

# Power Generation – Fit4 2010

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# Comprehensive product and service portfolio – Leading market positions in nearly all businesses

Divisions

Fossil Power Generation (F)



Oil & Gas and Industrial Applications (I)



Instrumentation and Controls (L)



Wind Power (R)



Business activities

- Large gas turbines
- Large steam turbines
- Generators
- Power plants, e.g. CCPP, STPP
- Service, incl. plant diagnostics, boiler and environmental service

- Industrial gas turbines
- Industrial steam turbines
- Turbo compressors
- Compressor solutions for oil & gas
- Service

- Instrumentation and control systems for all types of power plants
- IT solutions
- Service

- Wind turbines from 0.6 MW up to 3.6 MW (on- and off-shore)
- Wind farms
- Service

Market position

#2

#2

#1

#5 (#1 in offshore)

Average past growth rates p.a.

~ 10%

~ 40%

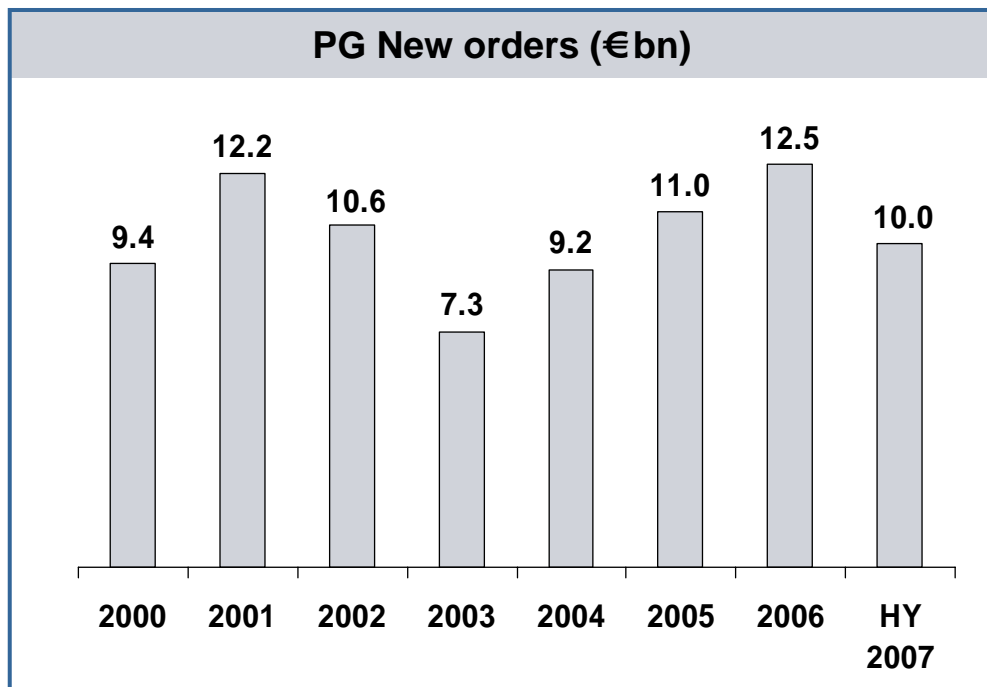
~ 10%

~ 130%

PG business figures  
Fiscal year 2006

Sales: €10.1 bn  
Employees: 36,400

**PG benefits from strong orders and sales growth –  
New target margin until 2010: 10-14%**



**Key Financials (€m)**

	FY06	HY07	ΔHY07/ HY06
<b>New Orders</b>	<b>12,532</b>	<b>10,034</b>	<b>+37 %</b>
<b>Sales</b>	<b>10,086</b>	<b>5,798</b>	<b>+28 %</b>
<b>Group profit</b>	<b>779</b>	<b>499</b>	<b>+14 %</b>
as % of sales	7.7%	8.6%	---
<b>ROCE</b>	<b>45%</b>	<b>48%</b>	---
<b>Cash Conversion Rate</b>	<b>0.8</b>	<b>1.5</b>	---
<b>Employees</b>	<b>36.4</b>	<b>38.9</b>	<b>+10 %</b>

September 30<sup>th</sup>/ March 31<sup>st</sup>,  
in thousands

▶ Strong volume growth continues in first half of FY 2007

▶ Significant improvement of Cash Conversion Rate (CCR)

▶ New target margin until 2010 10-14%

## Examples of recently received orders show PG's worldwide competitiveness

### Americas

#### Fossil Power

- USA: Turbine Island for 350MW CCPP, sold with LTP
- USA: Key components and FGD-equipment; 700MW clean coal PP
- Argentina: 2x 830MW Turnkey CCPP sold with LTPs

#### Oil & Gas and Industrial Application

- USA: 8x STs for TXU
- Brazil: steam turbine-sets for biomass-fired IPP

#### Wind Power

- USA: 55x SWT-2.3 (127MW)

### EMEA

#### Fossil Power

- GER: 800MW Turnkey CCPP, sold with LTP
- UK: 840MW Turnkey CCPP, sold with LTP
- NL: 870MW Turnkey CCPP

#### Instrumentation and Controls

- CZ: SPPA-T3000 for PP in Tusimice
- Egypt: SPPA 3000 for PP in Cairo

#### Oil & Gas and Industrial Application

- Nigeria: 2 GT-driven compressor trains + 3 power gen. trains

#### Wind Power

- UK: 140x SWT-2.3 (322MW)
- UK: 54x 3.6 Offshore (194MW)

### Asia

#### Fossil Power

- Thailand: 700MW Turnkey CCPP
- South Korea: Key components for 550MW CCPP

#### Fuel Gasification

- China: 5x 500MW gasifier to produce polypropylene from coal

#### Oil & Gas and Industrial Application

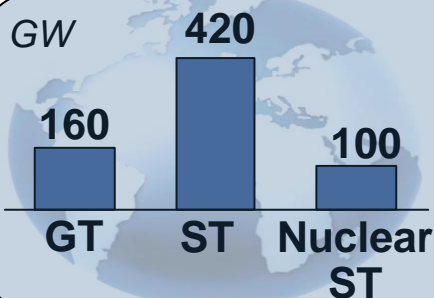
- China: 2 compressor trains for pure terephthalic acid production
- India: 3 GTs for RIL

#### Wind Power

- Japan: 25x SWT-1.3 (33MW)

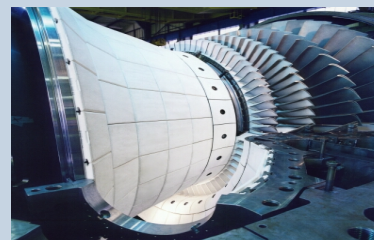
IPP: Industrial power plant; EMEA: Europe, Middle East, Africa; CCPP: Combined cycle power plant;  
 GT: Gas turbine; ST: Steam turbine, LTP: Long term service program; FGD: Flue gas desulfurization  
 SWT: Siemens Wind Turbine; RIL: Reliance Industries Limited

**Worldwide installed fleet provides strong basis for future profitable growth of core services**



**Installed Base**

- 680 GW global fleet
- 20% of global fleet (fossil and industrial)



**F/G class**

**Advanced GT Fleet**

- > 400 units in operation
- 70% with long-term service agreements

+



**ST Upgrades**

- Potential of > 1000 conventional turbines older than 20 years
- Potential of 80 turbines for nuclear ST



**D/E class**

**Modern GT Fleet**

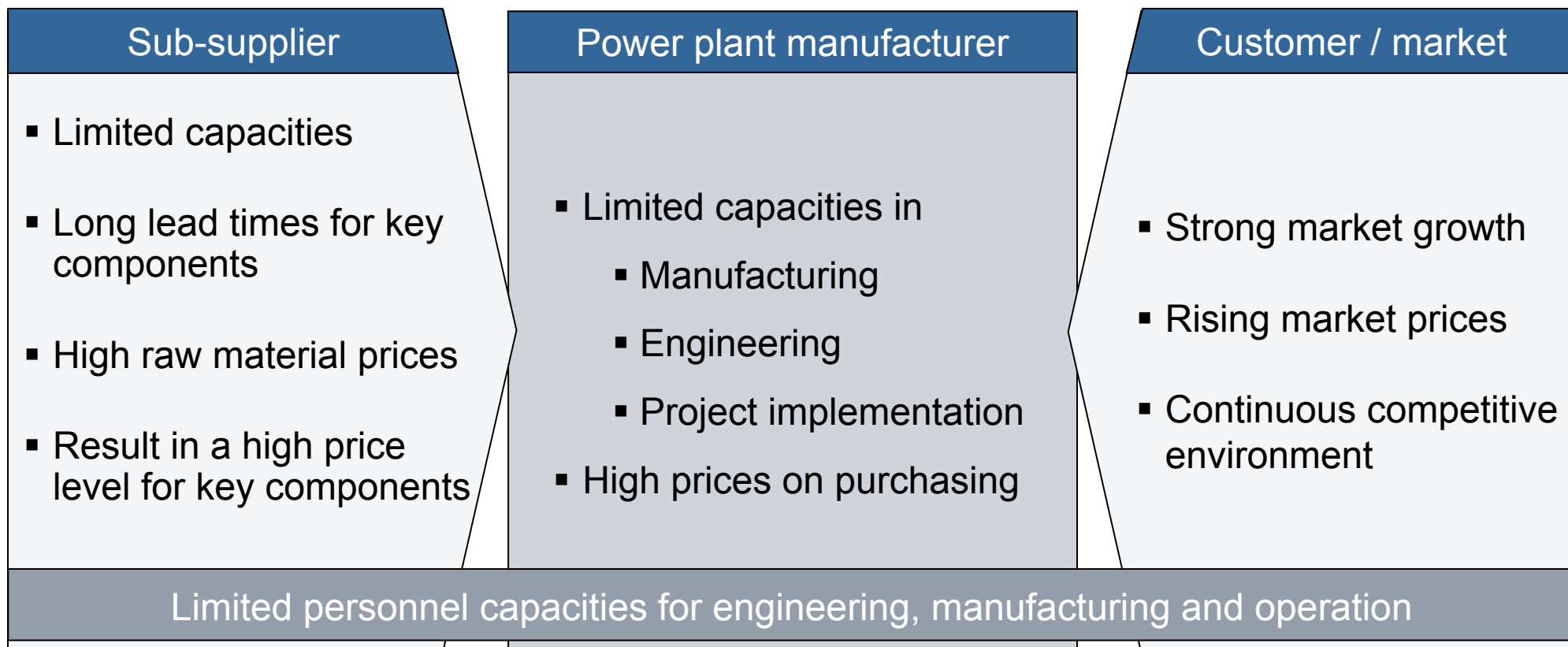
- > 600 units in operation
- Service annuities and lifetime extensions

+

**Mature GT Fleet**

> 600 units in operation

**Strong market demand poses challenges to resources at the entire power industry**



**Expanding capacities and optimizing the supply chain management to mitigate supply constraints**



## Global challenges impacting the energy supply

### Demographic Dynamics



- **Population Growth:**  
7.5 bn in 2020 (+1.1 bn)
- **Power Consumption:**  
+5.2% p.a. in emerging regions vs. 1.4% in developed world
- **Urbanization/Megacities** (>10 million):  
15 new cities in 2015

### Resource Scarcity



- **Geopolitics:**  
70% of world oil and gas supplies only in a few countries
- **Fuel Diversity:**  
100% increase in oil prices over last 2 years accelerate shift to broader fuel mix

### Environmental Focus

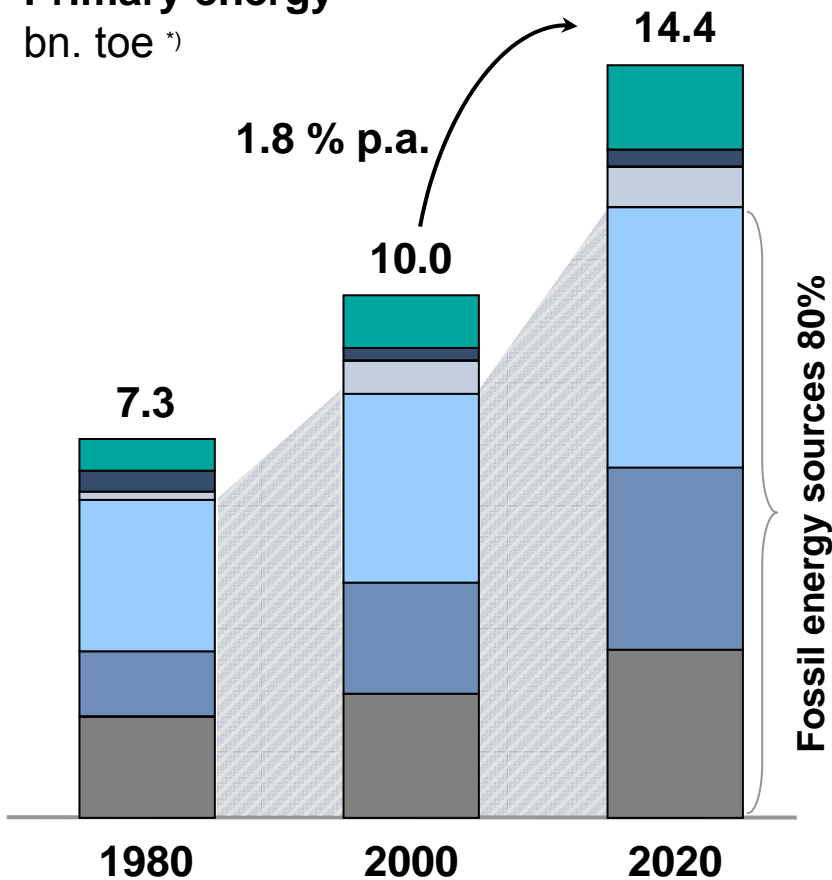


- **Global Emissions:**  
40% increase over past 20 years in air pollution
- **Climate Change:**  
Global warming is a fact, threatening humans and biosphere

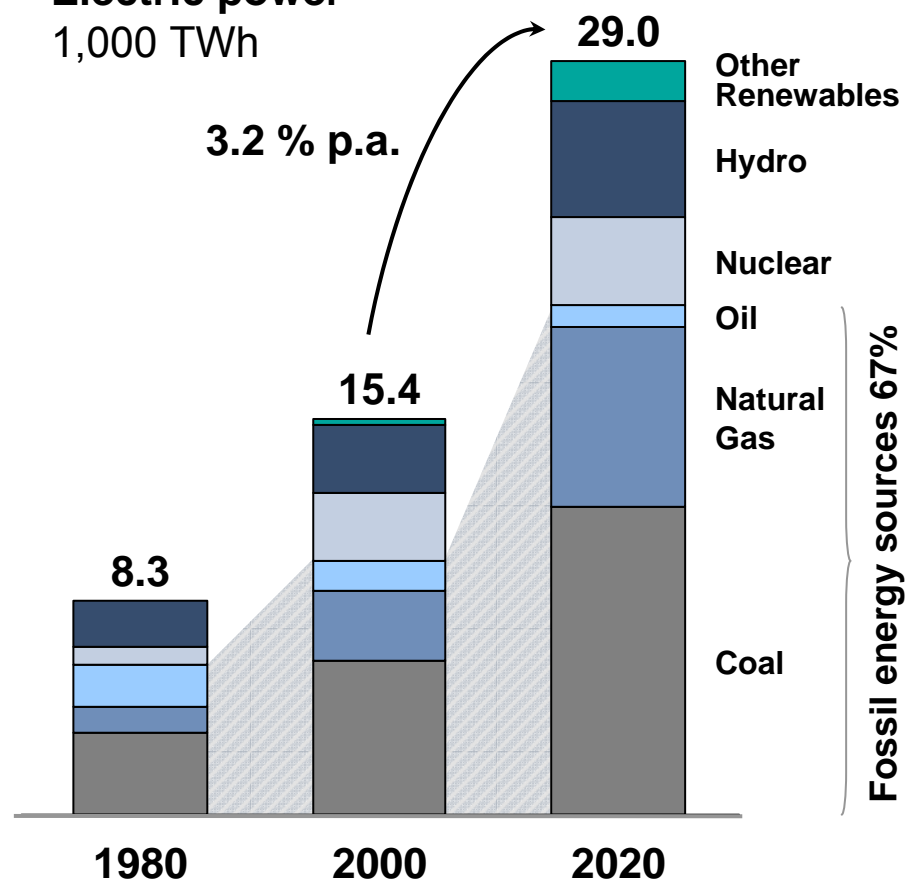


# Demand for electric power growing more strongly than demand for primary energy – Fossil fuels dominate

**Primary energy**  
bn. toe \*)



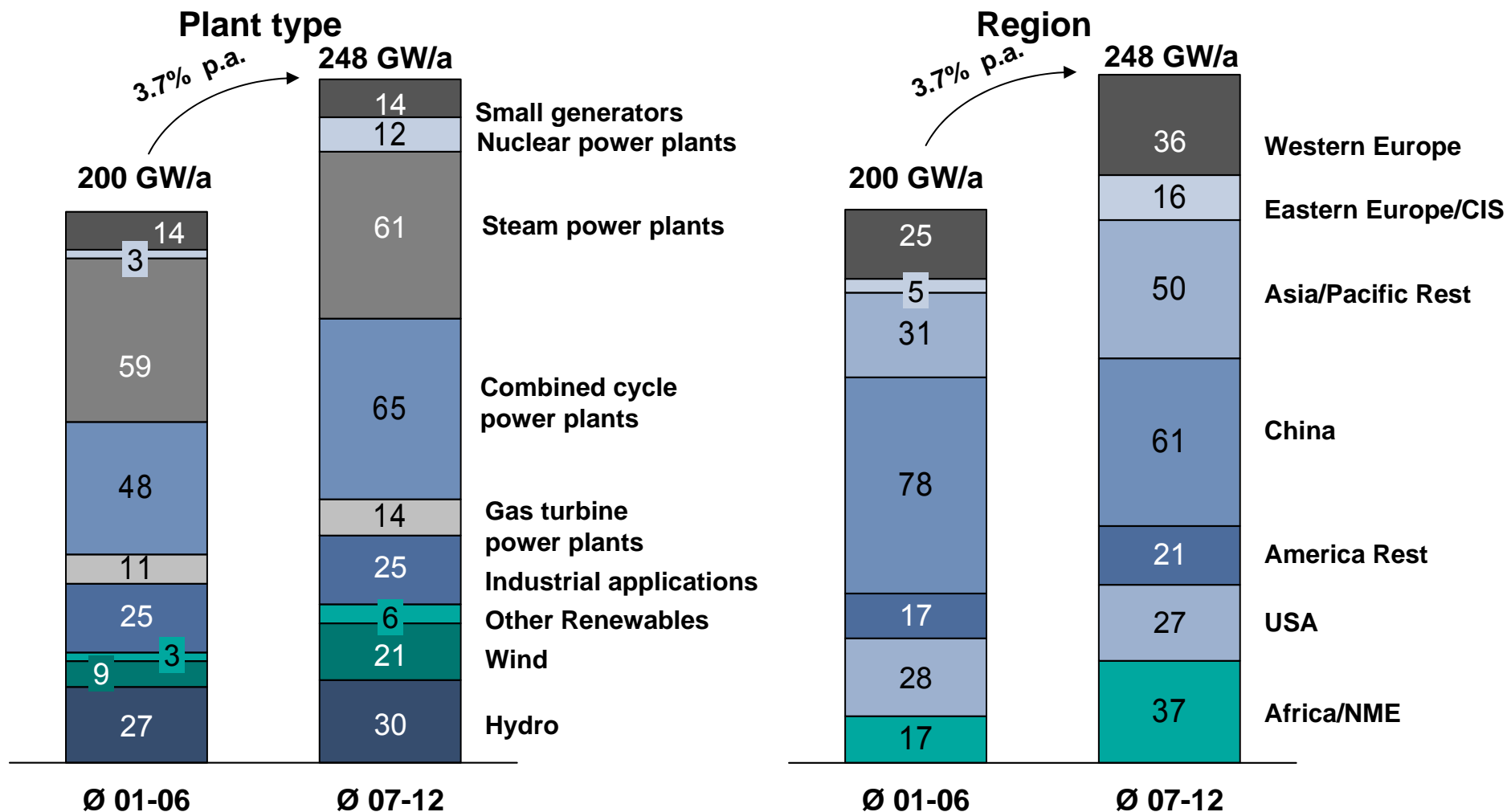
**Electric power**  
1,000 TWh



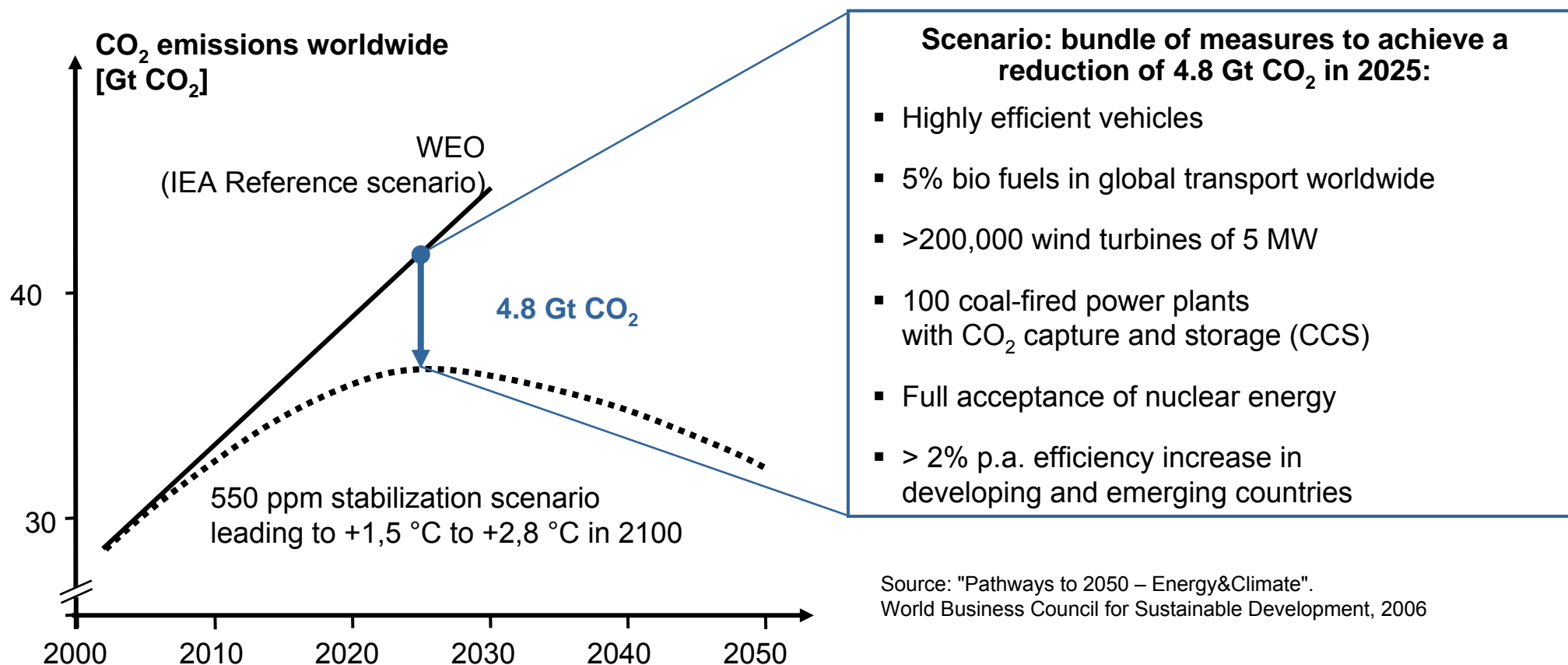
Source: IEA2004, Paris; Siemens PG

\*) toe= tons of oil equivalent

# Fossil-fueled power plants remain dominant – Strong demand for new power plants in almost all regions



## Climate mitigation would require drastic reduction of greenhouse gas emissions



# Clean energy: Technology options for tomorrow's low-emission power mix

## Privileged feed-in demands load leveling

- Renewable energy:
  - Wind power
  - Concentrated solar power



## Intermediate-load/ peak-load

- Gas-fired combined cycle power plants:
  - High efficiency
  - Low emissions
  - Steep ramp up



## Low-emission base-load

- Coal-fired power plants:
  - High-efficient, clean STPP
  - IGCC pre-comb. capture
  - Retrofit post-comb. capture
- Nuclear power plants
- Hydro power plants



### Comply with CO<sub>2</sub> abatement policies

- ✓ CO<sub>2</sub> cap & trade, CO<sub>2</sub> pricing
- ✓ Mandatory Carbon Capture and Storage (CCS)
- ✓ R&D funding
- ✓ Renewables quota
- ✓ National nuclear program

### Ensure reliable power supply

- ✓ High efficiency and limited resource usage
- ✓ Reduced dependence on fuel imports
- ✓ Stable grid operation
- ✓ Economic viability

# Today PG's fossil-based technology is setting efficiency standards worldwide

## Lignite-fired steam power plant

43%



Niederaußem,  
965 MW

## Hard coal-fired steam power plant

47%



Reference STPP NRW,  
600 MW

## Combined cycle power plant

58%



Mainz-Wiesbaden  
400 MW

## Development of efficiency and corresponding reduction of CO<sub>2</sub> emissions

	Efficiency	CO <sub>2</sub> -emissions
1992:	36 %	Basis
2006:	43 %	-16%
2020 target:	>50 %*	>-28%

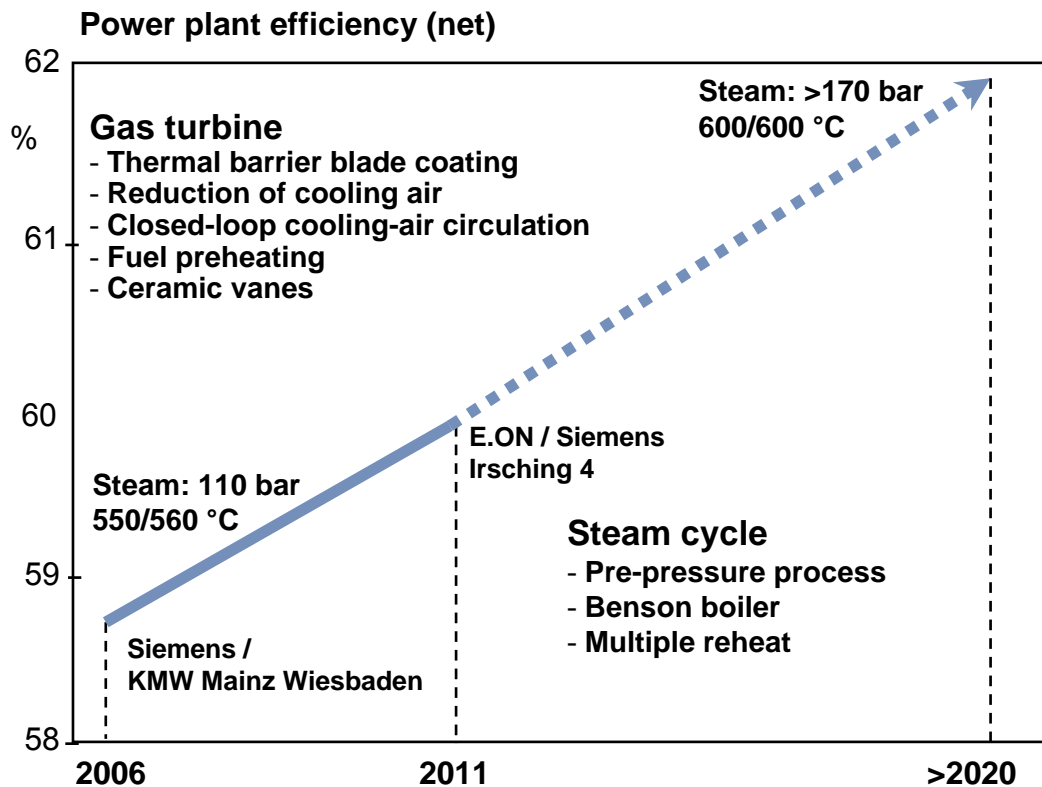
\* Using lignite pre-drying technology

	Efficiency	CO <sub>2</sub> -emissions
1992:	42 %	Basis
2006:	47 %	-11%
2020 target:	> 50 %	>-16%

	Efficiency	CO <sub>2</sub> -emissions
1992:	52 %	Basis
2006:	58 %	-10%
2020 target:	> 60 %	>-13%

# Siemens H-technology is a significant step in the development of combined cycle power plants

## Combined cycle power plant



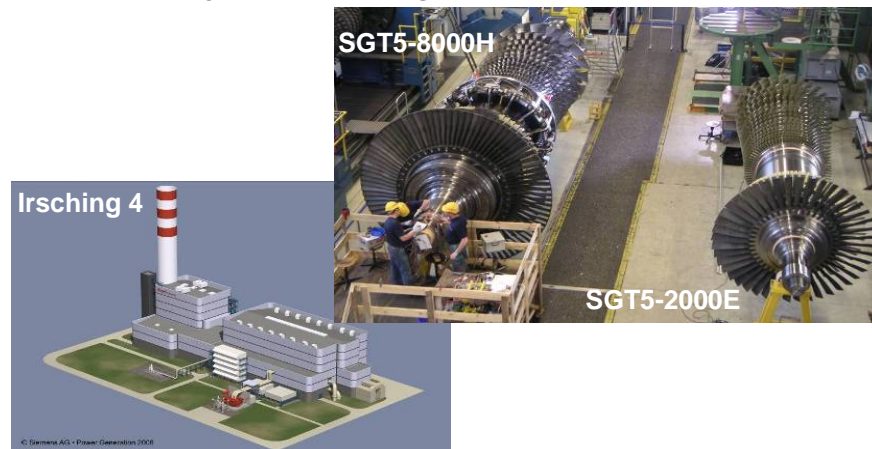
KMW = Kraftwerk Mainz Wiesbaden (Power Plant M.W.)

## PG gas turbine development

Worldwide most powerful gas turbine

- Output: 340 MW GT  
**530 MW CCPP**
- Efficiency: 39% GT  
**60% CCPP**

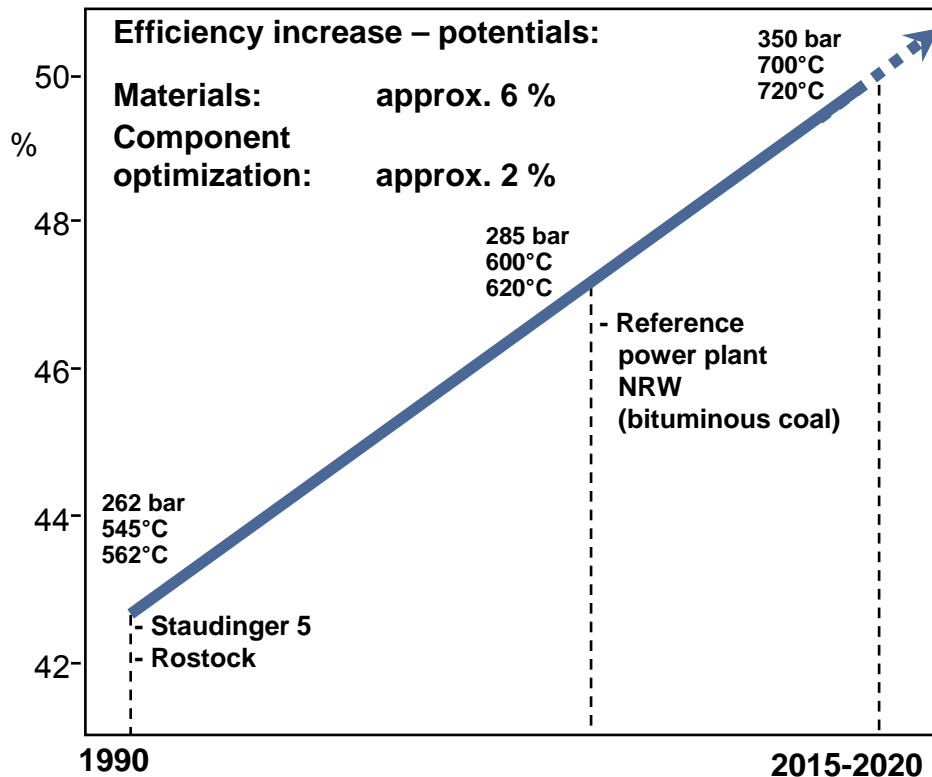
Pilot project Irsching (GER)



# Research project allows > 50% efficiency at coal-fired steam power plants

## Steam power plants

Power plant efficiency (net)



## European research project, pathway to 700°C technology

- Development of the next supercritical steam power plant generation
- Participation of European utilities and OEM's
- Planned construction  
400 MW NRW-700 Power Plant
- **AD700\***: Transition from chrome steel to nickel-base alloyed materials for superheated steam
- **COMTES700\*\***: Analysis of critical steam generator components, such as superheater, header, safety valve under operating conditions

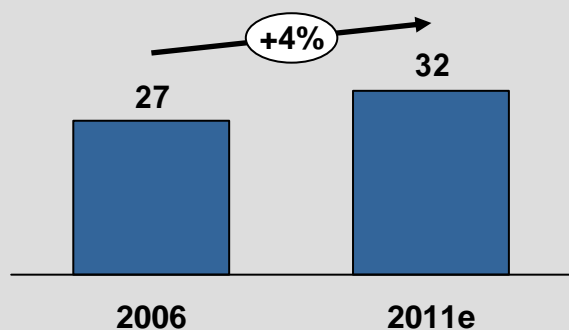
\* Advanced 700°C power plant project,

\*\* Component test facility for a 700°C power plant (in power plant Scholven)



## Air pollution control (APC) is gaining increasing importance – PG entered the market successfully

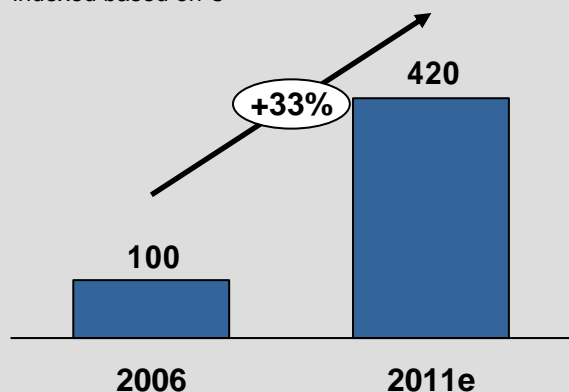
Global APC market  
in bn €



### Market, Technology

- Coal-fired power plants increasingly used for base load
- Air pollution has risen by 40% over the last 20 years
- Compliance with multi-pollutant emission regulation, especially in North America and Europe
- Strongly growing global market in the mid-term driven by impending legislation

PG sales within APC business  
indexed based on €

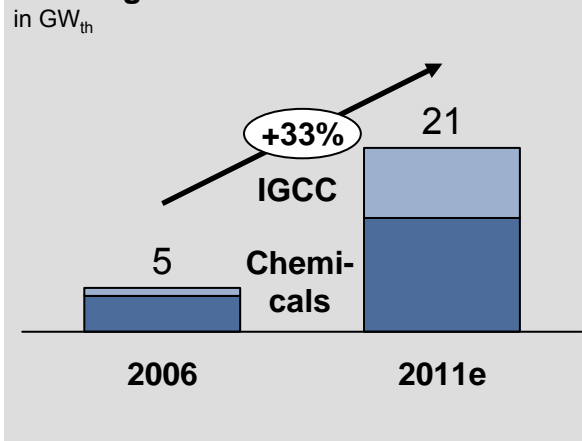


### Siemens PG activities

- Acquisition of US-based Advanced Burner Technologies (ABT) and Wheelabrator leads to strong position for extended environmental systems & services
- Front-end: Low NOx burners
- Back-end: Flue gas clean-up
- Focus on increasing market share in APC outside the US

# Gasification technology offers multiple business opportunities: gas cleanup with optional CCS as well as production of synfuels

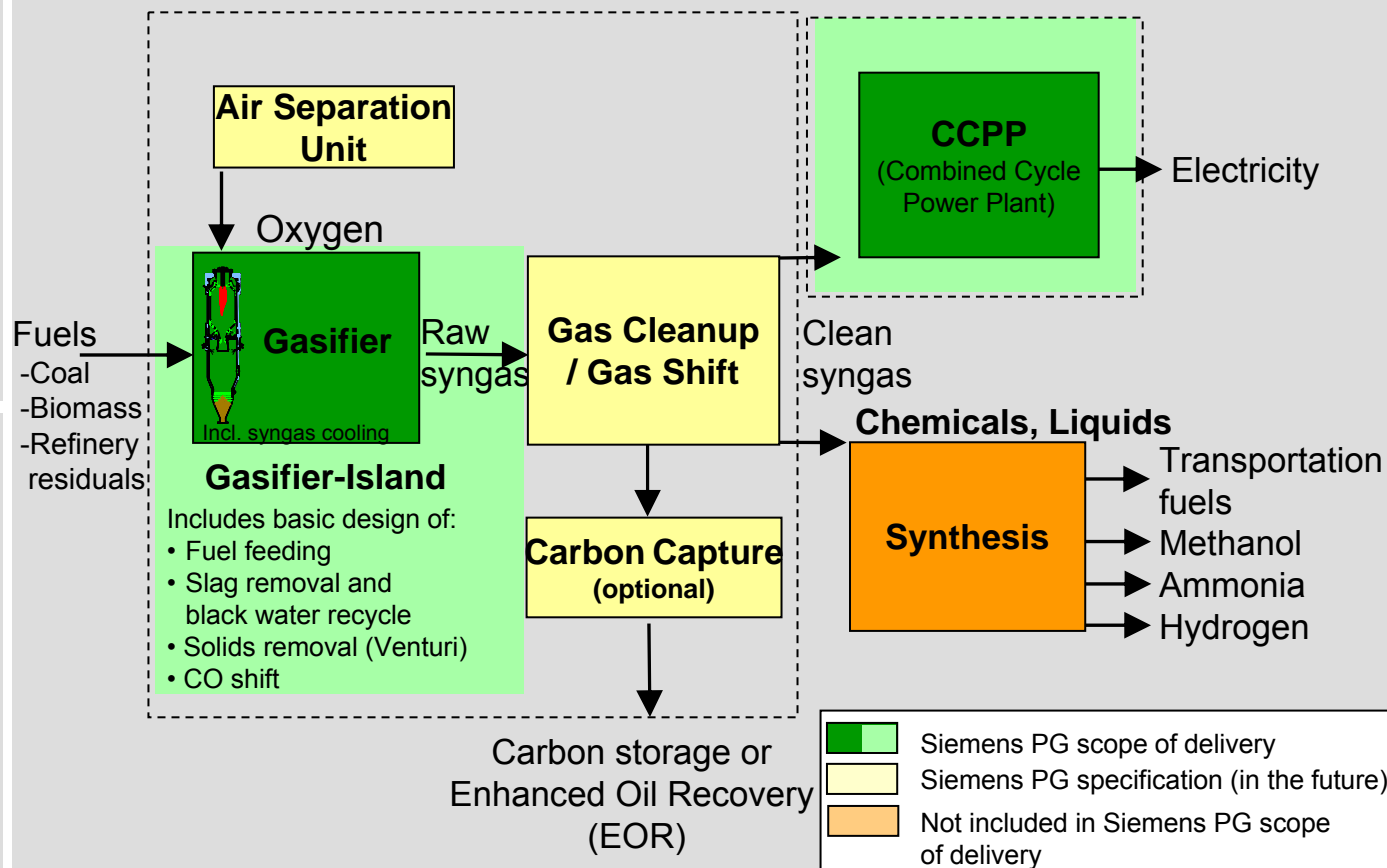
Global gasifier market in GW<sub>th</sub>



## Highlights of Siemens gasifier:

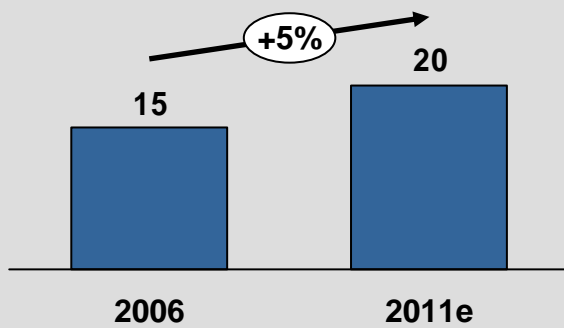
- More than 20 years of operating experience in 200 MW<sub>th</sub> size
- Flexible feedstock capable of burning low grade coal
- Quench technology for simplicity & improved reliability
- Cooling screen for higher availability
- World class gasification test facility

Own gasification technology allows to optimize the complete system and offer competitive IGCC solutions



# Basis for growth build up by acquisitions in Division Oil & Gas and Industrial Applications

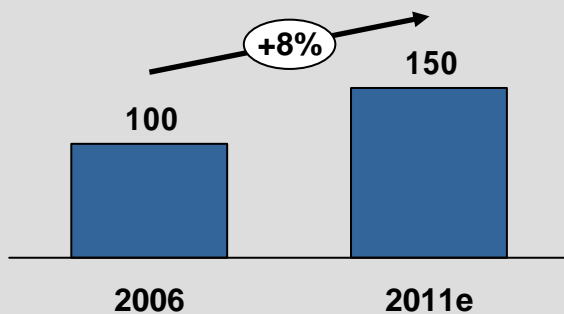
PG Oil & Gas market  
in bn €



## Market, Technology

- Oil prices stay at high level → further infrastructure investments possible
- Shift from oil to coal and gas → gas-to-liquid, coal-to liquid as growth segments
- New technologies required to allow further exploitation of reserves e.g. sub-sea applications

PG orders within Oil & Gas and Industrial Applications  
indexed based on €



## Basis for growth build up by acquisitions

Siemens Industrial Turbines



Industrial applications

ST <100 MW

Demag Delaval (2001)



Oil & Gas

Compressors

Alstom Industrial Turbines (2003)



Oil & Gas

ST & small GT (<70 MW)

KK&K (2007)

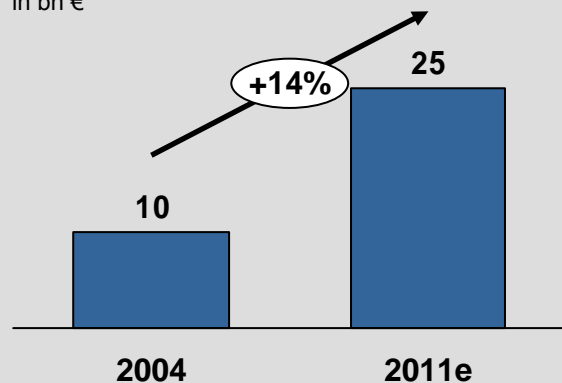


Industrial applications

Small steam turbines (<5MW)  
Small compressors

## Siemens Wind Power is growing more than 2 times global wind power market

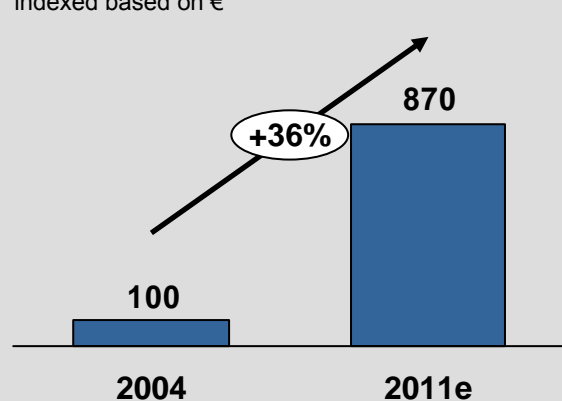
Worldwide wind market  
in bn €



### Market, Technology

- Wind power is main driver for growth in CO<sub>2</sub>-free technology
- National energy plans and government support for renewable energy
- Technological development improves economics
- Increasing engagement of utilities and large energy companies

Siemens Wind Power orders  
indexed based on €



### Siemens PG activities

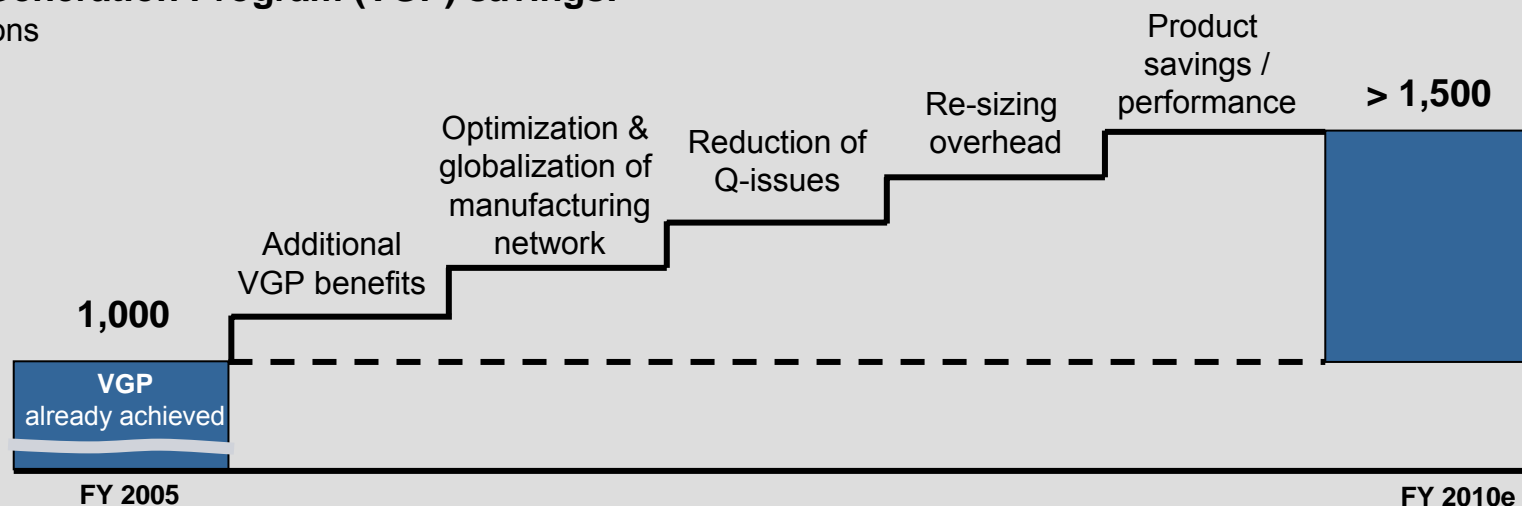
- PG entered the wind market through acquisition of Bonus A/S (2004)
- Further build up of supply chain: new and additional manufacturing capacities in DK and the US (Iowa)
- World market leadership for offshore applications
- Focus on growth markets in Europe, North America and Asia

## Established initiatives ensure improvements in performance and cost position

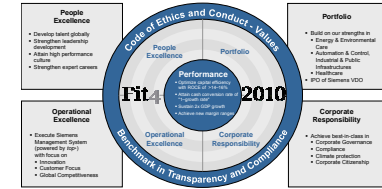
- Standardization of main products: gas turbines, steam turbines, generators
- Expansion of worldwide manufacturing network, strengthening service
- Successful integration of manufacturing and service activities of KK&K thus taking advantage of synergies, streamlining of overheads
- Consequent implementation of our quality culture initiative

### Value Generation Program (VGP) savings:

in € millions



## PG's priorities to achieve Fit4 2010 goals



- **Expansion of manufacturing and engineering capacities**
  - Increase ST manufacturing capacities
  - Build up engineering staff
- **Mitigation of supply constraints**
  - Establish frame agreements with major suppliers
- **Environmental care: extension of product portfolio**
  - Fossil: Air Pollution Control through Wheelabrator and ABT; highly efficient turbomachinery (e.g. new gas turbine); gasifier for syngas (fuel and chemical production and IGCC)
  - Renewables: Wind power through Bonus
- **Growth program for wind business**
  - Enter new markets (EU, Asia); further develop offshore business
- **Enhancement of Oil & Gas and Industrial Applications**
  - Integrate KK&K; regionalize sales of PG I

## **PG's key take aways**

- **Positive market outlook**
- **Clearly outpacing market growth**
- **Diverse mix of environmentally-friendly technologies**
- **Strong service fundamentals provide solid foundation**
- **Current margins with further upside potential**
- **Well balanced investments with clear focus on cash conversion**

**PG well positioned to address future clean energy markets**



## Reconciliations and definitions

"Group profit from Operations" is reconciled to "Income before income taxes" of Operations under "Reconciliation to financial statements" on the table "Segment information." See "Financial Publications/Quarterly Reports, FY07 Q2, Financial Statements" at our Investor Relations website under [www.siemens.com](http://www.siemens.com).

ROE (Return on equity) margin for SFS was calculated as SFS' income before income taxes divided by the allocated equity for SFS. Allocated equity for SFS for the financial year 2007 is € 1.041 billion.

The allocated equity for SFS is determined and influenced by the respective credit ratings of the rating agencies and by the expected size and quality of its portfolio of leasing and factoring assets and equity investments and is determined annually. This allocation is designed to cover the risks of the underlying business and is in line with common credit risk management standards in banking. The actual risk profile of the SFS portfolio is monitored and controlled monthly and is evaluated against the allocated equity.

Siemens ties a portion of its executive incentive compensation to achieving economic value added (EVA) targets. EVA measures the profitability of a business (using Group profit for the Operating Groups and income before income taxes for the Financing and Real estate businesses as a base) against the additional cost of capital used to run a business, (using Net capital employed for the Operating Groups and risk-adjusted equity for the Financing and Real estate businesses as a base). A positive EVA means that a business has earned more than its cost of capital, and is therefore defined as value-creating. A negative EVA means that a business is earning less than its cost of capital and is therefore defined as value-destroying. Other organizations that use EVA may define and calculate EVA differently.

To measure Siemens' achievement of the goal to grow twice the rate of global GDP we use GDP on real basis (i.e. excluding inflation and currency translation effects) with data provided by Global Insight Inc. and compare those growth rates with growth rates of our revenue (under IFRS). In accordance with IFRS, our revenue numbers are not adjusted by inflation and currency translation effects.

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