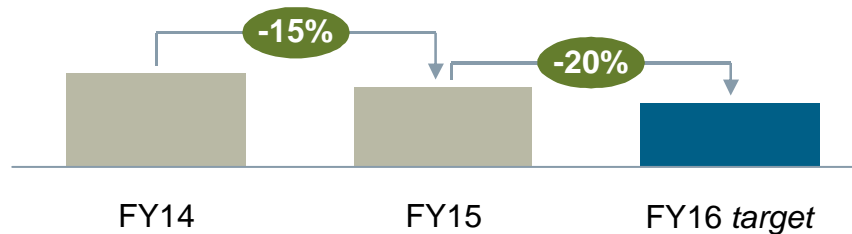
## Quality measures

- Established effective quality organization
- Introduction of quality mgmt. practices from automotive industry
- Supplier quality improvement initiatives e.g. through early involvement
- Digitalization of new product development by introducing Teamcenter



## Clear evidence of success

- Significant decrease of quality costs in project execution

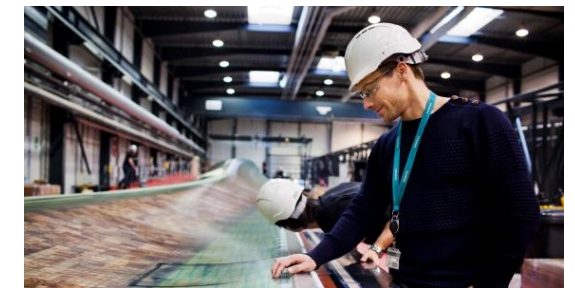


- Leading Edge Protection (LEP) solution developed successfully
- Continuous improvement of supply chain quality

Execution according to plan ✓



Leading Edge protection



Blade Inspection

By effectively dealing with our quality issues we are well equipped to launch our next generation products

# Stringent execution of cost out measures; >5% total cost productivity p.a. – Major footprint changes underway

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## Cost measures

- Product cost reduction based on market driven targets
- Optimization of project execution
- Reduction of structural cost and overhead
- Adaptation of global footprint – including shift to low cost locations and cost reduction in logistics



## Clear evidence of success

- Stringent target costing approach introduced with early involvement of supplier
- Introduction of 24hrs workflow for I&C<sup>1)</sup> of one offshore turbine (>50% OF time reduction<sup>2)</sup>)
- Savings through execution of 1by16
- Capacity of China blade factory being doubled; groundwork for Morocco blade factory started



Execution according to plan ✓



Morocco



China



Egypt



UK



Germany

**Total Cost Productivity of 5% achieved in FY15 – Target for FY16: >5%**

1) Installation and commissioning 2) Condition apply – Achieved through smart logistic concepts and shift of offshore work to land

# Complete product portfolio overhaul underway – Main impact starting from FY18

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## Development measures

### ON geared platform, e.g. SWT-2.3-120

- Longer blades
- New gearbox
- Upgraded bedframe

- Build on proven design
- Re-use of components



### ON direct drive platform, e.g. SWT-3.3-130

- Longer blades
- Upgraded Generator
- New cooling system

- Upgrade of all critical elements



### OF direct drive platform, e.g. SWT-7.0-154

- New Converter
- Upgraded transformers
- Stronger magnets

- Re-use of established supply chain



## Clear evidence of success

- +9% more energy output
- Optimal rotor giving strong capacity factor to fill US customer demand

- +10% more energy output
- First order for Finland in Q4 FY15

- +10% more energy output
- First order for UK in Q4 FY15, largest order with 102 units in Q2 FY16
- Certificate received 8 months earlier than planned

Execution according to plan ✓



Further developments ongoing – Communication expected still in 2016 | In FY18 ~80% of deliveries will be new developments

# Onshore to stay successful in traditional strongholds and to tap into new growth markets


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## Selected examples


Ensure success in largest markets


Capture growth in upcoming markets


Efficiently serve small/opportunistic markets


 Large frame contract with SH-Wind for new D3 platform


 Joint energy solution together with PG and EM with 2 GW wind frame contract


 Drive partial localization with local partners


 Further expand local setup and capabilities – maintain #1 position

 First mover with 61 MW at Siahpoush Wind farm

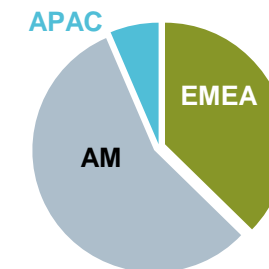
 Introduction of new G2 platform (2.3-120) and new concrete tower solution

 Preferred supplier for 850 MW e.g. Midelt, together with EGP. New blade factory for local market and export

 Support developers to optimize financial arrangements

 Hub-based sales, e.g. in South Africa to efficiently serve small markets like Kenya and Ghana

## Orders Split FY15<sup>1)</sup>



1) Excluding Service    ↑ Market development

# Siemens as Offshore leader drives innovations to further reduce costs

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## Offshore Leader



Largest OF park ever built  
(London Array 630 MW)



~2,100 Turbines



25 years of experience



51% Market share in CY15 - clear #1

Siemens WP has been the Offshore market leader for years and benefits from its unchallenged experience

## Innovation on turbine



### Innovative turbine: SWT-7.0-154

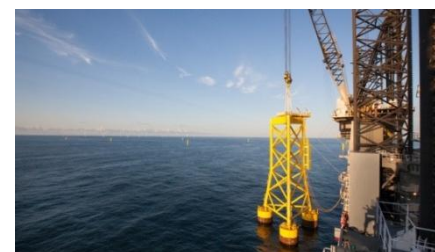
- Built on proven 6.0-154
- 10% more AEP vs. 6 MW
- Leverage existing supply chain
- Further expansion to 8 MW planned



### Innovative diagnostics

- 200 Gigabyte of data per day
- Detecting damage before it occurs
- Remotely fixing the problems

## ... and beyond



### Industrialized jacket foundation

~40% cost reduction compared to traditional concepts



### Innovative grid access

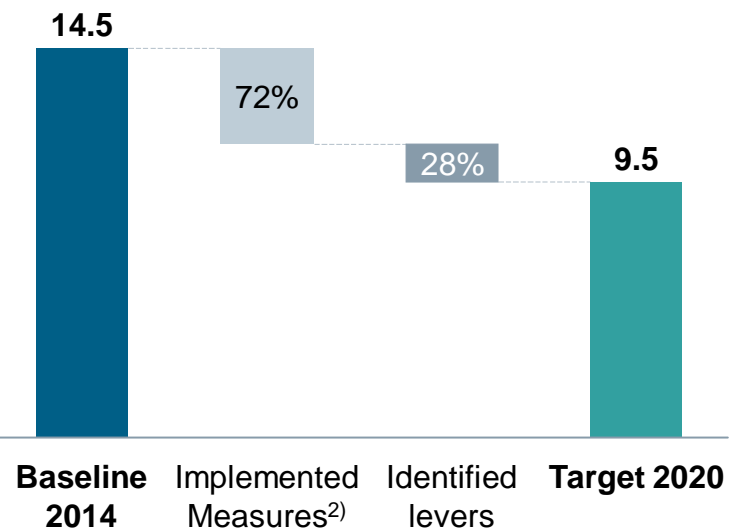
- E.g. new HVAC solution requires no separated platform
- 40% cost reduction

# Offshore to maintain market leadership – Along with partners paving the way towards <€10ct LCoE target

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## Target of €9.5ct by 2020 to be achieved

LCoE in €/kWh based on reference case<sup>1)</sup>



## ... major recent wins

- **East Anglia One**  
(UK – 714 MW – ScottishPower Renewables)
- **Hohe See<sup>3)</sup>**  
(GER – 407 MW – EnBW)
- **Arkona Becken**  
(GER – 360 MW – E.ON)
- **Formosa 1**  
(Taiwan – 8 MW – Formosa)



## ... and leadership to be sustained

- **Unmatched #1 position**  
~2,100 turbines installed offshore
- **Best performing wind farms**  
London Array recorded highest output in Dec 2015 (CF<sup>4)</sup>: 79%)
- **Best performing turbines**  
SWT-7.0-154 awarded Turbine of the Year by WPM in 2015
- **Best sold turbine in China OF**  
SWT 4.0-130 through license agreement (>70% MS)

➔ Siemens fully supports and leads the way to the offshore industry commitment below €8ct LCoE in 2025

1) Based on the SWT-7.0-154 turbine; Offshore project 1 GW, 50m water depth, 114 km from shore 2) Levers include measures in relation to the WTG, Grid, OPEX and AEP and financial levers  
3) Preferred Supplier 4) Capacity factor

# Execution according to plan – More to come

## Key takeaways



**Growing  
Market**

**4%**  
CAGR 15-21<sup>1)</sup>

Solid business in growing market

**Wind  
2020**

**Execution  
according  
to plan**

**7.1%**  
Profit margin<sup>2)</sup>

Turnaround program established and well on track



**Growth  
Path**

**~80%**  
New developments  
in FY18 deliveries

Launch of new products supports the profitable growth –  
in ON and OF

1) Excluding China – served through license partner

2) H1 2016