



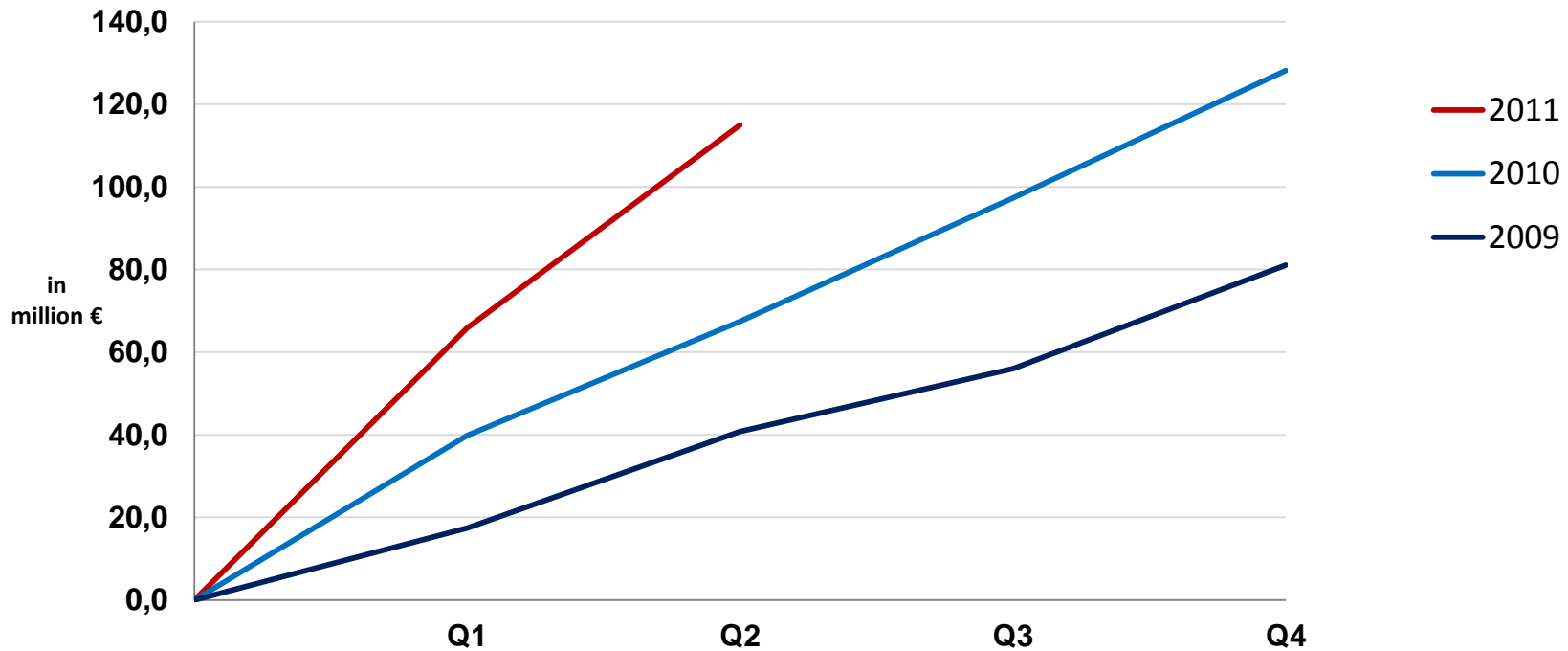
*SMART SOLUTIONS TO DRIVE THE FUTURE*

SINGULUS TECHNOLOGIES AG - Optical Disc and Solar

**SINGULUS** 

# Accumulated Order Intake

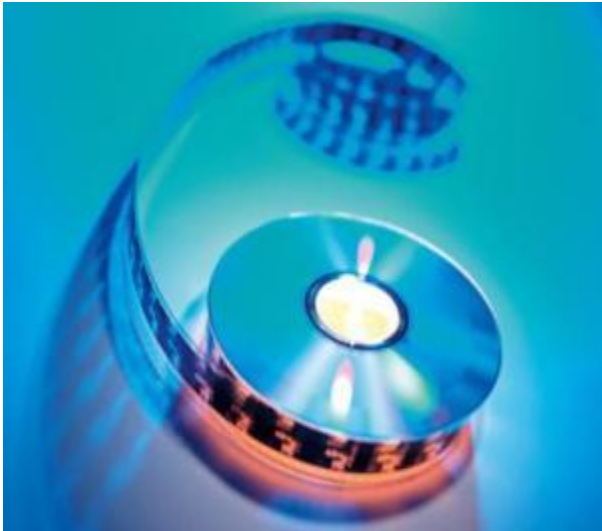
→ Order intake in 2011 is by far exceeding the previous years



# Our Major Segments

## Optical Disc

- Mastering
- Molding
- Replication



## Solar

- Coating
- Wet Processing
- Systems Business



# The Total Solution for Optical Disc



Mastering Systems

Molding Systems



SKYLINE for CD SPACELINE for DVD

BLULINE for Blu-ray

## High Margin Product BLULINE II

- Best of class
- Market share 90 % (excl. Sony)
- Excellent equipment performance
- > 130 Blu-ray systems installed base
- Platform for BD 75 & BD 100



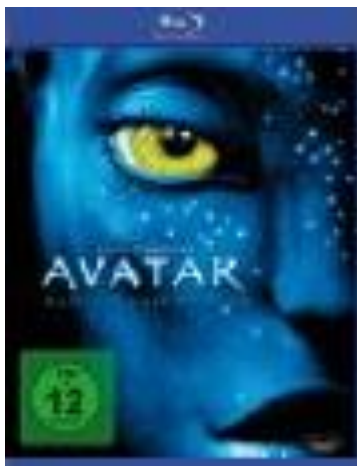
## CRYSTALLINE

- Ready for Dual Layer Blu-ray
- Well-established in the market



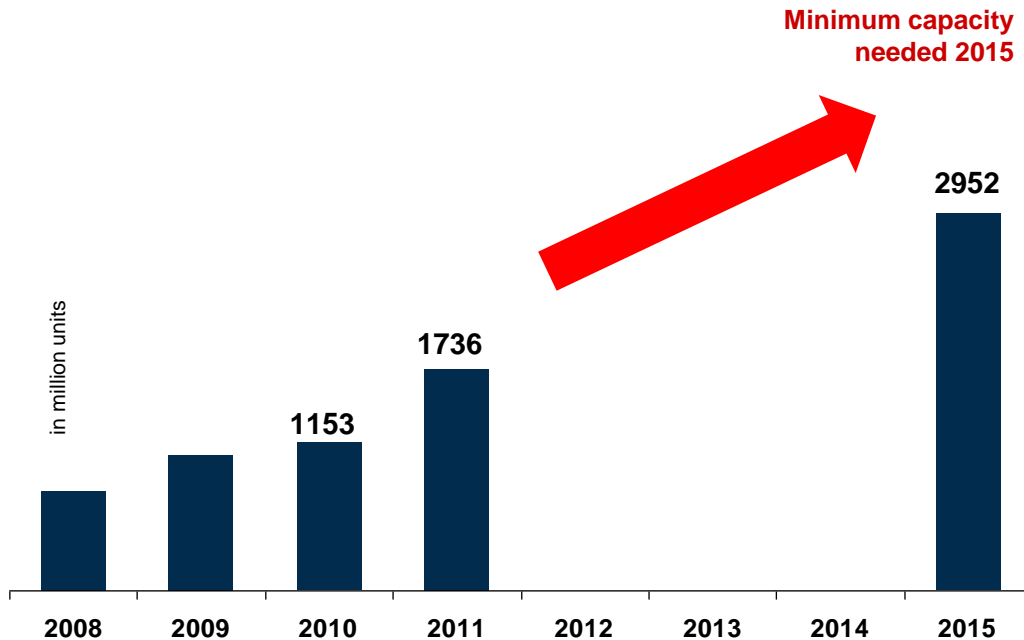
# Blu-ray – Coming Soon

→ Coming soon: Harry Potter blockbuster on BD, Star Wars Saga on BD and later on BD 3D, Lord of the Rings on BD 3D and more...



# Packaged Media Remains Major Revenue Stream

→ Production capacity will be build up over the coming years



- \_ Rapid growth of Blu-ray disc sales worldwide
- \_ Packaged media remain the major revenue generator for studios
- \_ 3D will boost the Blu-ray market
- \_ High Blu-ray player penetration

Source: FutureSource 07-2011

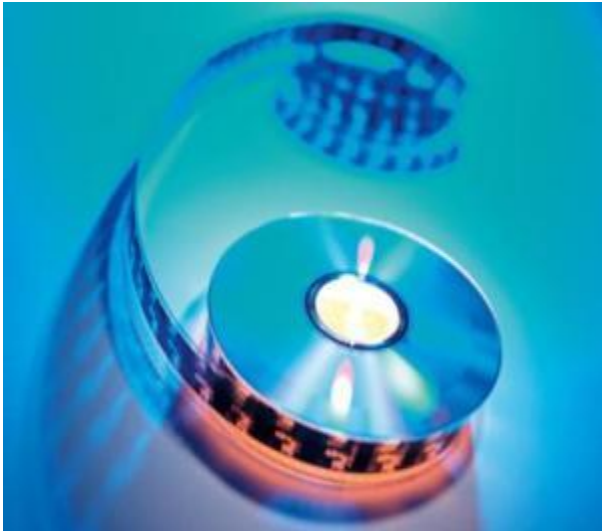
# IFA 2011 confirms: Our World is 3D



# Our Major Segments

## Optical Disc

- Mastering
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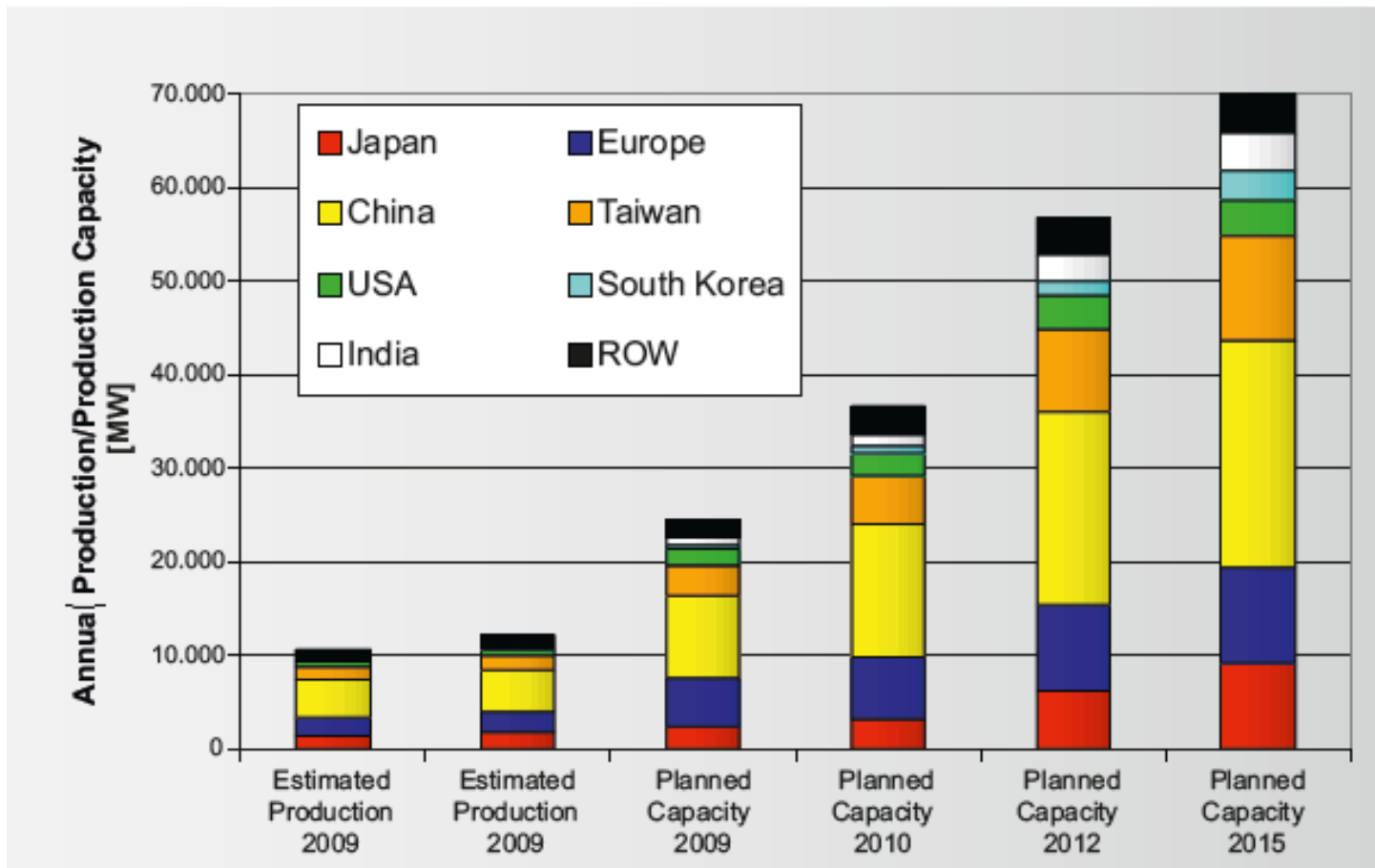


## Solar

- Coating
- Wet Processing
- Systems Business

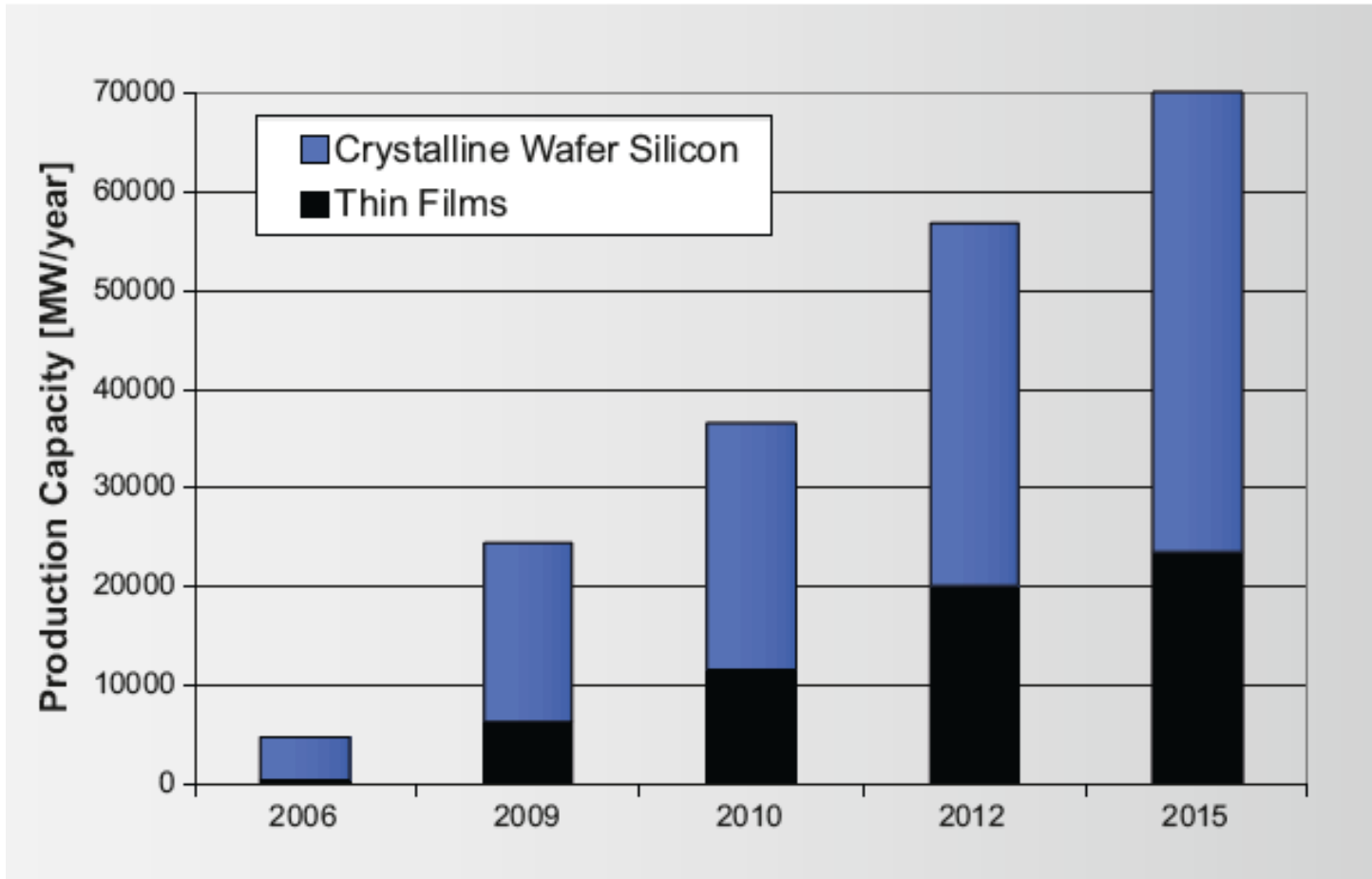


# World-wide PV Production 2009 with future Planned Production Capacity Increases



Source: PV Status Report - 2011

# Annual PV Production Capacities of Thin-Film and Crystalline Silicon (Modules)



Source: PV Status Report - 2011

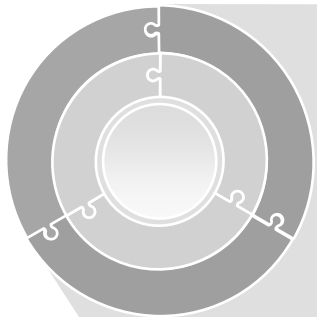
### Solar Cells

#### Si Solar Cells

- STANGL Wet Processing
- SINGULUS Automation
- SINGULUS AR-Coating
- SINGULUS Backside Coating
- Front End
- Inline

#### Thin Film Cells

- STANGL SOLAR Wet Processing
- STANGL SOLAR Chemical Deposition
- SINGULUS ILGAR-Process
- SINGULUS Selenization
- SINGULUS TCO



## Product Portfolio Crystalline



**Raw Material Cleaning  
Wafer Degluing/Cleaning**

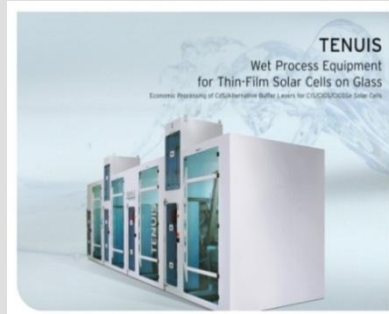
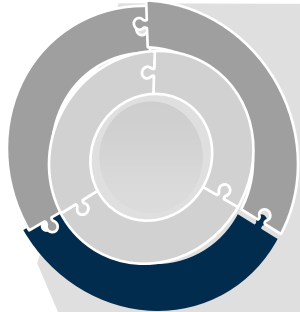
**c-Si Cell Processing  
Batch- & Inline System**

**Loading/un-Loading Systems  
Automatization Systems**

- SOLARE System for Inline Production of Silicon Solar Cells with LINEA and two SINGULAR & a back-end with double capacity offering approx. 60 MW



## Wet Process Applications / Cleaning / Washing / Etching Coating



**CIS/CIGS/CIGSSe**

**TENUIS**

**Single Side**

**CdS/ZnS Buffer Layer**



**CIS/CIGS/CIGSSe**

**IMPEDIO**

**Single Side**

**CdS/ZnS Buffer Layer**



**CIS/CIGS/CdTe/a-Si**

**VITRUM**

**Cleaning/Etching**

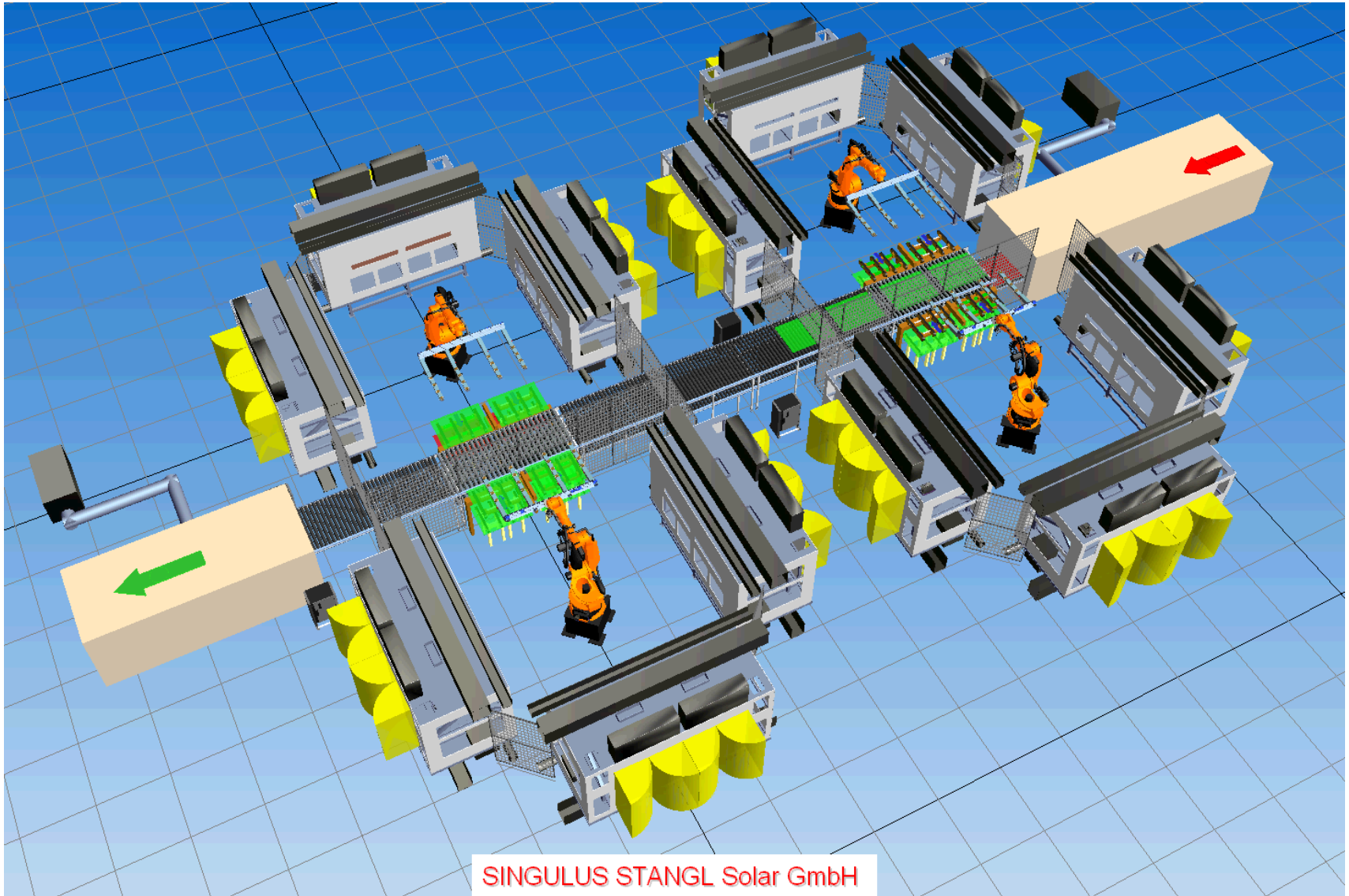
# TENUIS Production Line for CIS/CIGS/CIGSSe Buffer Layer

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EU PVSEC -2011  
- 16 -



# TENUIS GEN 2 Production Line

## Double batch



# CISARIS Inline Diffusion Furnace for CIS/CIGS Solar Cells

- Product introduced 2010
- 8 Machines already sold with an order intake of about € 50 million
- 2<sup>nd</sup> Generation for inline diffusion furnace with optimized cycle time



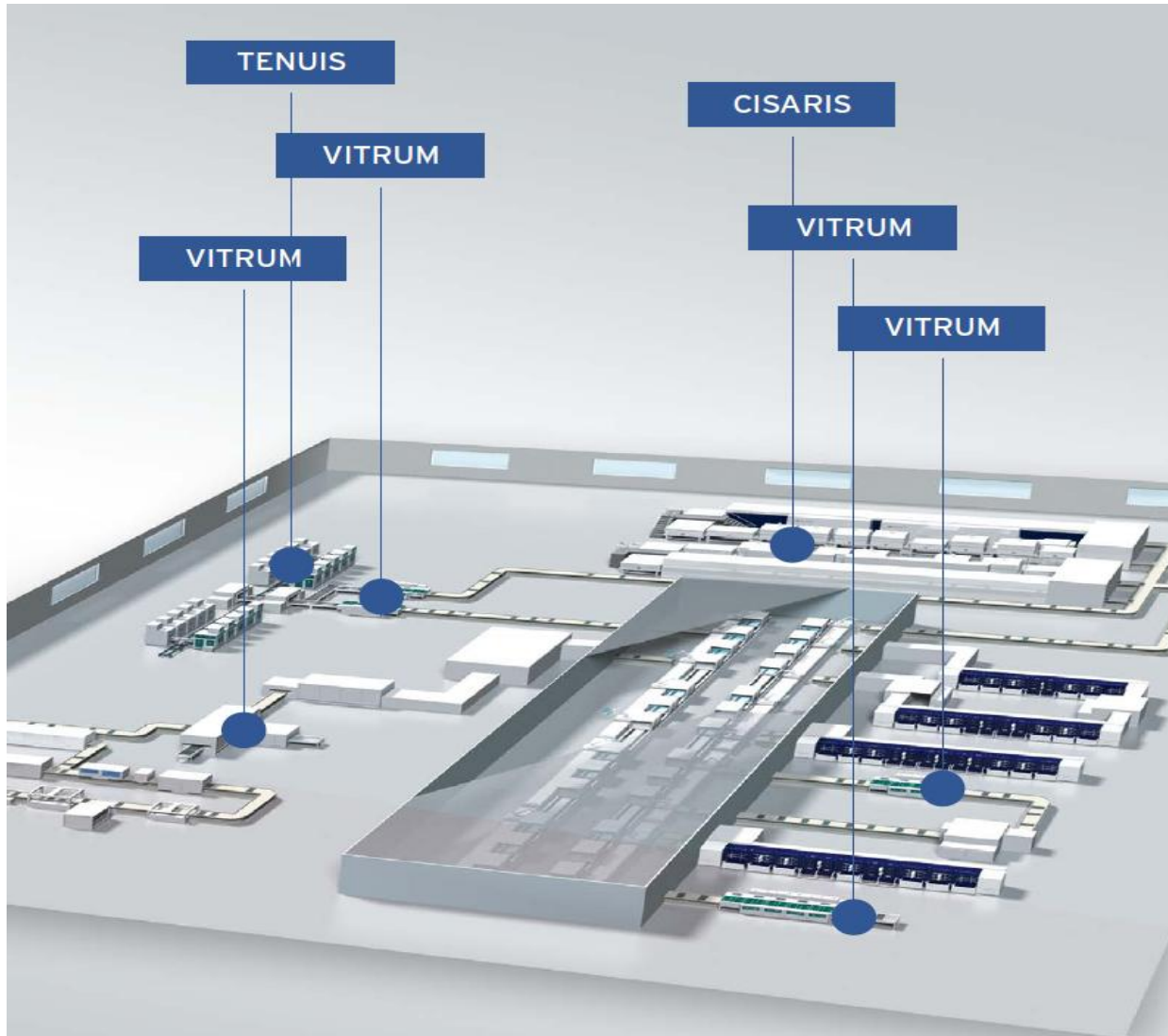
# VITRUM GEN 2 - Wet Processing System for Washing, Cleaning & Etching (CdTe / CIGS)

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



# Thin Film - CIS/CIGS Manufacturing Process

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



# Solar 2007 – 2011 – Successful Market Entry

- R & D Partner for new cell concepts
- Reduction of production cost
- High performance cells

- Best in Class PV Production Equipment
- Integrated PV Production Systems
- Optional Complete PV Lines

- Order for Inline Diffusion Furnaces
- FAT for 1<sup>st</sup> Front End System
- Complete solutions with partners

- Cooperation with HZB for ILGAR
- Large Order for flexible CIGS Cells
- Shipment of 1<sup>st</sup> SINGULAR

- Takeover of Stangl
- Start of SINGULAR Development
- Inline Wet Processing for SI Cells

2007

2010

2012

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## Forward-Looking Statements

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