



*SMART SOLUTIONS*

*SINGULUS TECHNOLOGIES AG*

Close Brothers Seydler Bank AG  
Small & Mid Cap Conference, 02.02.2012  
Frankfurt am Main, IHK

**SINGULUS** 

- 1) Company Overview**
- 2) Smart Solutions**
  - Optical Disc
  - Solar
  - Semiconductor
- 3) Financials**
- 4) Strategy**

## Optical Disc

- Mastering
- Molding
- Replication



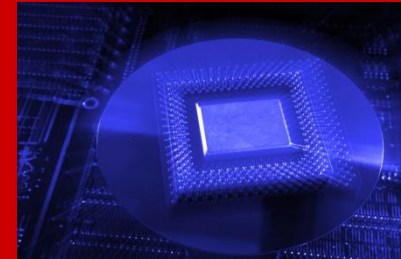
## Solar

- Coating
- Wet Processing
- Systems Business



## Semiconductor

- MRAM
- Thin Film Heads
- Sensor



## Smart Solutions:

Innovative Technology in  
Advanced Vacuum Coating  
Applications



- Vacuum Coating
- New Applications

## Chief Executive Officer

Dr.-Ing. Stefan Rinck



Dr.-Ing. Stefan Rinck

## Chief Financial Officer

Dipl.-Oec. Markus Ehret



Dipl.-Oec. Markus Ehret

## Supervisory Board

Chairman: Dr.-Ing. Wolfhard Lechnitz  
Vice Chairman: Günter Bachmann  
Member: Dr. rer. nat. Rolf Blessing

## Overview segments / forecast for 2011

### Optical Disc

- Positive development in Blu-ray
- Order intake on target
- New BLULINE BD-R/BD-RE replication system introduced, first order received
- Positive Outlook for Blu-ray

### Solar

- € 50 million orders for selenization machine
- New VITRUM GEN 2 introduced, 9 orders booked
- Several SINGULAR AR coating systems sold for use in production and R & D applications
- New Vacuum Coating System for thin film Solar Cells introduced, first order booked

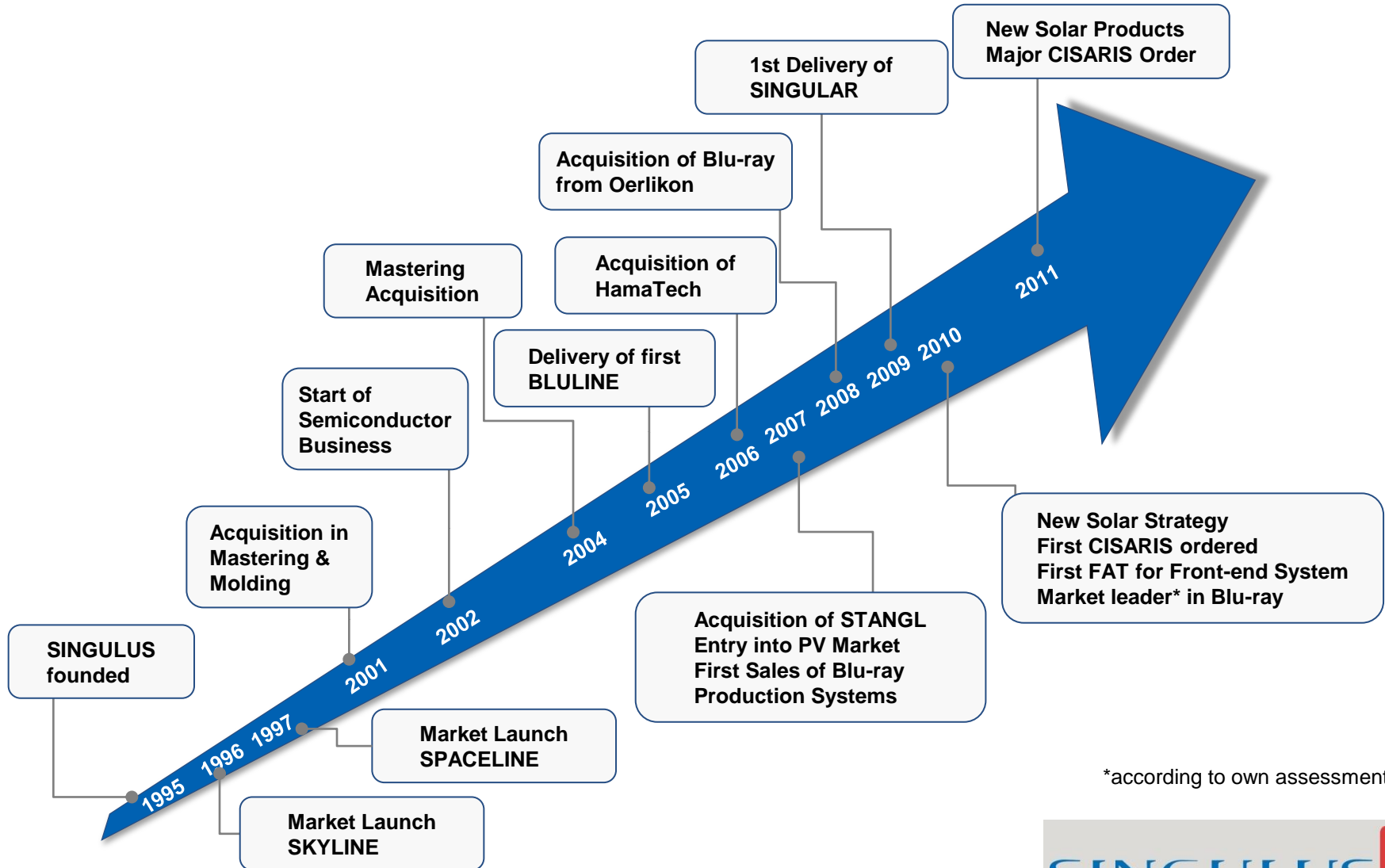
### Semiconductor

- MRAM market expected to develop into a mass market

### Forecast 2011

- Revenue > € 160 million (+ 33 %)
- Positive year-end result for 2011 → EBIT of € 6.3 million achieved after 9 months
- Break-even in solar → positive EBITDA already after 9 months

# SINGULUS TECHNOLOGIES Milestones



\*according to own assessment

# Worldwide Sales and Service Network

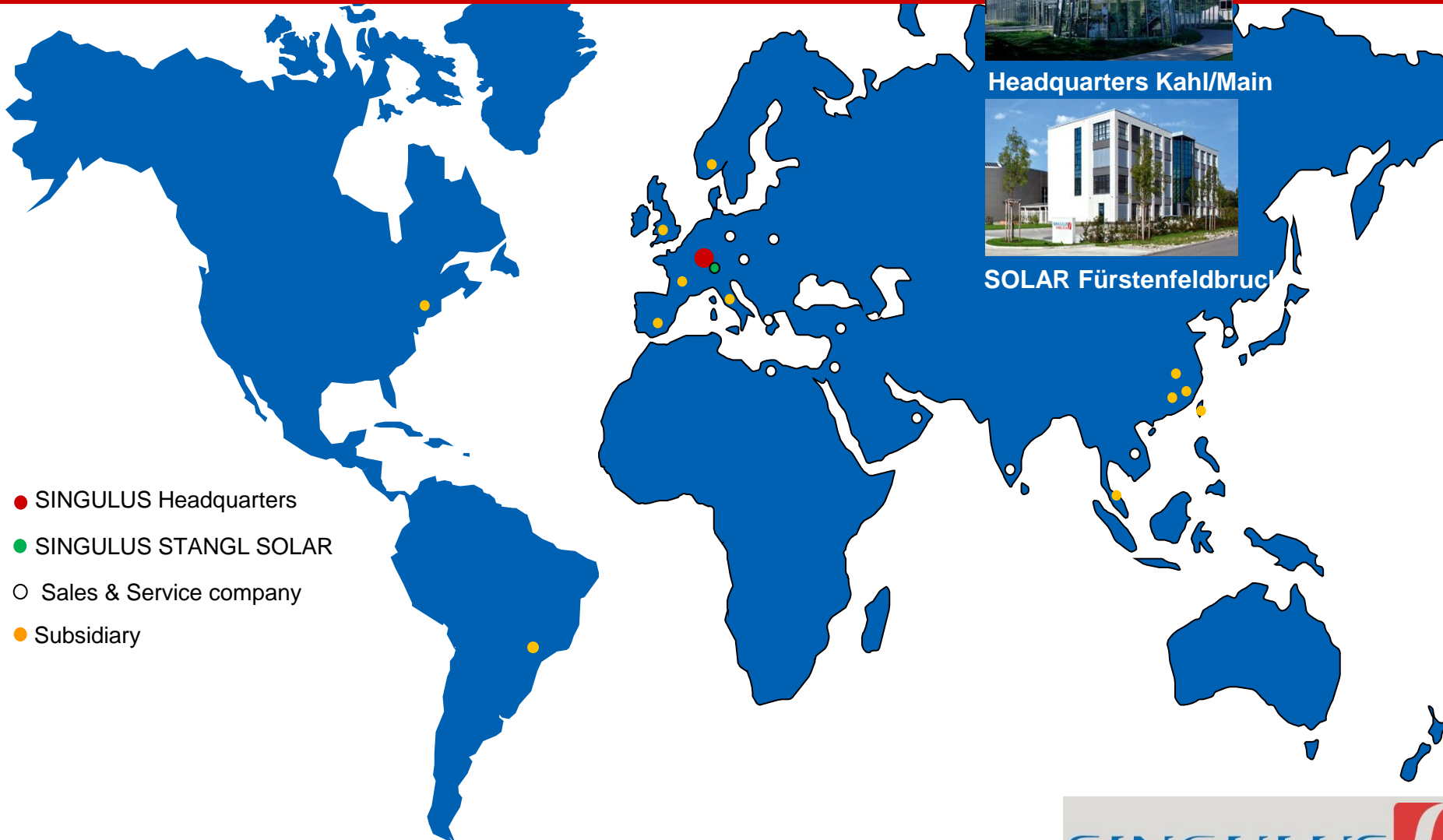
SINGULUS serves costumers worldwide



Headquarters Kahl/Main



SOLAR Fürstentfeldbrunn



- SINGULUS Headquarters
- SINGULUS STANGL SOLAR
- Sales & Service company
- Subsidiary

## Optical Disc

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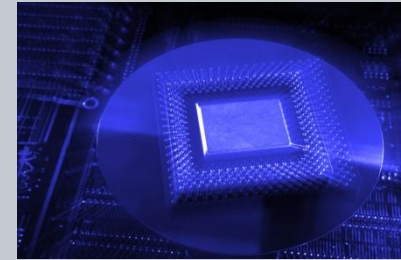
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# Segment Optical Disc: SINGULUS Covers the Complete Value Chain

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For all disc formats CD – DVD – Blu-ray

Mastering

Molding

Metalizing

Bonding  
Embossing  
Lacquering

Finishing





# Segment Optical Disc: SINGULUS Blu-ray Disc Lines Worldwide

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Over 150 Blu-ray disc lines for more than 30 customers



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
CD	122	234	405	221	134	310	202	82	113	80	19	12	19
DVD	17	26	99	79	182	183	255	149	123	113	72	17	19



# Segment Optical Disc: Production Systems for all Blu-ray Formats

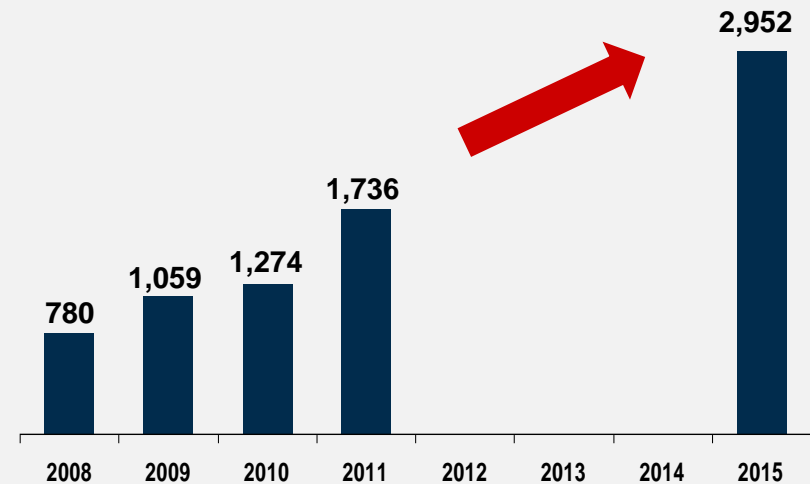
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## High margin product BLULINE II

- Best of class\*
- Excellent equipment performance
- > 150 Blu-ray systems installed base
- 3D ready
- Platform for BD 100 & BD 128
- CRYSTALLINE well-accepted in the market



## Minimum Blu-ray Production Capacity (million discs)



Source: Futuresource consulting, June 2011

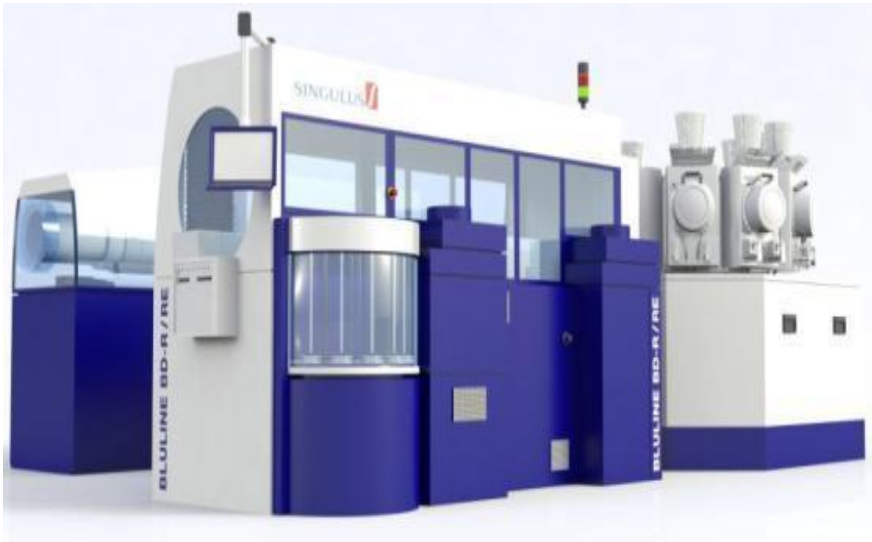
\*according to own assessment



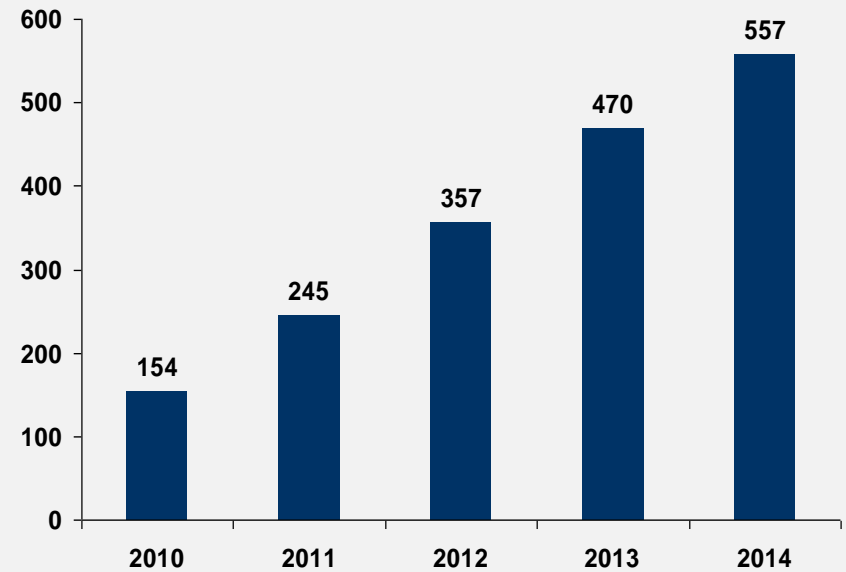
# Segment Optical Disc: Production Systems for BD-R/BD-RE

## BLULINE BD-R/RE

- Inline production system
- Based on BLULINE II
- Opens up potential as additional revenue source



## Global BD-R/RE Disc Production (million discs)

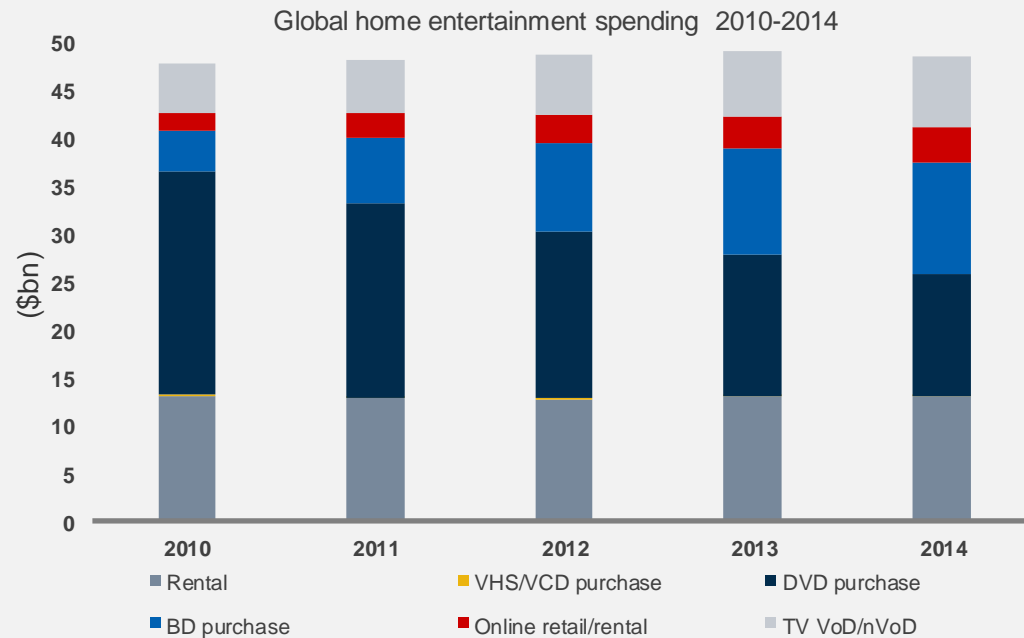
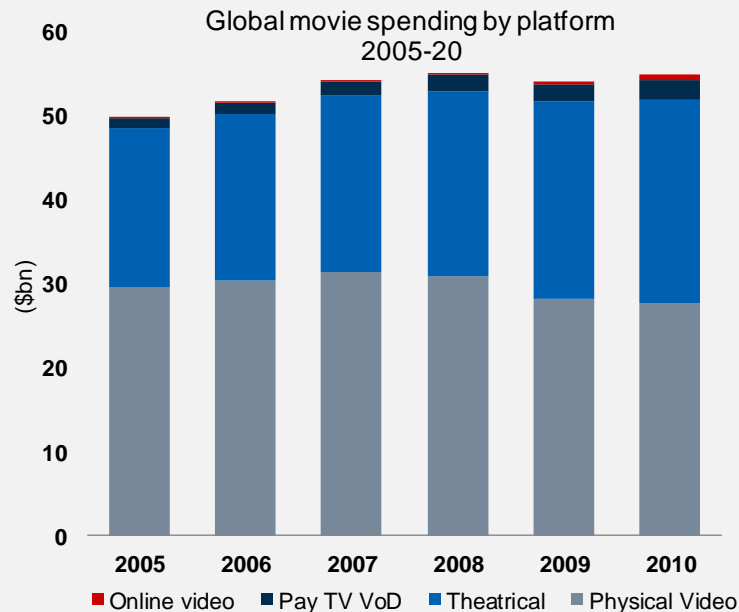


Source: Futuresource consulting, October 2010



# Packaged Media Spending

- Packaged media generated almost half of all movie spending
- The prevalence of the retail business model means packaged media's share of volume is even greater up to 60 %
- Packaged media generated packaged media will still generate 77 % of total spending
- By 2014 online will account for 8 % of global home entertainment spending
- TV Video on Demand for a further 15 %



Notes:

Local currencies converted at fixed 2010 exchange rates. Physical data covers all mainstream genres; Digital includes content delivered over the open internet: retail (movies, TV & sport), rental (movies & TV) and subscription (movies & TV); TV VoD/nVoD covers TV content and movies delivered through walled garden systems

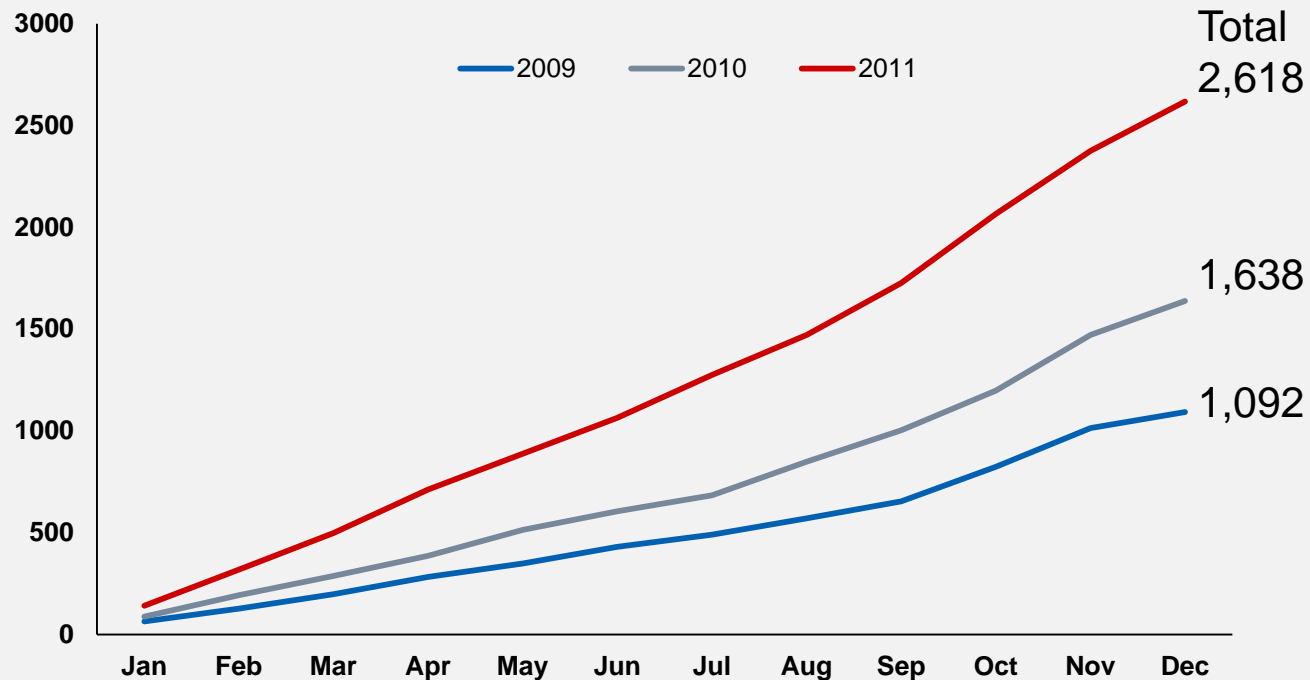


# Segment Optical Disc: Blu-ray Disc Released in Germany

## Strong growth in the number of Blu-ray disc releases

Status January

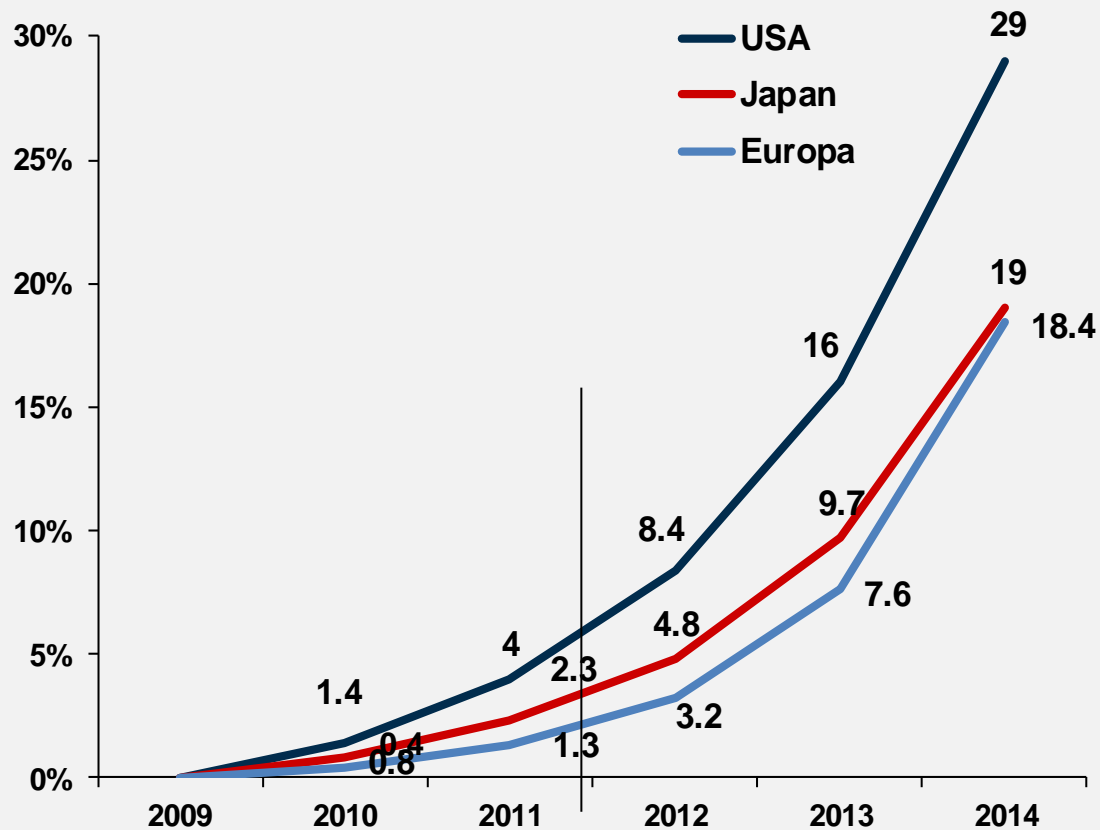
2010: 87  
2011: 141  
2012: 176





# Segment Optical Disc: 3D TV Screen Penetration Forecasts

29% of US households are expected to have 3D TVs by 2014





# Segment Optical Disc: Blu-ray Market

## Blu-ray is a growing market

- Global pre-recorded BD production is forecast to reach to 811 million discs this year, an expansion of 38% over 2010
  - Blu-ray production in the US is forecast to expand by 49% in 2011
  - The European industry is expected to experience a similar level of growth
  - In Japan BD-Video production is forecast to increase by one third
  - BD production activity in Asia continues to underperform
- Nintendo's Wii games console which will use a proprietary format based on Blu-ray

## Optical Disc

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- Replication



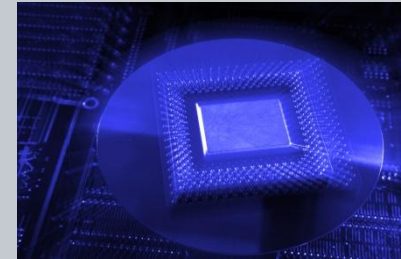
## Solar

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- Systems Business



## Semiconductor

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- Sensor



## Smart Solutions:

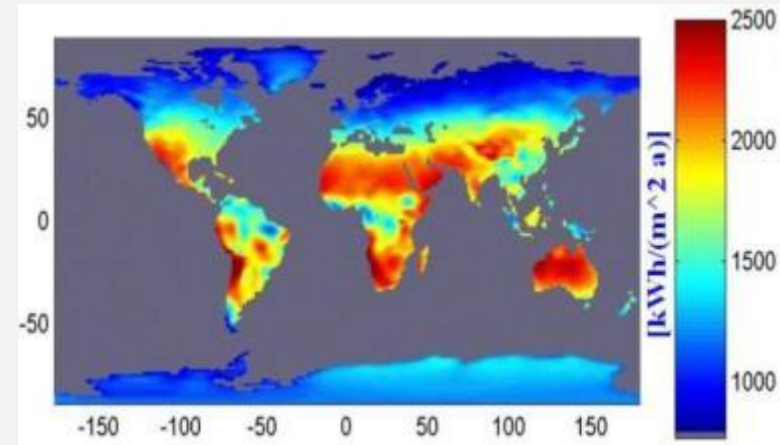
Innovative Technology in  
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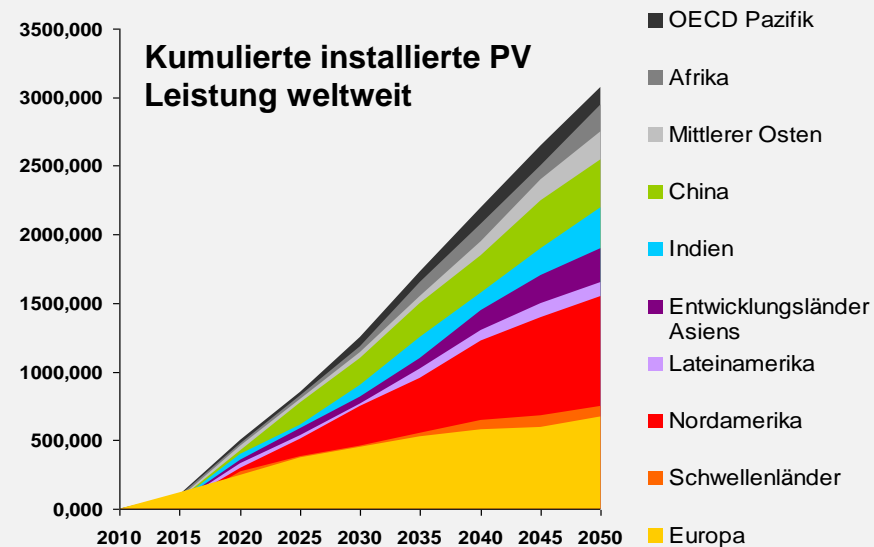
- Vacuum Coating
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# Segment Solar: Solar Irradiation around the World

- Today, solar energy makes up less than 0.1 % of global energy
- The “sunny” parts of the world are ready for photovoltaic
- Cost reduction of cells and modules will drive photovoltaic
- Photovoltaic will be one of the most economic energy sources with a large market potential
- SINGULUS expects strong growth in the sun belt countries



Source: European Centre for Medium-Range Weather Forecasts;  
<http://www.ecmwf.int/>.

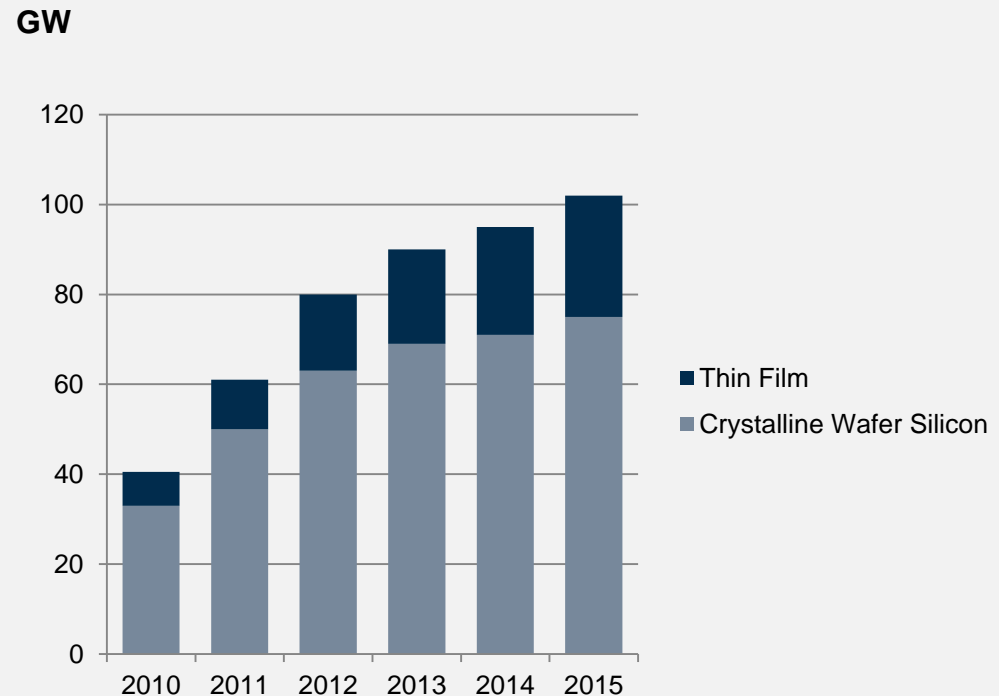


Source: Greenpeace/EPA Solar Generation VI, 2010.

# Segment Solar: Market Share C-Si and Thin Film Production

## SINGULUS is very active in the thin film solar market

- Growth rate in thin film will exceed that of C-Si
- SINGULUS holds patents for the application of buffer layers for CIS thin film solar cells
- SINGULUS possesses proven know-how in the selenisation of CIS thin film solar cells
- SINGULUS provides new cost-efficient methods for cleaning thin film solar cells
- SINGULUS develops new systems for this market (vacuum coating)

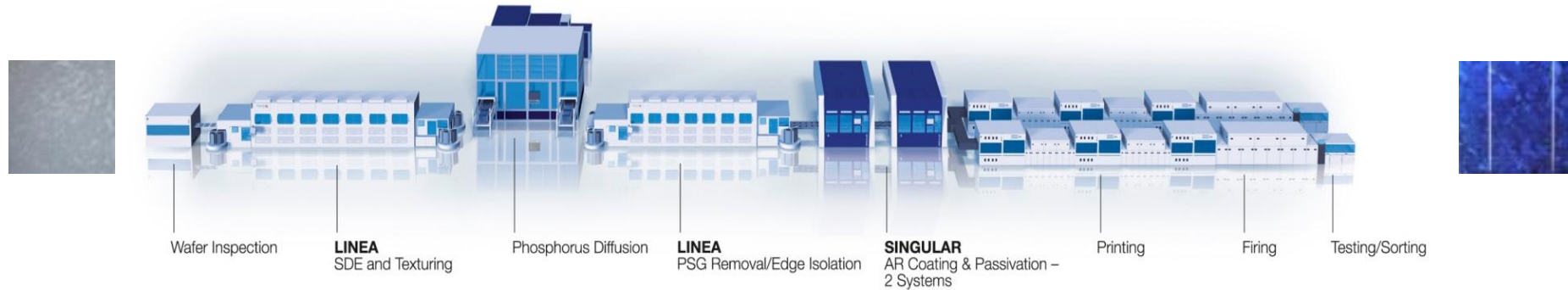


Source: PV Status Report 2011, EU

# Segment Solar: SOLARE System for Inline Production of Silicon Solar Cells

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**SINGULUS** possesses know-how for the essential processes



**Solar Wafer**

**Solar Cell**



**SILEX**

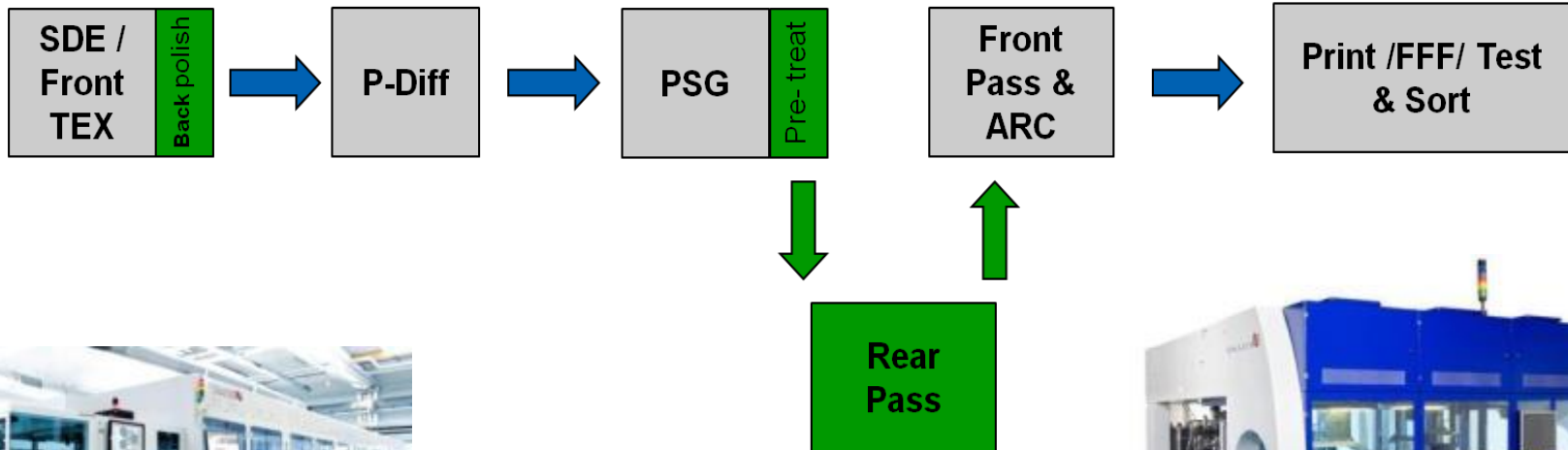
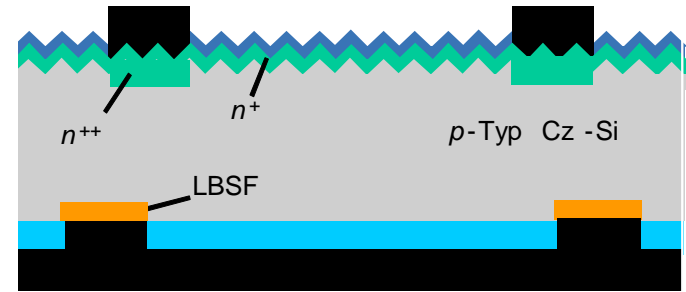


**Wafer-  
Handling**

# Segment Solar: Concept – PERC Solar Cell

## PERC - Passivated emitter and rear cell

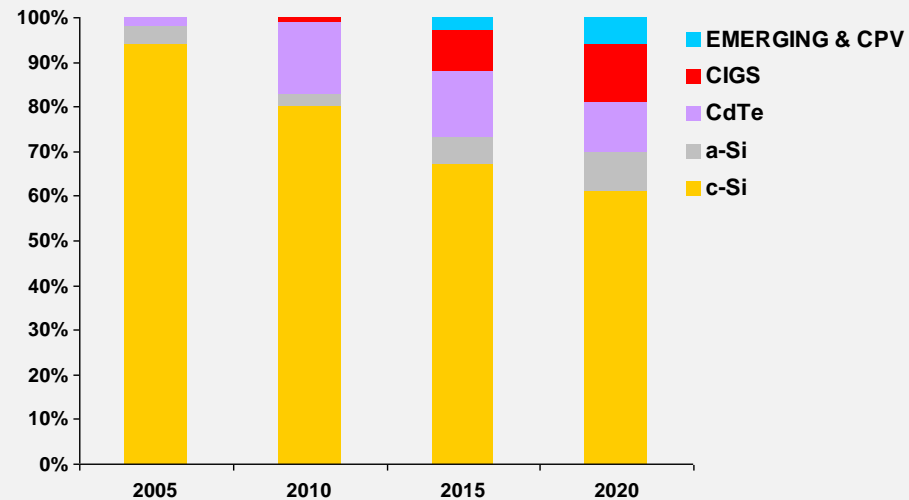
*“The PERC cell is often suggested as a relatively low cost way for making silicon cells above 20% efficiency.”*, Martin A. Green, 2001





# Segment Solar: Thin Film – Why CIGS?

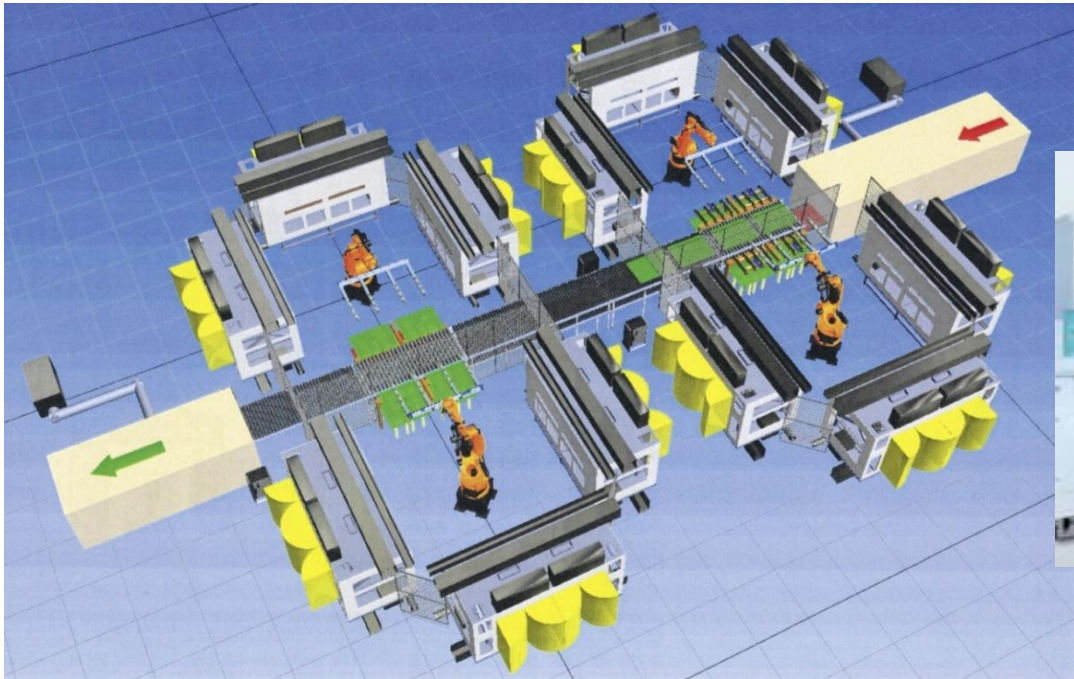
- High efficiencies (more than 20 % in the lab, more than 13 % in production)
- High technological threshold
- Low manufacturing costs
- High innovation potential
- Aesthetic module design, branding of proprietary module technology



Source: Historical data (until 2009) based on Navigant Consulting.  
Estimations based on EPIA analysis.

# Segment Solar: TENUIS GEN 2 for Deposition of Buffer Layer

- Market leader\* with installed system
- Patented process know how for deposition
- Production capacity 60 MW, with modular concept to increase throughput up to 180 MW and 500 MW
- Low chemical consumption on the market  
(€2.5 million per year cost savings due to chemical reduction)



\*according to own assessment

# Segment Solar: CISARIS Inline Diffusion Furnace for CIS/CIGS Solar Cells

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- Product launch in 2010
- 8 Machines already sold with an order intake of € 50 million
- 2nd generation inline diffusion furnace with optimized cycle time
- Development of 3rd generation of inline diffusion furnace started



# Segment Solar: VITRUM GEN 2 – Wet Processing System

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## Already 10 systems sold

- New optimized design
- Lowest cost of ownership on the market
- High availability (uptime > 98%)
- Better accessibility
- Small footprint
- High market demand

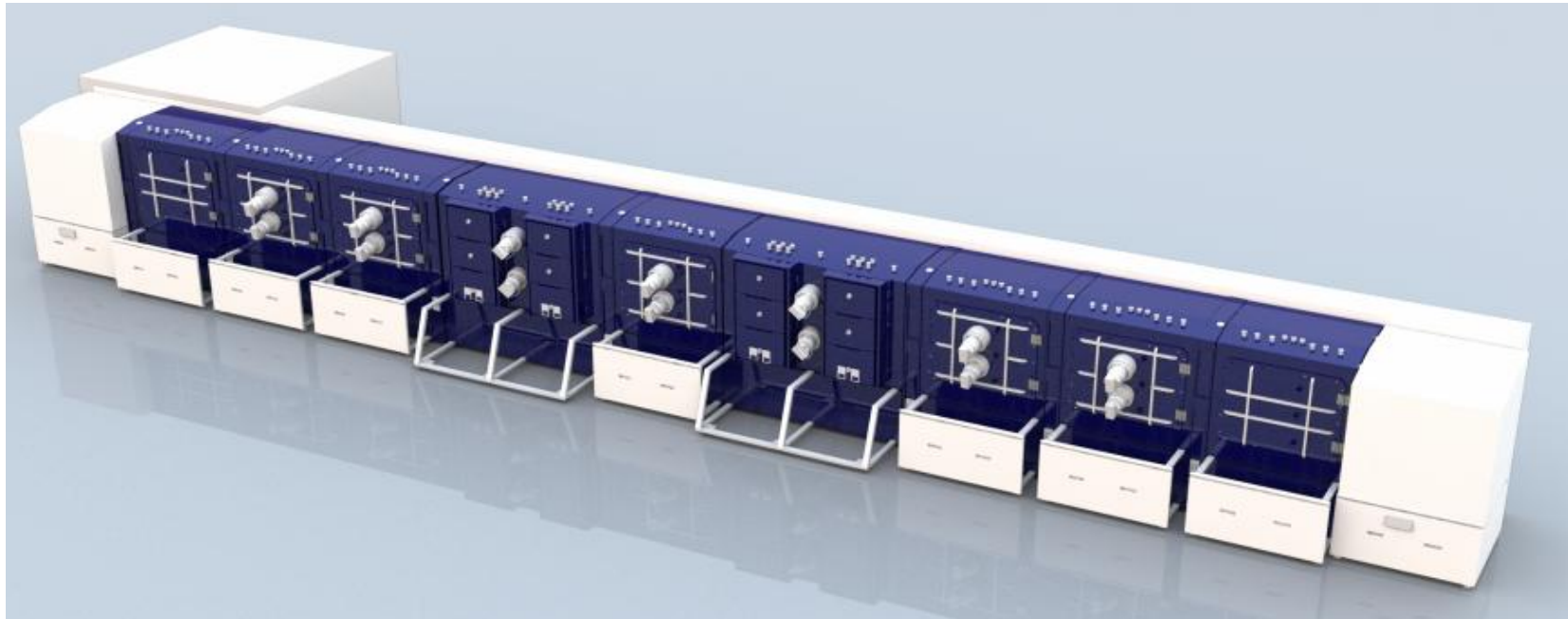


# Segment Solar: Vacuum Sputtering System for Thin Film Solar Modules

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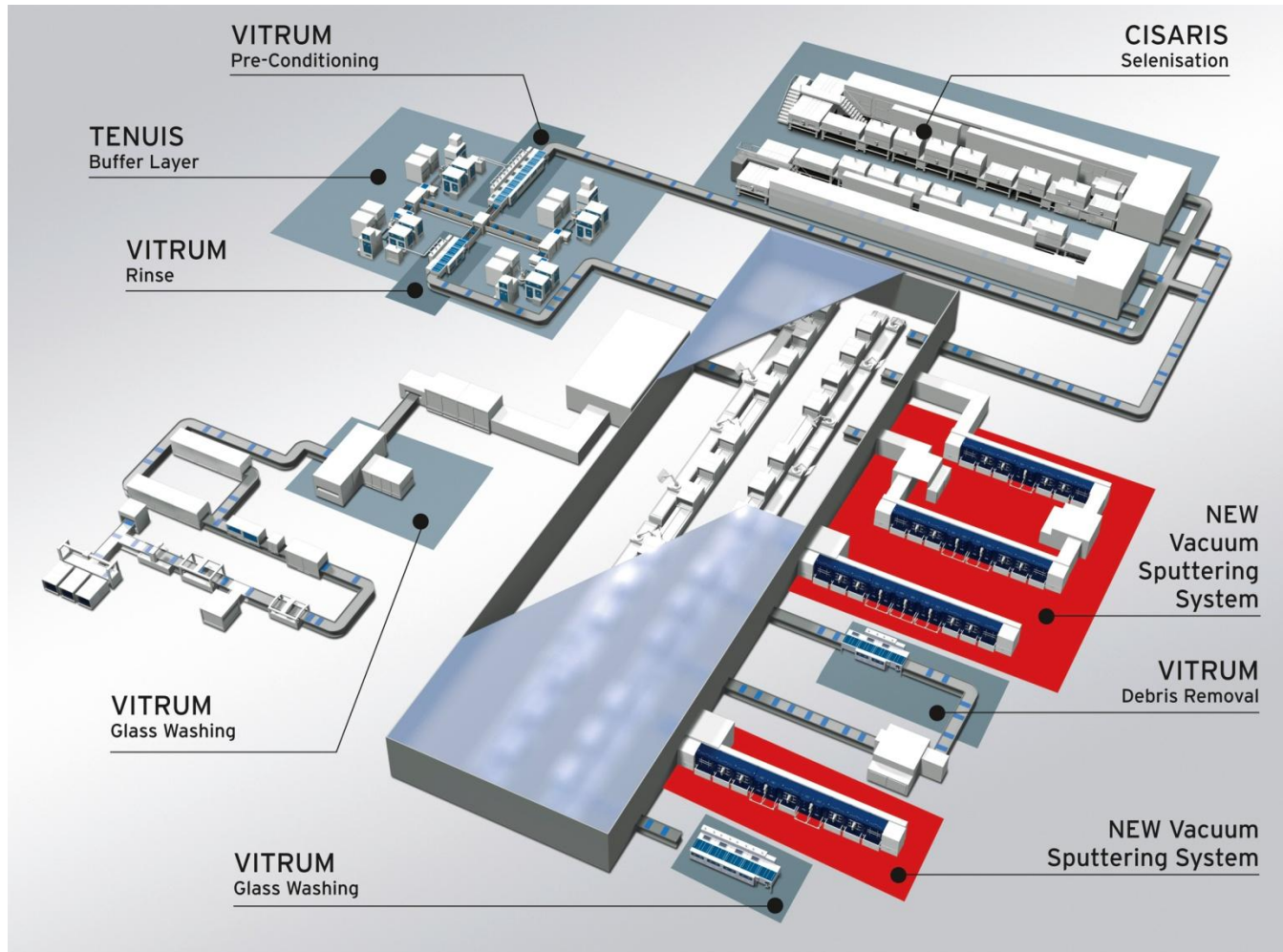
## New product: vacuum sputtering system

- Sputtering machine
- Modular system
- Vertical Glass transport
- First machine in order backlog



# Segment Solar: Thin Film – CIS/CIGS Manufacturing Process

**SINGULUS covers the main process steps of CIS/CIGS manufacturing**



## Optical Disc

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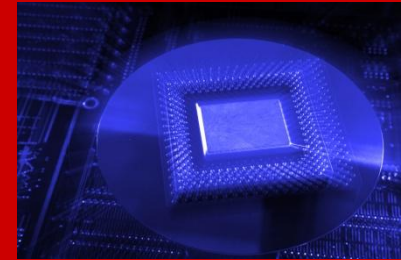
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# Segment Semiconductor: Nano Deposition Technology

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Innovative technology in advanced vacuum coating applications

## Semiconductor

- MRAM
- Other applications



## Thin Film Heads / Read-Write Heads

- Reader elements
- Write-over elements
- Other applications



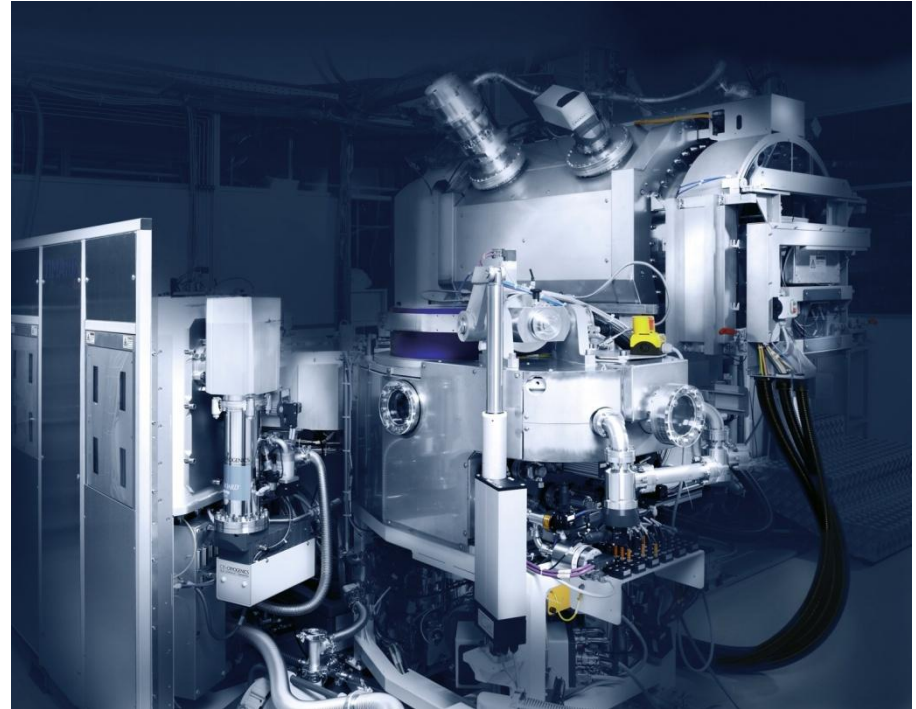
# Segment Semiconductor: TIMARIS Nano Deposition System

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**TIMARIS is the only market-ready machine for MRAM production\***

## TIMARIS

- 5 systems in the market by 2010
- 2 systems in revenue (2011)
- 1 further system delivered (revenue 2012)
- TIMARIS system to be used for further development of MRAM wafers and for pilot production ramp up



\*according to own assessment

## Optical Disc

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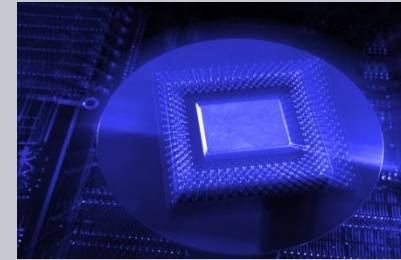
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*Financials*

**SINGULUS** 

# Profit & Loss Statement

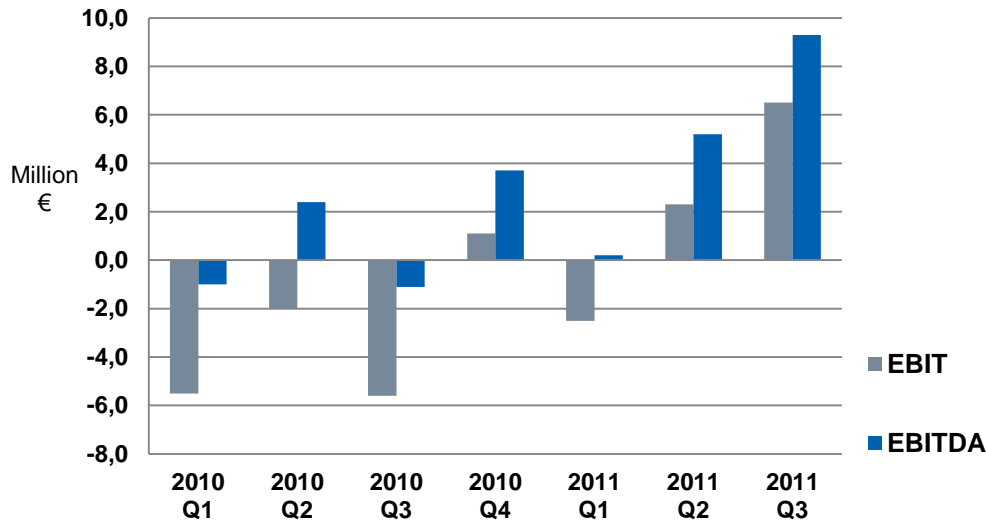
in million €	9M 2010	9M 2010 (operating)	9M 2011	9M 2011 (operating)
<b>Gross Revenue</b>	81.0	81.0	121.8	121.8
<b>Net Revenue</b>	79.7	79.7	119.5	119.5
<b>Gross Profit (in % of Net Revenues)</b>	18.1 (22.7%)	21.5 (27.0%)	36.5 (30.5%)	36.5 (30.5%)
<b>-R+D</b>	-12.3	-9.2	-7.8	-7.8
<b>-Sales &amp; Customer Service</b>	-14.3	-14.3	-14.6	-14.6
<b>-GM &amp; A</b>	-10.2	-10.2	-9.1	-9.1
<b>-Other Income/ Expenses</b>	-8.4	-0.9	1.3	1.3
<b>-Impairment/ Restructuring</b>	-53.8	0.0	0.0	0.0
<b>OPEX (Total)</b>	-99.0	-34.6	-30.2	-30.2
<b>EBIT</b>	-80.9	-13.1	6.3	6.3
<b>EBITDA</b>	-20.0	0.3	14.7	14.7
<b>Net Income</b>	-76.2		3.7	3.7
<b>EPS basic (in €)</b>	-1.90		0.09	0.09

# Balance Sheet

in million €	Dec. 31, 2010	Sept. 30, 2011
<b>Cash and Cash Equivalents</b>	12.3	12.7
<b>Total Receivables and Other Current Assets</b>	47.3	59.4
<b>Total Inventories</b>	47.7	50.6
<b>Non Current Assets</b>	74.6	71.3
<b>Total Assets</b>	181.9	194.0
<hr/>		
<b>Total Current Liabilities</b>	54.6	43.5
<b>Total Non-Current Liabilities</b>	21.1	16.0
<b>Total Equity</b>	106.2	134.5
<b>Equity and Liabilities</b>	181.9	194.0

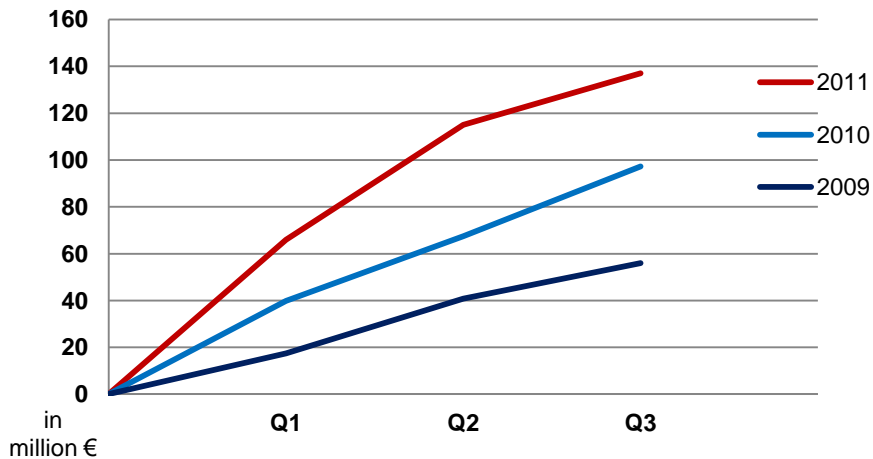
# EBIT and EBITDA\*

## Accumulated Order Intake



- Constant improvement in EBIT and EBITDA since 1Q 2011
- High growth rates in EBIT and EBITDA

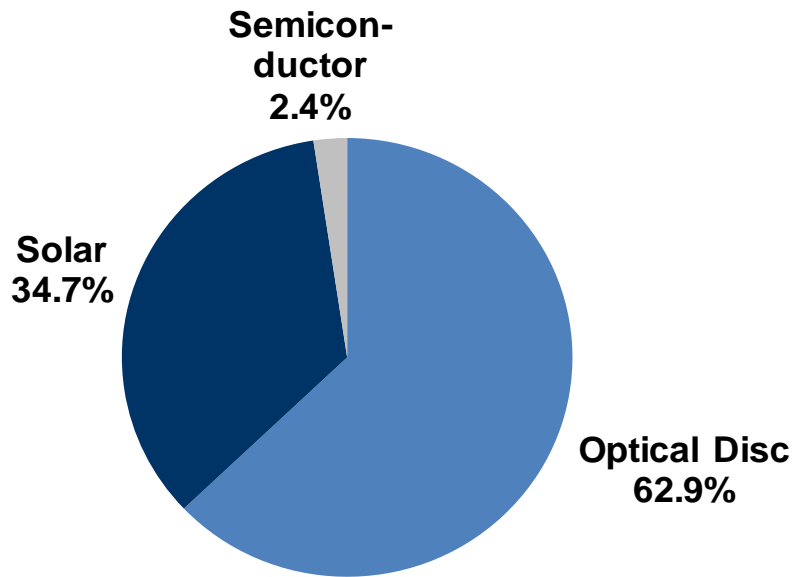
\* adjusted by one time effects



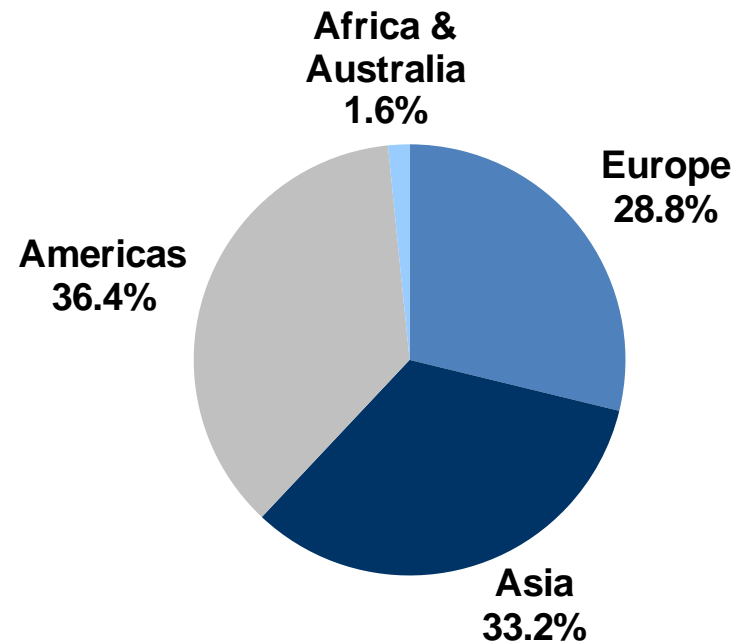
- Order intake in 2011 significantly higher than in the past years
- High growth rates in order intake

# Sales Split 9M 2011

## By segment



## By region



### Innovative technology in advanced vacuum coating applications

- SINGULUS possesses proven know-how in the manufacturing of machines for the vacuum coating of different materials.
- This technology is successfully applied by SINGULUS for example in the replication systems as well as in the coating of silicon solar cells.
- SINGULUS intends to extend this know-how for the development of vacuum coating machines to new application areas in the future.



## **SINGULUS TECHNOLOGIES AG**

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## Forward-Looking Statements

This presentation contains forward-looking statements based on current expectations, assumptions and forecasts of the executive board and on currently available information. Various known and unknown risks, unpredictable developments, changes in the economic and political environment and other presently not yet identifiable effects could result in the fact that the actual future results, financial situation or the outlook for the company differ from the estimates given here. We are not obligated to update the forward-looking statements made in this presentation unless there is a legal obligation.