



**WACKER** POLYSILICON

# SUPPLYING A GROWING INDUSTRY

WACKER POLYSILICON

May 2010

CREATING TOMORROW'S SOLUTIONS

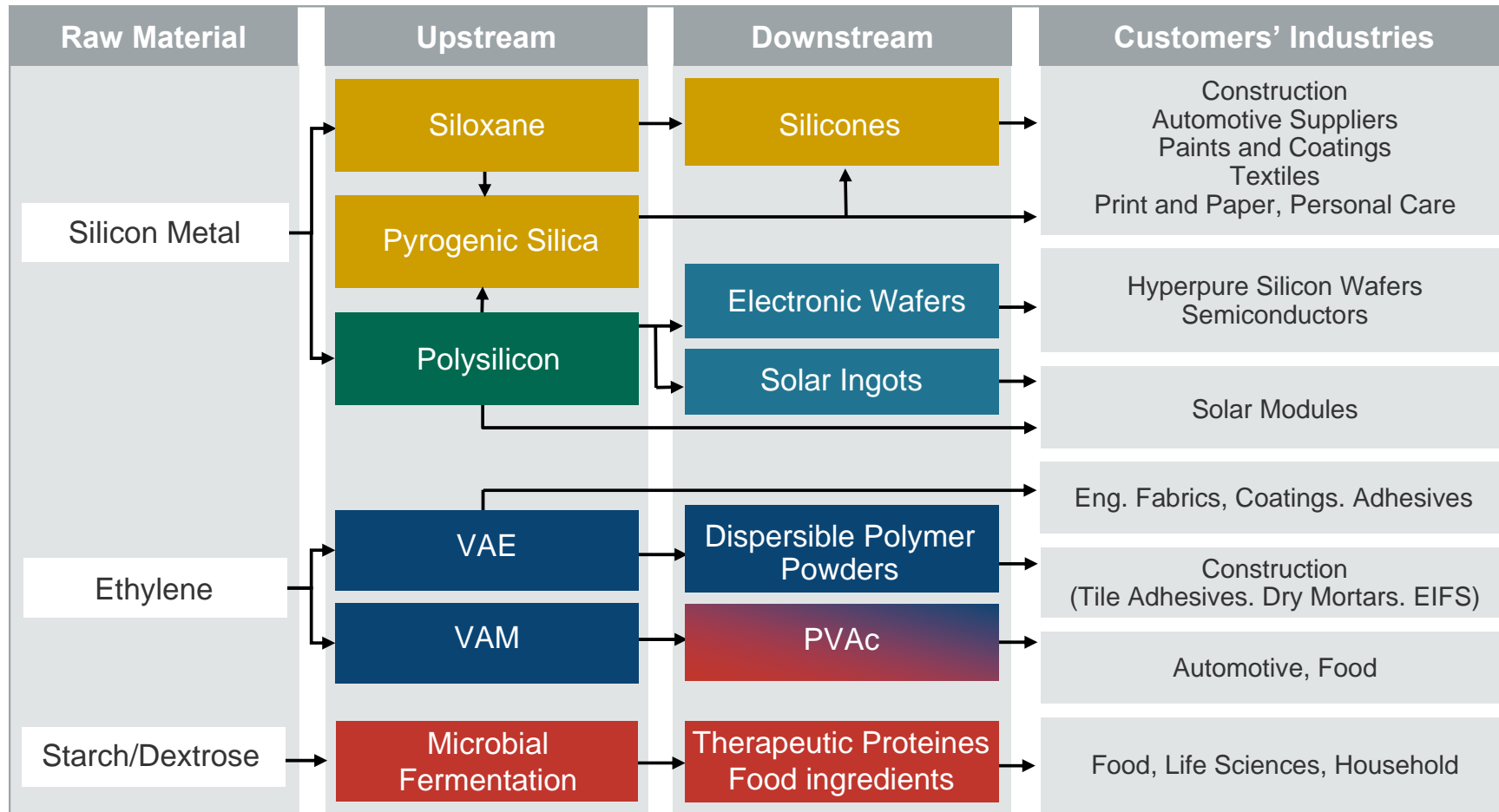
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- **Overview WACKER CHEMIE AG**
- Introduction to WACKER POLYSILICON
- Demand Situation and Competitive Status of PV
- Supply / Demand Balance
- Summary / Outlook 2010

# WACKER: HIGHLY INTEGRATED OPERATIONS BASED ON THREE KEY RAW MATERIALS



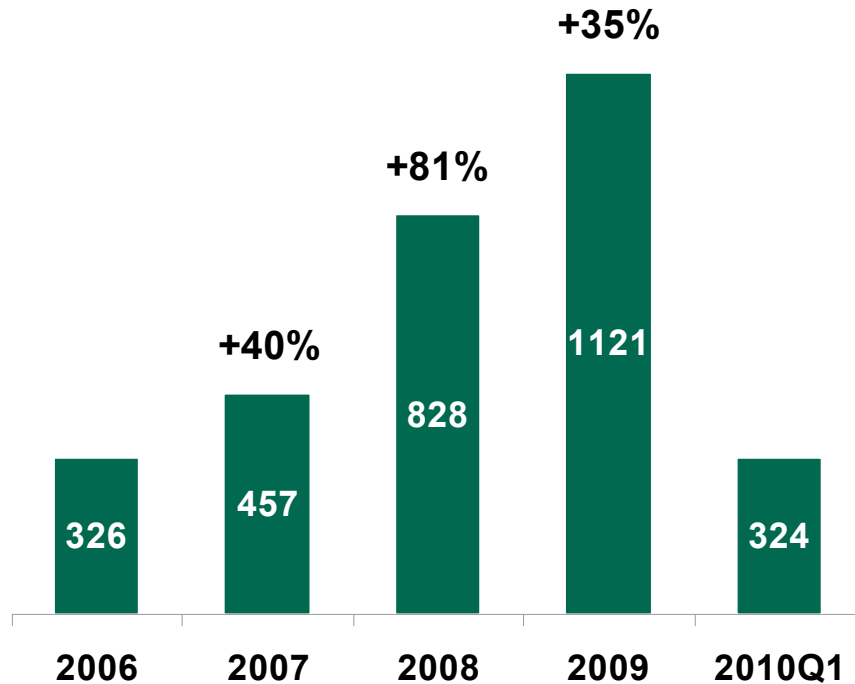
VAM = Vinyl acetate monomer. VAE = Vinyl acetate ethylene, PVAc = Polyvinyl acetate, EIFS = Exterior insulation and finish system

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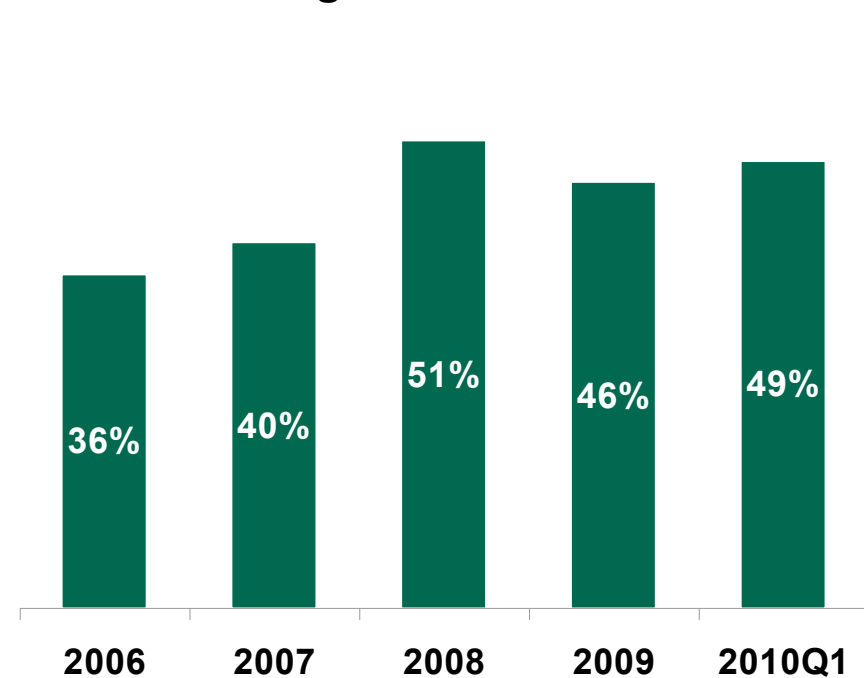
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# WACKER POLYSILICON – FINANCIAL PERFORMANCE

## Sales €m



## EBITDA Margin



- Ongoing strong sales development
- Ongoing aggressive capacity expansion
- Received prepayments support favorable cash position

# BROADEST PRODUCT PORTFOLIO – POLYSILICON SOLUTIONS FOR ALL SILICON GROWTH TECHNOLOGIES



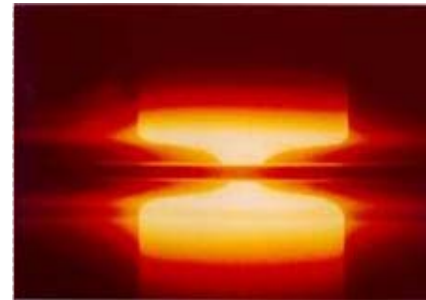
**Chunks**



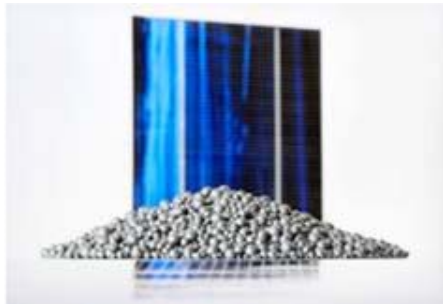
**CZ pulling,  
Casting**



**Rods**



**FZ pulling,  
CZ pulling**



**Granules**

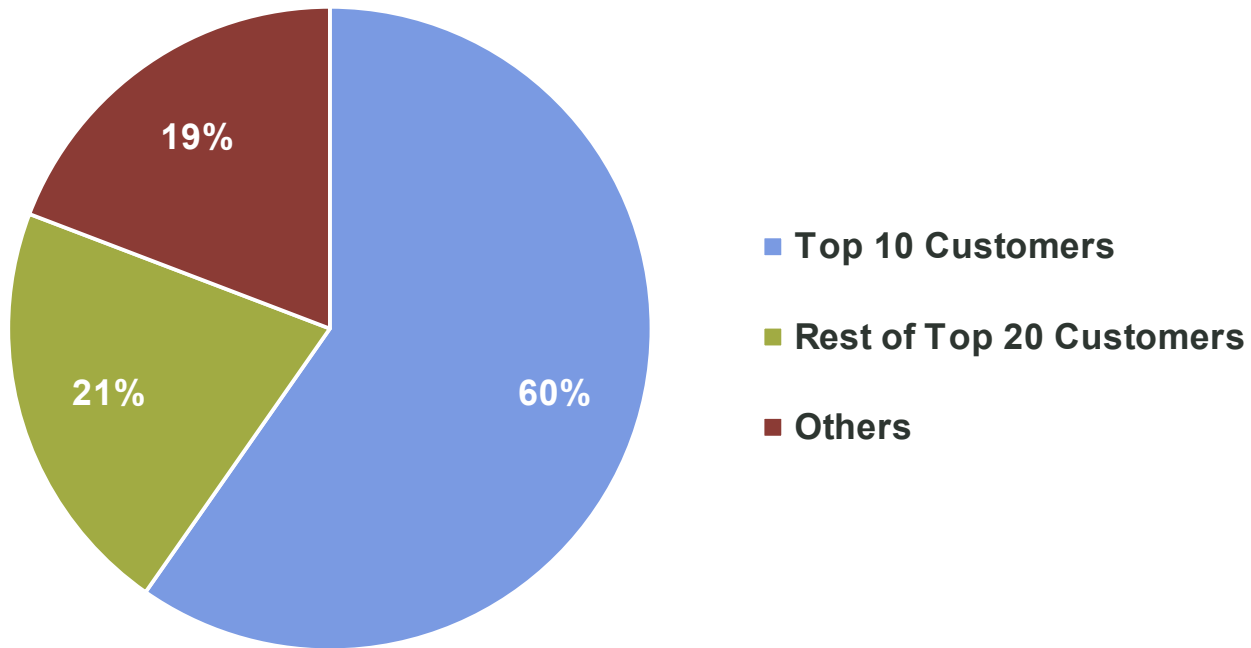


**Topping up,  
Multiple pulling,  
String ribbon,  
EMC**

# BROAD CUSTOMER STRUCTURE

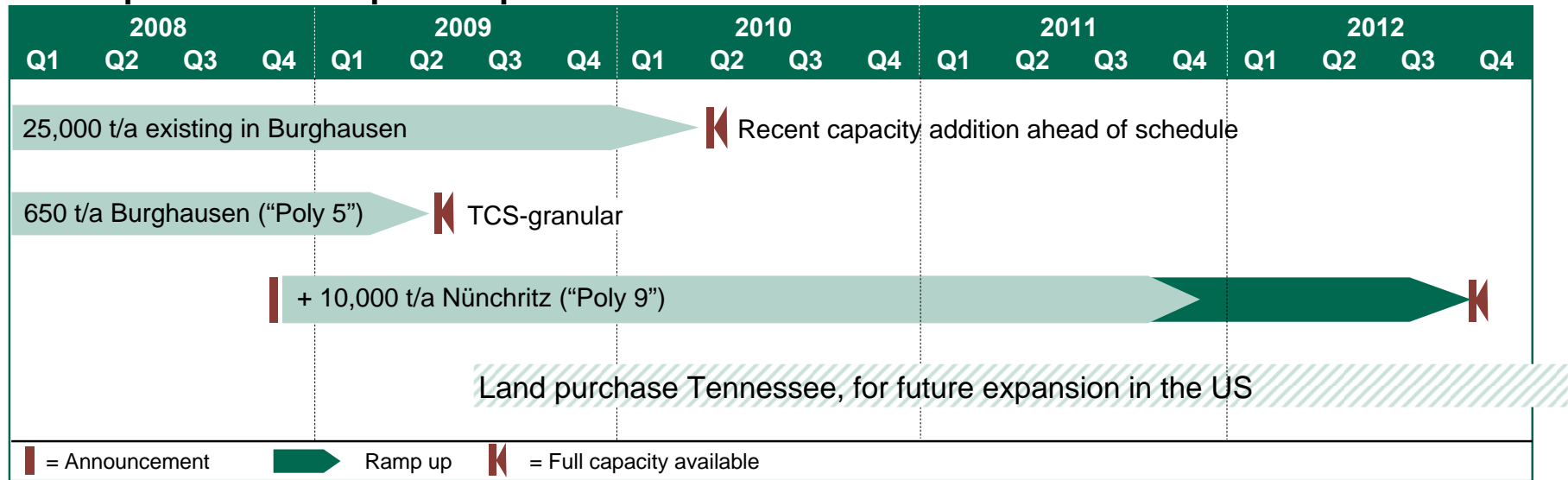
## TOP 10 CUSTOMERS COVER 60% OF VOLUME

Volumes shipped (2010e)



# ONGOING CAPACITY EXPANSION TO MEET OUR CUSTOMERS' DEMAND

## Development of nameplate capacities



### Construction progress "Poly 8"



July 2009  
Deposition reactor hall



March 2010  
Distillation

### Construction progress "Poly 9"



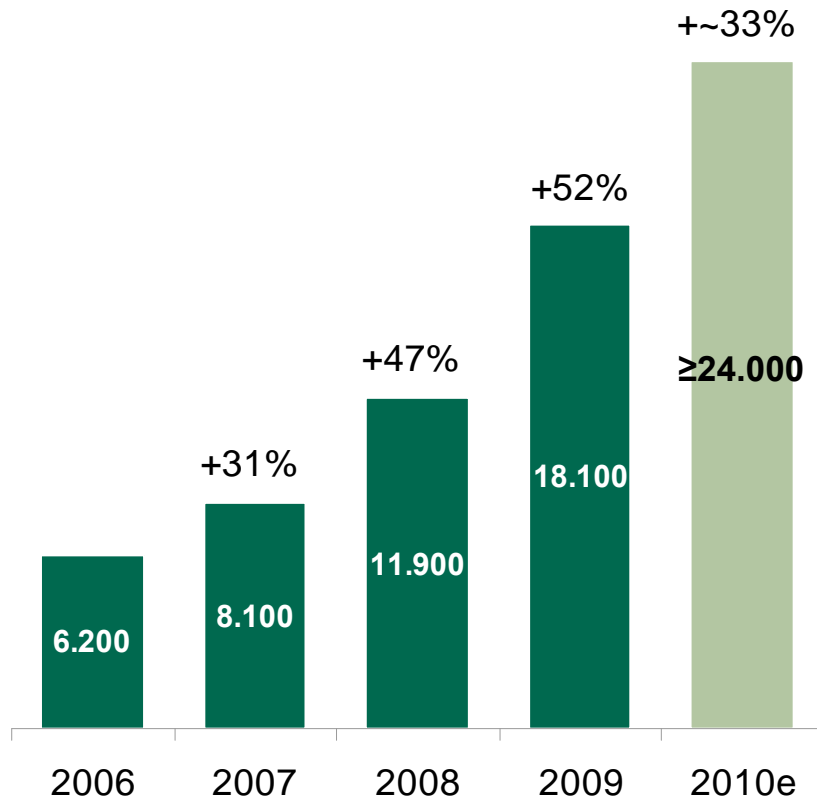
November 2009  
Deposition reactor hall



March 2010  
View on construction site

# WACKER POLYSILICON – STRONG OUTPUT INCREASE

## Polysilicon Production (MT)



**Existing capacity: ~25,000 MT**

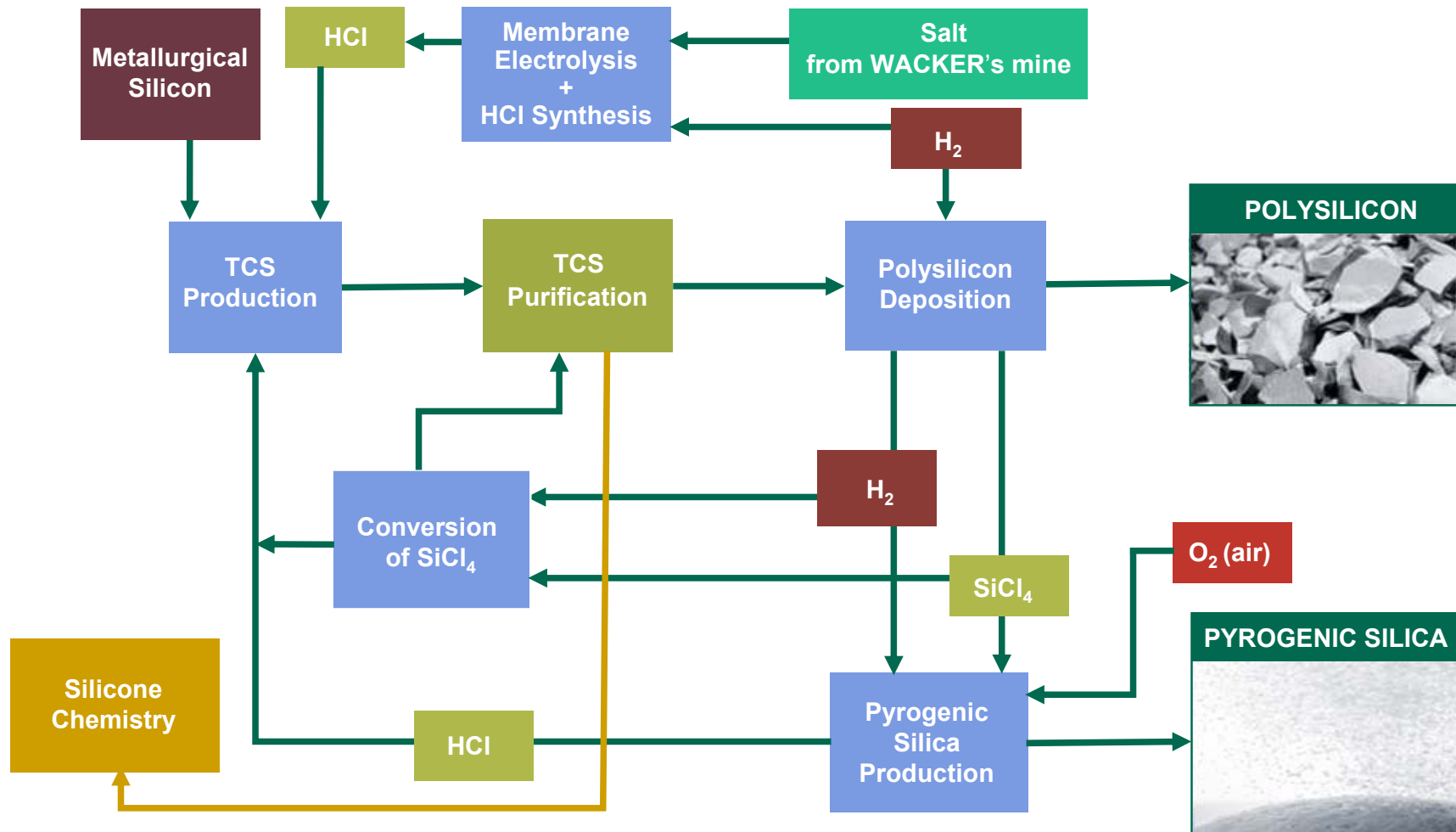
- Poly 5 Fully ramped
- Poly 7 Fully ramped
- Poly 8 Fully ramped

**Ongoing expansion: +10,000 MT**

- Poly 9 Well on track

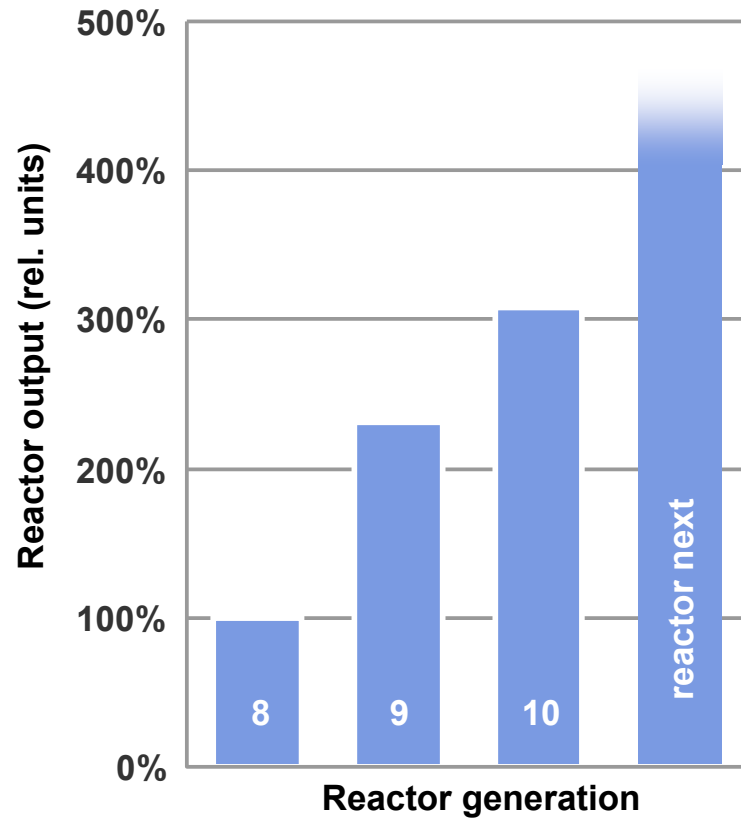
**Nameplate capacity (2012e): ~35,000 MT**

# WACKER FULLY INTEGRATED TECHNOLOGY – CLOSED LOOPS FOR KEY AUXILIARIES

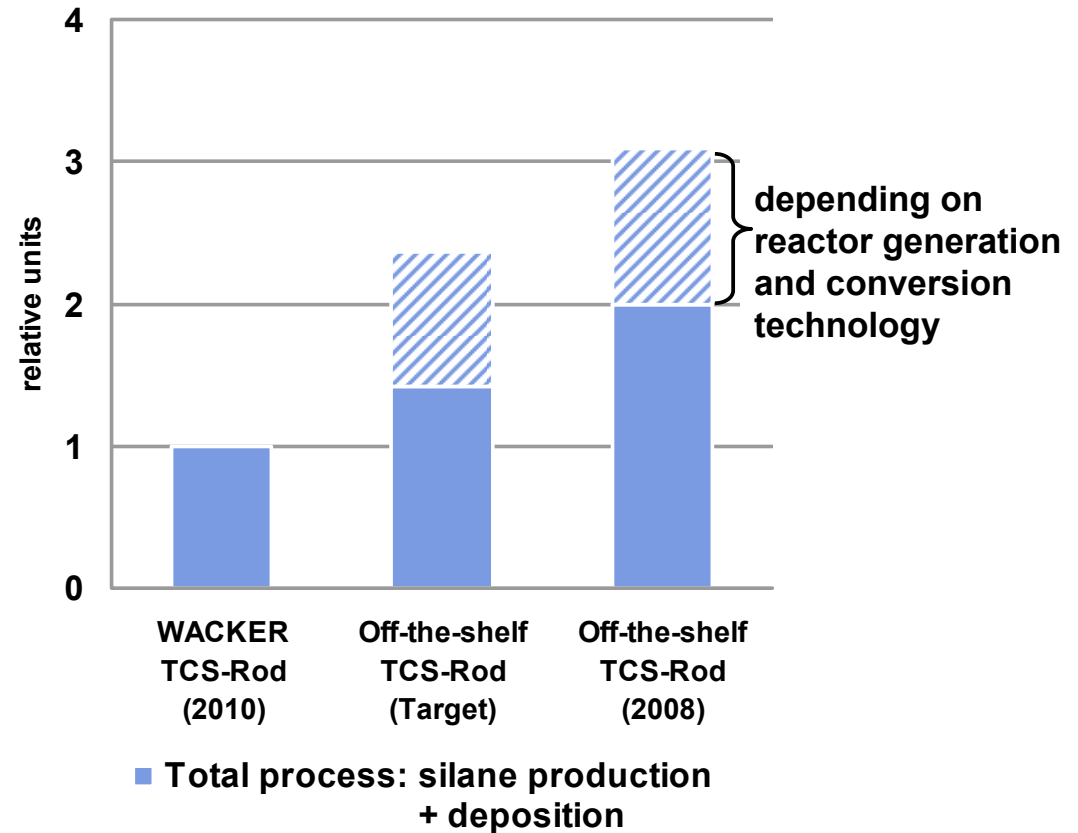


# LOW ENERGY CONSUMPTION – HIGH PRODUCTIVITY GAINS

## Development reactor output



## Energy consumption per kg solar silicon



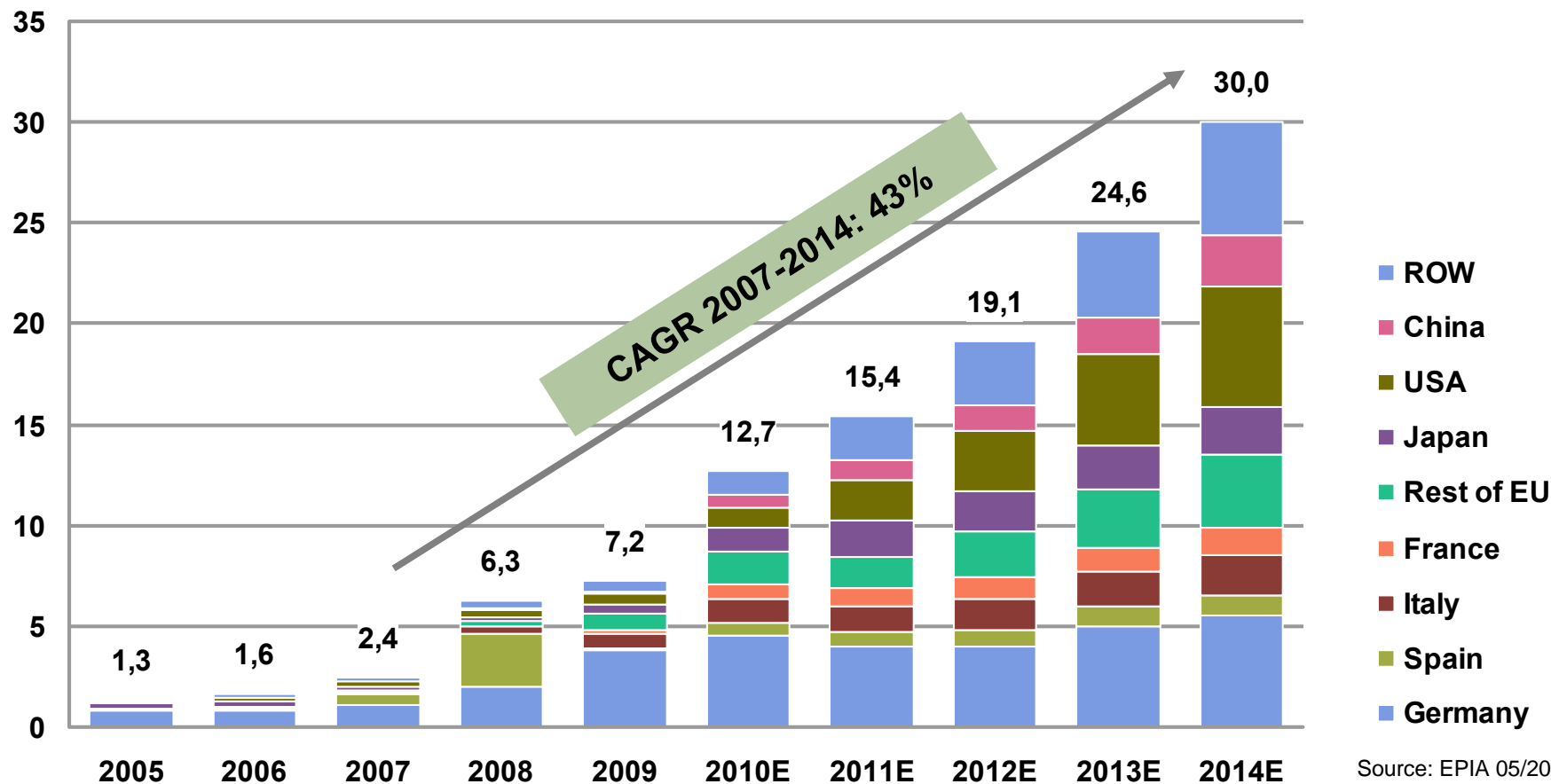
Source: GT Solar 09/2008 and 04/2010; Centrotherm 04/2008 and 04/2010; LXE 04/2010; WACKER estimates

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# STRONG GROWTH OF PV MARKETS WORLDWIDE

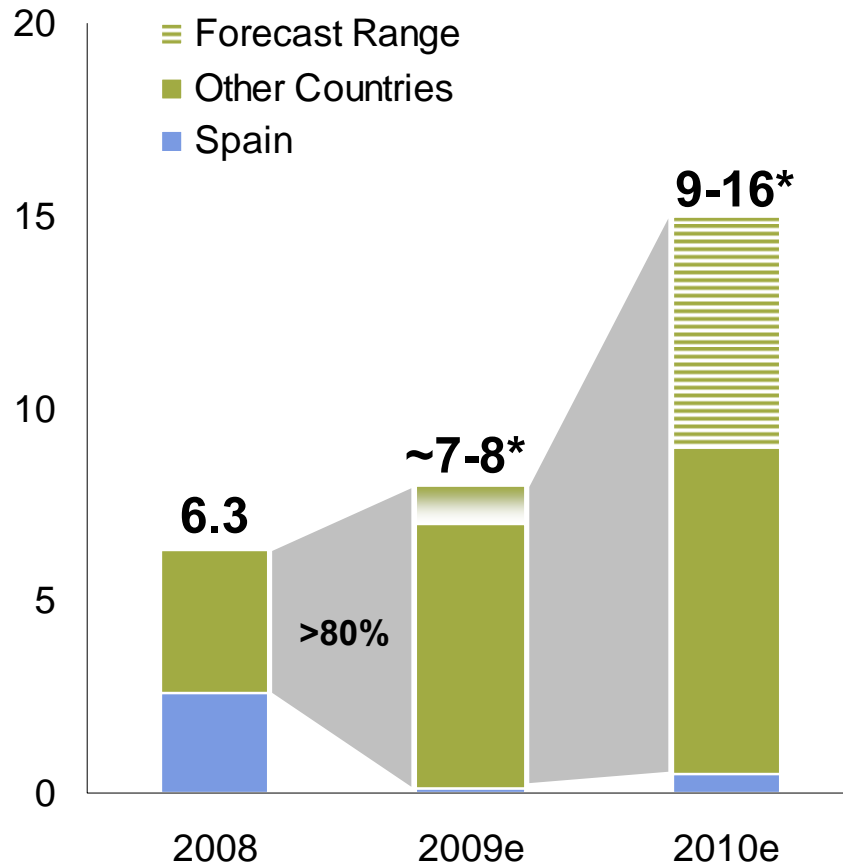
## Historical Annual PV Market Development and Forecast (GW)



Source: EPIA 05/2010

# 2009: MARKET OUTSIDE OF SPAIN GROWS MORE THAN 80%; FURTHER STRONG GROWTH EXPECTED IN 2010

## Photovoltaic-Volume (GW)



## Market Dynamics

- Despite unfavorable market environment (financial crisis, collapse in Spain) strong overall growth in 2009
- Top PV players report growing shipments and high capacity utilizations in Q1/2010
- Strong guidance for full year 2010 and increasingly tightening supply situation

2010

- Recovery of global economy supportive
- Grid parity within reach in many markets
- Regulatory programs in many countries

# ALL REGIONS (EX SPAIN) CONTINUE TO GROW STRONGLY

Country	New Installations (MW)			CAGR 08-10
	2008	2009	2010e	
Germany	2,002	3,800	3,500 - 5,000	50-80%
Spain	2,605	100	600	-50%
Rest of Europe	646	2,000	1,400 - 3,000	70-150%
USA	342	500	1,000 - 3,000	70-200%
China	45	200	500 - 1,000	230-370%
Japan	230	500	1,000 - 1,500	110-160%
Rest of World	413	400	1,000 - 1,500	50-85%
<b>TOTAL</b>	<b>6,283</b>	<b>~7,500</b>	<b>9,000 - 15,600</b>	<b>30-70%</b>

Source: EPIA 05/2010, WACKER estimate

# ATTRACTIVE FEED-IN-TARIFFS IN MORE THAN 30 COUNTRIES SUPPORTING GROWTH OF PV INDUSTRY WORLDWIDE

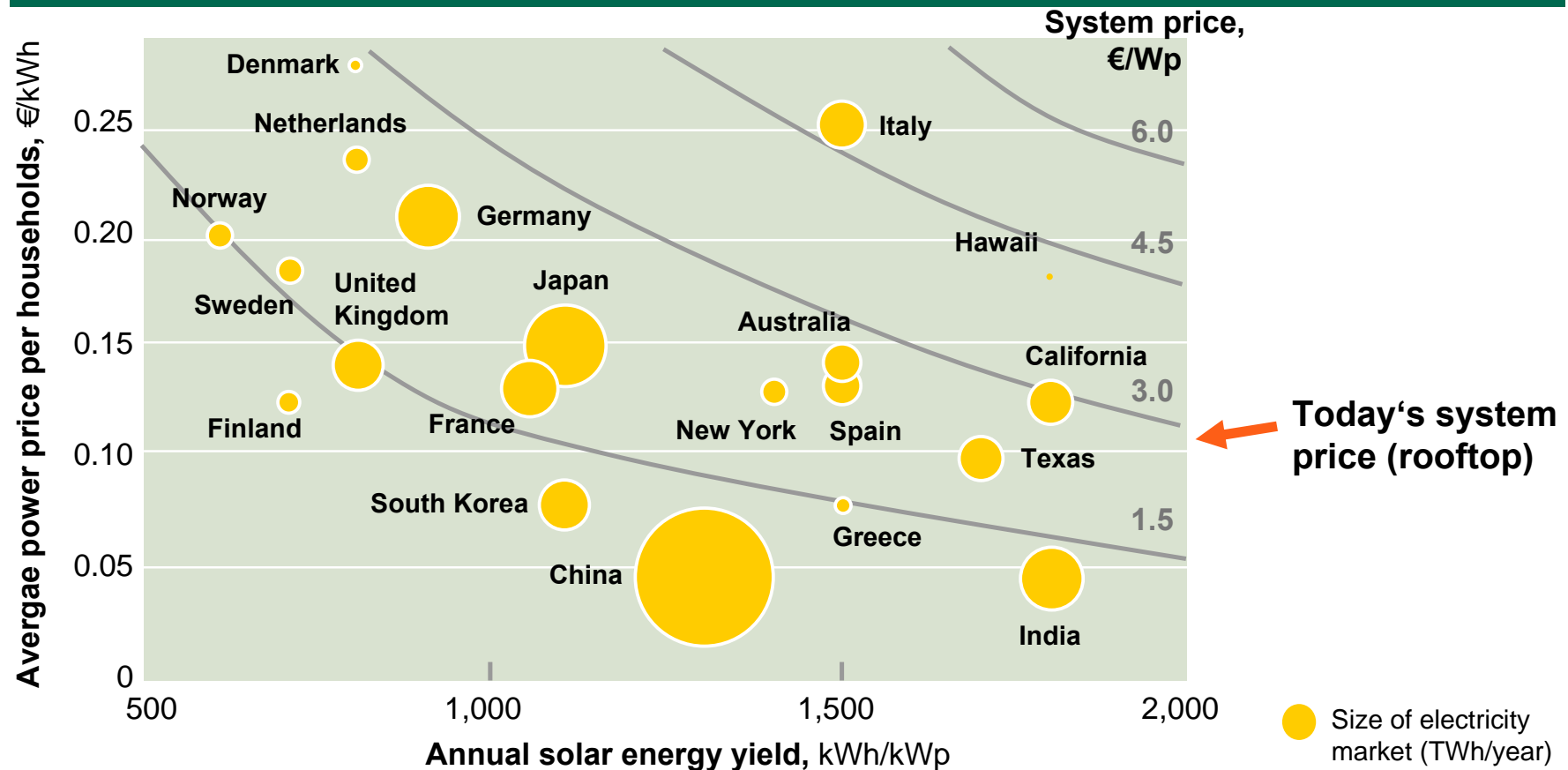
## Global Breakdown of Feed-in-tariffs per Country



Source: [www.pv-tech.org](http://www.pv-tech.org) 02/2010; WACKER analysis

# “CONSUMER GRID PARITY” WILL BE REACHED IN MANY LARGE MARKETS BEFORE 2012

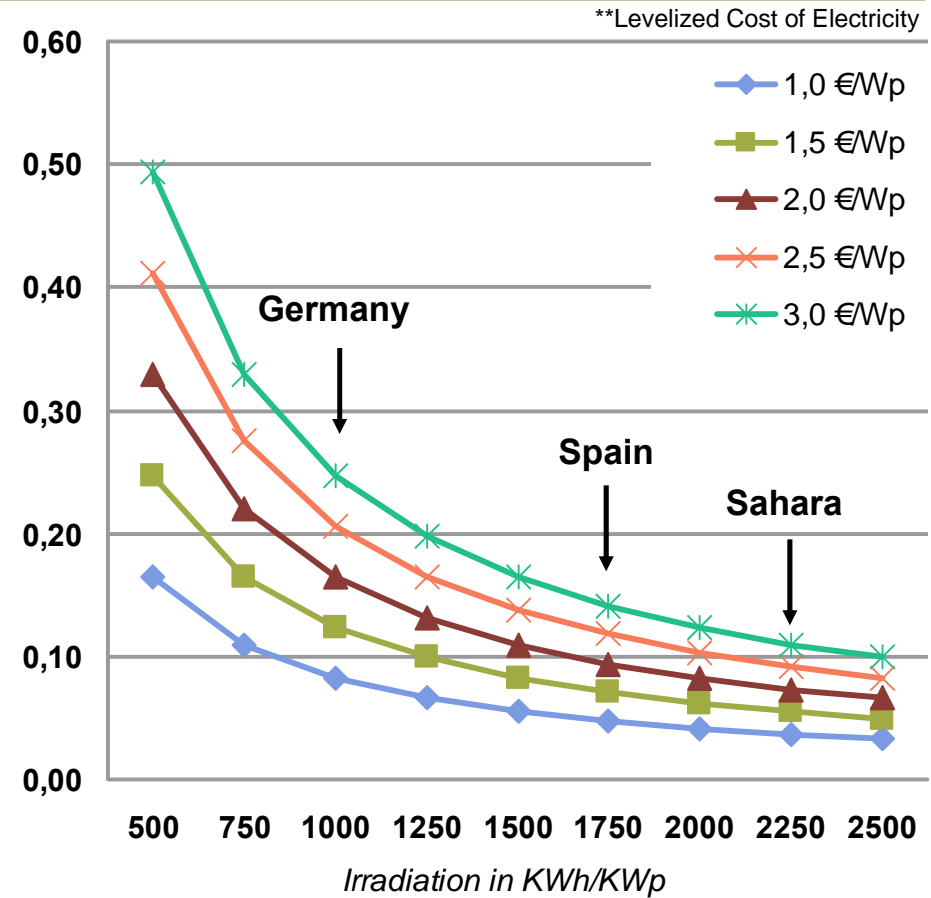
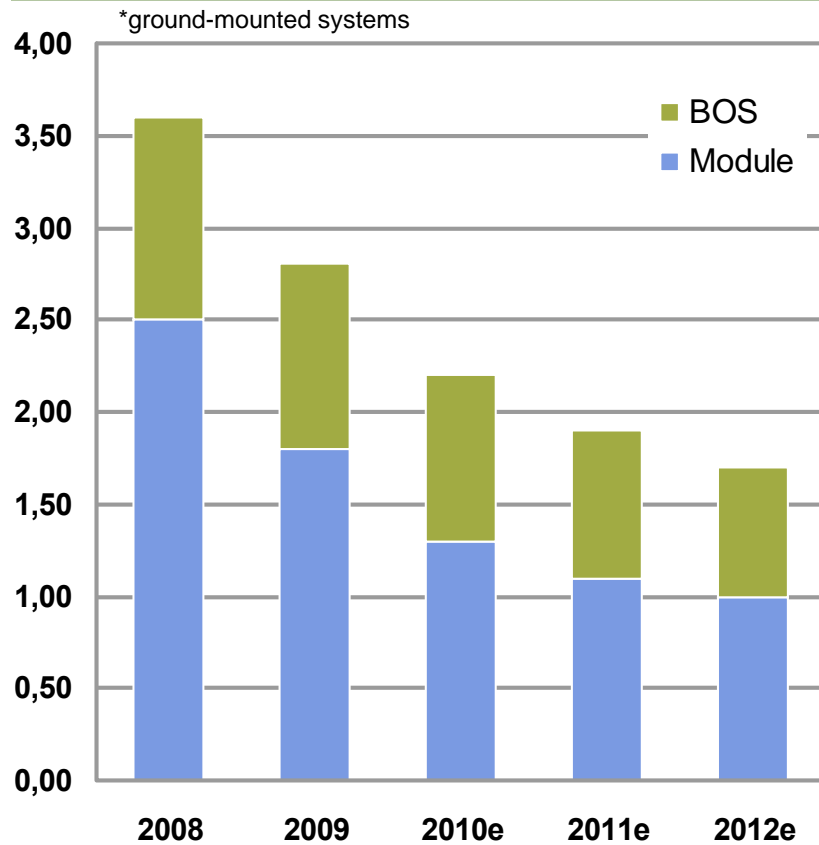
## Consumer Grid Parity Analysis per Country



Source: McKinsey 06/2008; GB-P analysis

# DECLINING SYSTEM PRICES WILL BRING DOWN TOTAL COST OF PV ELECTRICITY

PV System Price Development\* (€/Wp) and corresponding LCOE\*\* (€/kWh)

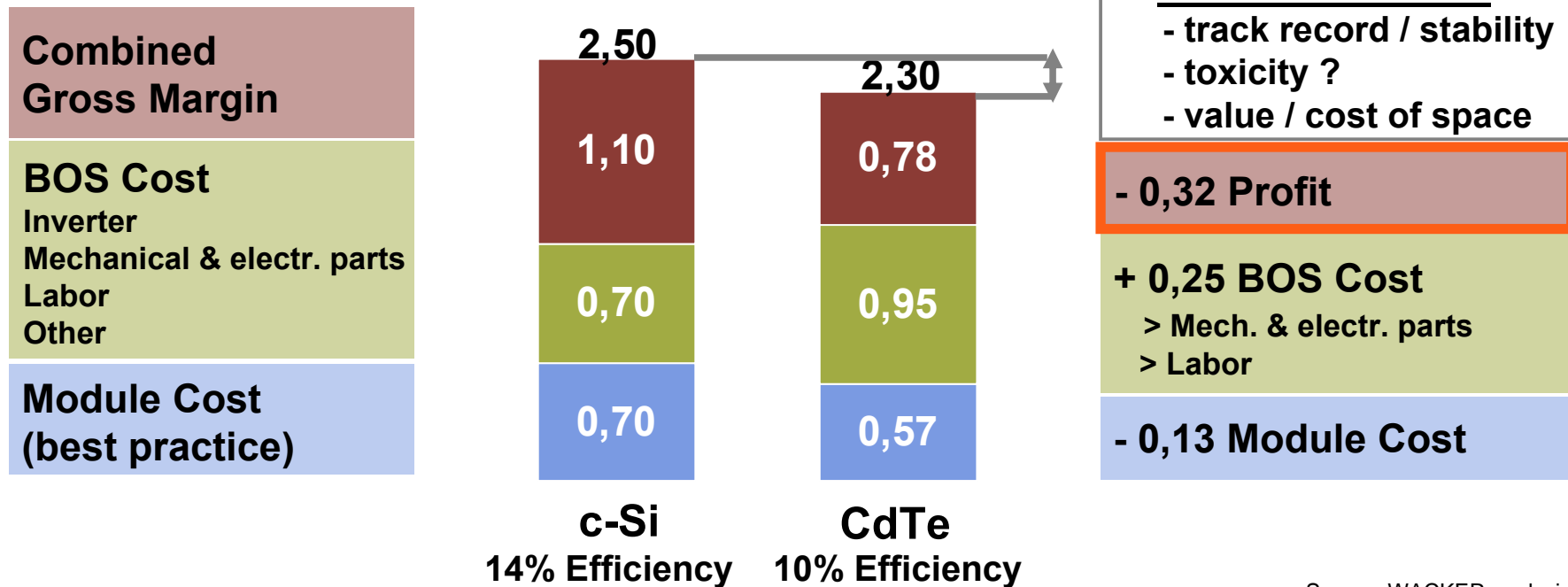


Sources LBBW 02/2009, industry announcements, WACKER estimate

# THIN FILM SUFFERS FROM HIGHER SYSTEM COSTS AND LIMITED LONG TERM EXPERIENCE

Status 05/2010

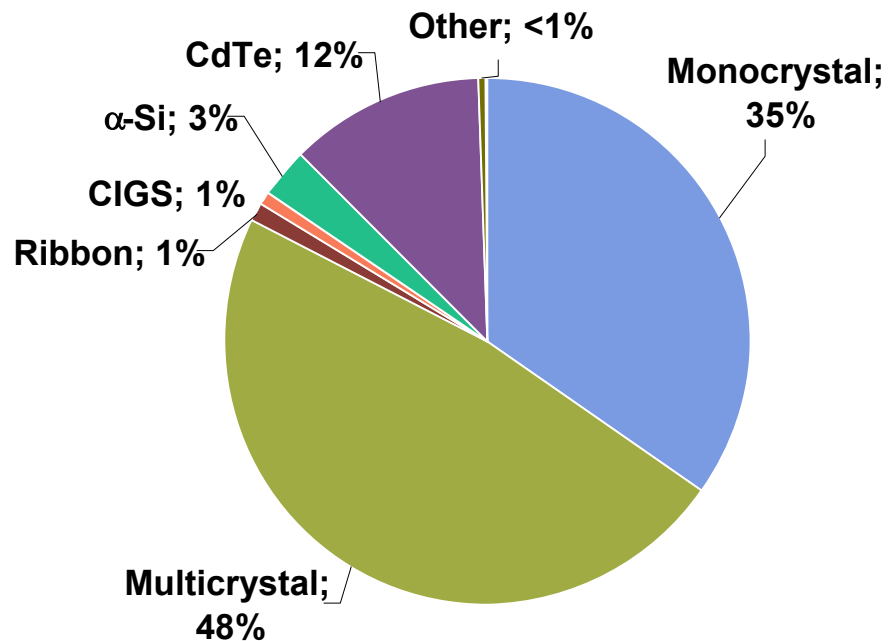
## Typical Roof Top System Cost Structure (€/Wp)



Source: WACKER analysis

# CRYSTALLINE PV WILL BE THE DOMINATING TECHNOLOGY FOR THE FORESEEABLE FUTURE

## PV Market Shares 2009



Sources: industry announcements, GB-P analysis

## Market Dynamics

- 2007-2008: Polysilicon shortage and high prices trigger ThinFilm activities
- After 2009: ThinFilm loses relative competitiveness compared to c-Si
  - ThinFilm strongly dominated by market leader First Solar (CdTe)
  - CIGS with future potential, albeit mass production not proven yet
  - Amorphous Si struggles due to high cost structure and low efficiencies

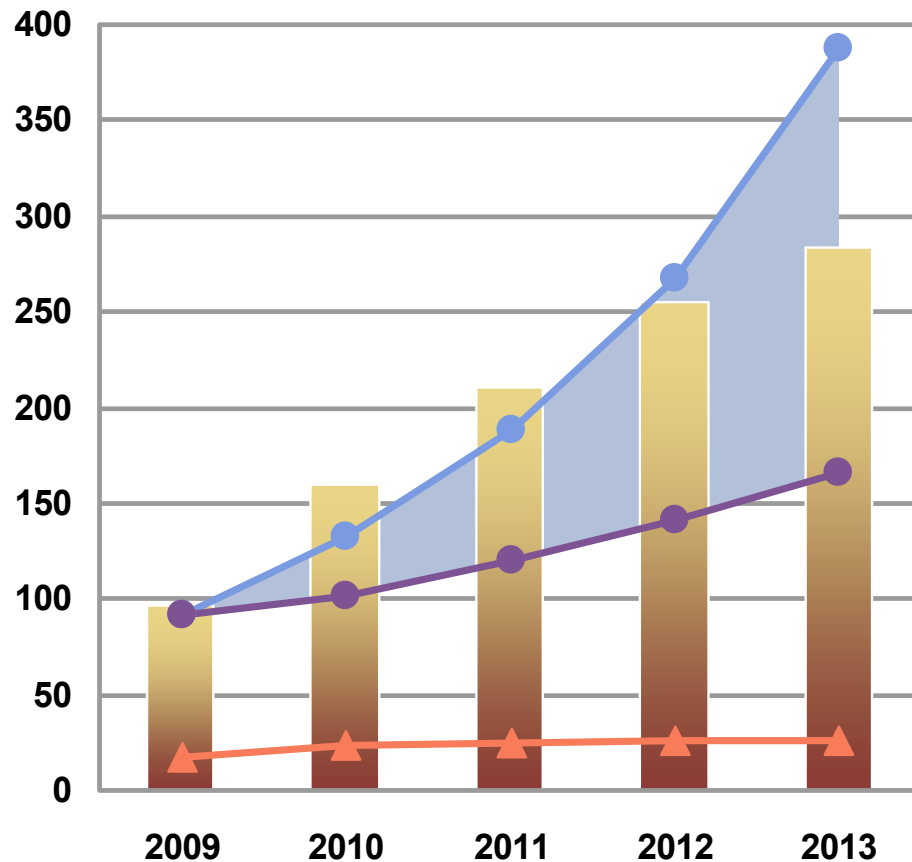
Cost reduction of c-Si vs. ThinFilm will be decisive for future development

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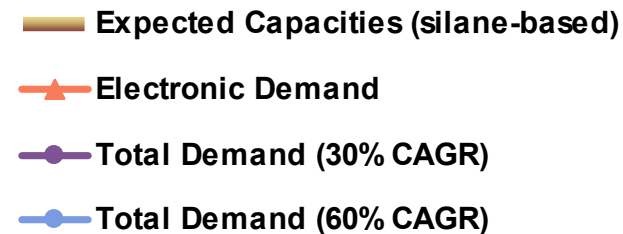
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# “QUALITY OVERSUPPLY” WILL OCCUR ONLY IN CASE OF VERY MODERATE GROWTH RATES

## Global Polysilicon Supply and Demand (kt, Electronic and Solar)



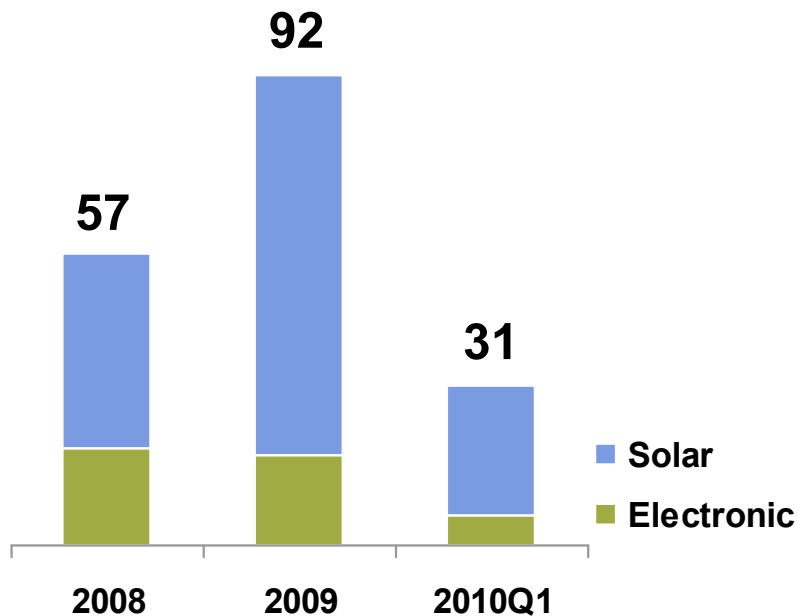
- Future polysilicon demand will be dominated by solar applications
- High quality polysilicon in short supply
- Quality and cost leaders with sustainable competitive advantage



Sources: Gartner, market surveys, industry announcements, WACKER estimate

# GLOBAL POLYSILICON SHIPMENTS EXPECTED TO CLEARLY EXCEED 100 KT IN 2010

## Global Polysilicon Shipments [kt]



## Shipment Estimate

SEMI shipment statistics

+ newcomer shipment (WACKER estimate)

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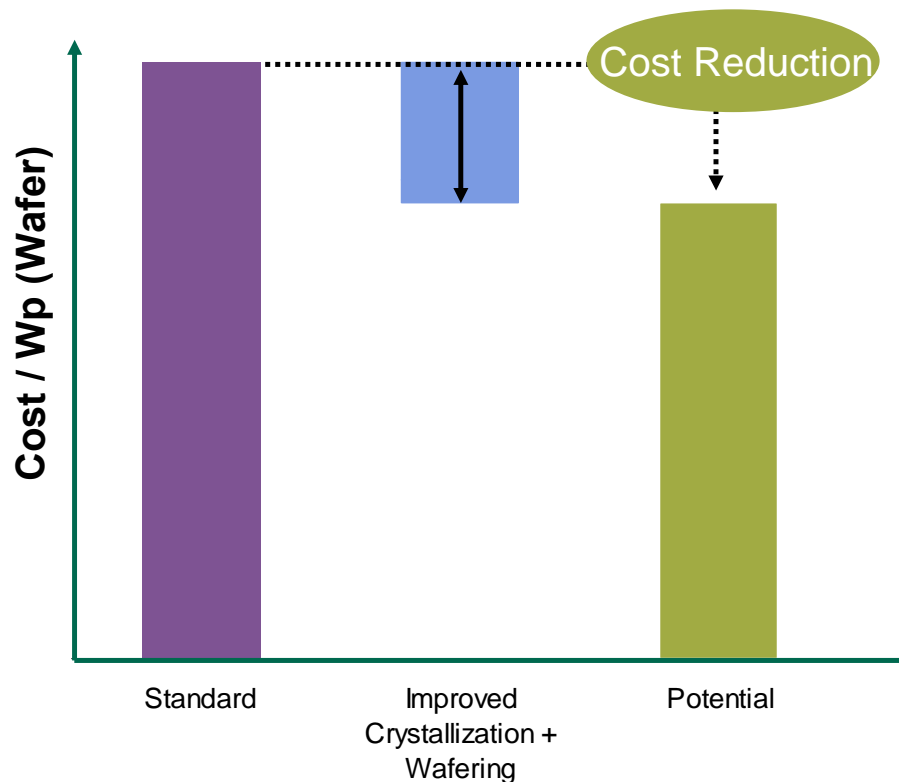
= TOTAL SHIPMENTS

Source: SEMI, WACKER estimates

31 kt of polysilicon sold in Q1 2010

# HIGH QUALITY POLYSILICON LEADS TO SIGNIFICANT COST REDUCTION POTENTIAL FOR OUR CUSTOMERS

## Illustrative Cost Reduction Potential for Wafer Manufacturers\*



\*Assuming that scrap volumes from manufacturing can be reduced by 50% employing high quality polysilicon

- Perfect crystallization with high yields due to high quality polysilicon
- Low breakage rates due to improved crystal structure and mechanical stability
- High efficiencies of produced wafers can lead to even higher cost reduction potential

Source: WACKER estimates

„Flight to Quality“ continues...

# SUPPLY / DEMAND BALANCE IS NOT ONLY A MATTER OF ANNOUNCED CAPACITIES AND ANNUAL INSTALLATIONS

- Newcomers' capacity with various issues (financing, technology, cost & quality)
- Crystalline market share higher than expected
- Low quality poly leads to higher g/Wp-factors
- 4-6 months lead time: poly supply to system grid connection



## SUPPLY

- = global supply announcements
- financing & technology issues
- project delays
- insufficient cost and/or quality



## DEMAND

- = electronic demand
- + annual solar installations (c-Si market share, g/Wp-factor)
- + lead-time

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# 2010 WILL BE ANOTHER YEAR OF GROWTH FOR POLYSILICON

## Summary / Outlook 2010

- Strong growth of PV installations expected in all regions
- Feed-in-tariffs in more than 30 countries support growth
- Further cost reduction achieved throughout whole PV value chain
- Strong recovery of demand from electronic segment
- German FIT reduction leads to pull-in effects in H1; more and more evidence for a strong H2
- High quality polysilicon remains in short supply

# WACKER: ISSUER, CONTACT AND ADDITIONAL INFORMATION

## ISSUER AND CONTACT

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## FINANCIAL CALENDER

June 28/29, 2010 CMD, Burghausen

July 30, 2010 2<sup>nd</sup> Quarter 2010

Nov. 4, 2010 3<sup>rd</sup> Quarter 2010

## ADDITIONAL INFORMATION

**ISIN:** DE000WCH8881

**WKN:** WCH888

**Deutsche Börse:** WCH

**Ticker Bloomberg:** CHM/WCH.GR

**Ticker Reuters:** CHE/WCHG.DE

**Listing:** Frankfurt Stock  
Exchange  
Prime Standard

