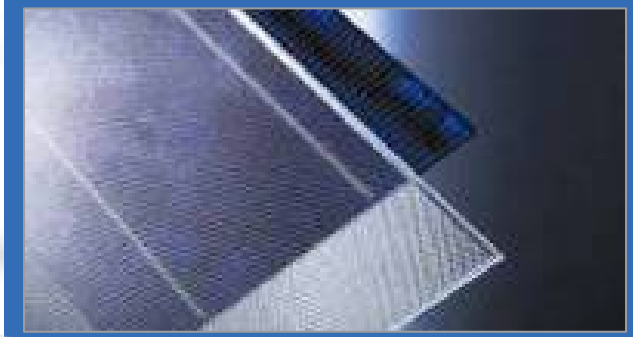


Investor Day

Our development in Solar

Jean-Pierre FLORIS

Les Miroirs, November 15, 2010

SAINT-GOBAIN

MATERIAUX INNOVANTS

Solar in Saint-Gobain

SUMMARY

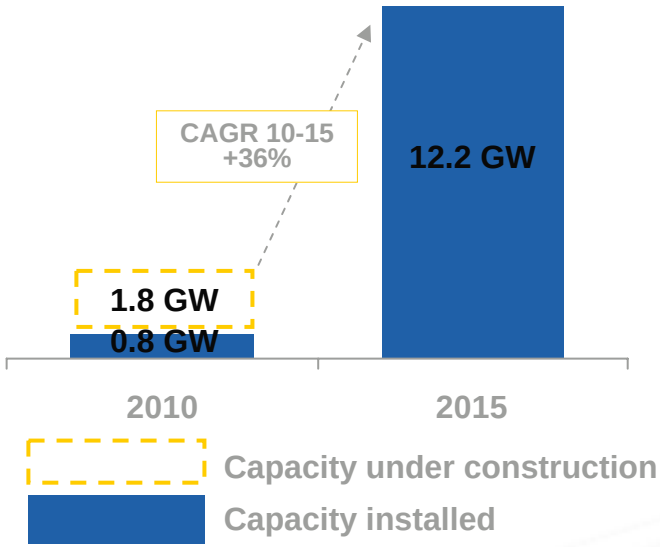
SAINT-GOBAIN
MATERIAUX INNOVANTS

Solar power: context

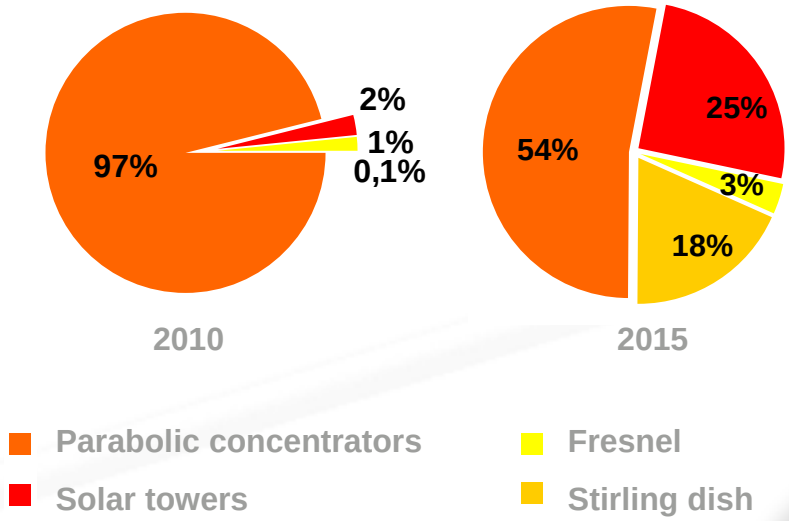
- An **inexhaustible** source of energy
- The greatest **growth potential** among renewable energies
- **Centralized and decentralized** productions
- A **drop in photovoltaic costs** towards grid parity
- **PV integrated in buildings**: a factor in the **Habitat strategy**
- **Unique Saint-Gobain expertise** (mirrors, coated glass, ceramics, plastics…)

Concentrated Solar Power market

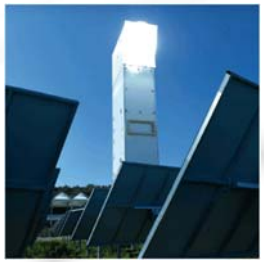
Growth in installed capacity



Trend in installed technologies



Parabolic concentrator



Solar tower

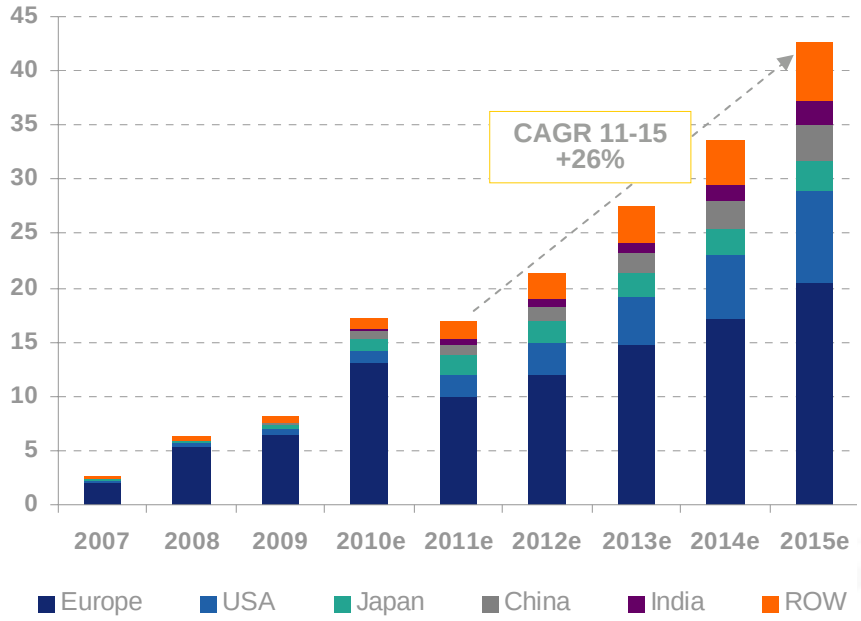
Fresnel

Stirling dish

SAINT-GOBAIN
MATERIAUX INNOVANTS

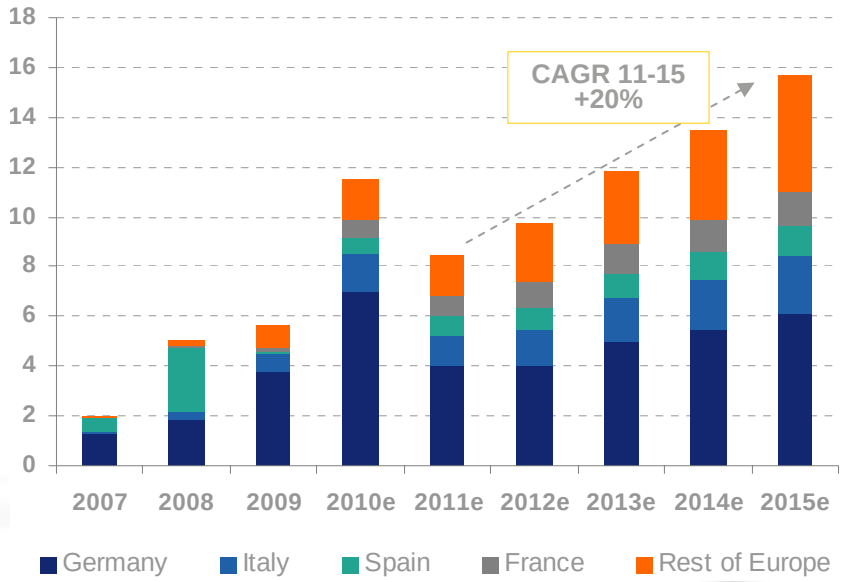
PV market located mainly in Europe

World PV installed market (GWp)



Source: EPIA may 2010, Saint-Gobain Solar Systems estimates

European PV installed market (GWp)



Source: EPIA maiy2010, Saint-Gobain Solar Systems estimates

- **Demand growth** for PV coming mainly from **Europe**
  - Market driven by **Germany in 2010** but by **other European countries in 2011**
  - **Spain** suffered a **brutal halt** in 2009 but retains a **potential for growth**

SAINT-GOBAIN
MATERIAUX INNOVANTS

Saint-Gobain's vision of photovoltaic solar energy

- A component of the **house of the future**
- A contributor to building **energy efficiency**

SAINT-GOBAIN
MATERIAUX INNOVANTS

Towards an economic equilibrium without feed-in-tariffs

The objective:

- Decrease in PV electricity costs towards an economic equilibrium without Feed-In-Tariffs (from €1.8 to €2.0 per installed Wp)
- Integrated PV then becomes a **construction norm** supporting the objectives of **RT 2020** for **positive energy new constructions**

Coherence with Saint-Gobain's technological choice:

- **Avancis** thin films will enable to **reach this equilibrium** (target module price of €0.5/Wp for an installed system at less than €2.0/Wp)

Decrease in PV systems cost*

Estimations in €/Wp	2010	2015
Module	1.5-1.6	0.8-1.0
Mounting system	0.2-0.3	0.2
Electrical kit	0.4	0.3
Installation and services	0.5-0.8	0.5
Price of PV system	**2.7-3.0**	**1.8-2.0**

a €1.8-2.0 system cost implies an electricity cost around 10c/kWh**

Assumptions:
*1,000h sunshine per year during 20 years
**No financial costs directly linked to consider (norm)
Maintenance/rental done by the owner

SAINT-GOBAIN
MATERIAUX INNOVANTS

Solar in Saint-Gobain

SUMMARY

I. Solar power market dynamics

II. Saint-Gobain's growth in solar

1. Saint-Gobain structure
2. Components
3. Modules (Avancis)
4. Saint-Gobain Solar Systems

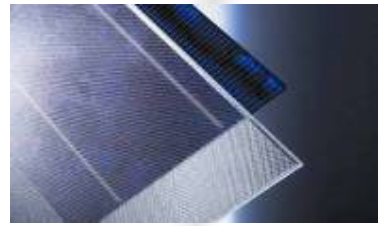
Conclusion

SAINT-GOBAIN
MATERIAUX INNOVANTS

To combine its solar offer, Saint-Gobain set up Saint-Gobain Solar in 2009

SAINT-GOBAIN SOLAR

- **Three activities**
  - **Components supply**:
    - for the **PV solar** markets
    - for the **CSP** markets
  - **Avancis**: photovoltaic modules
  - **Saint-Gobain Solar Systems**: distribution, integration and mounting of full PV systems

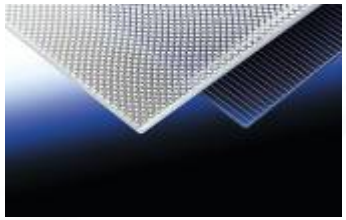


- **Strong assets**
  - Unique positioning along the whole value chain
  - Innovative products for every market
  - **Unique Saint-Gobain expertise** (mirrors, coated glass, ceramics, plastics…)

Present across the entire solar value chain

Concentrated Solar Power (CSP)

Mirrors and accessories

	Components	Products	User Solutions
Photovoltaic	Quartz crucible for silicon ingots  SiC grains to cut silicon wafers 	Solar glass, films, foams… 	CIS Modules AVANCIS	Saint-Gobain Solar Systems   CertainTeed Quality made certain. Satisfaction guaranteed.™

Sales around €300m en 2010, i.e. +50% versus 2009 including over €200m in Flat Glass

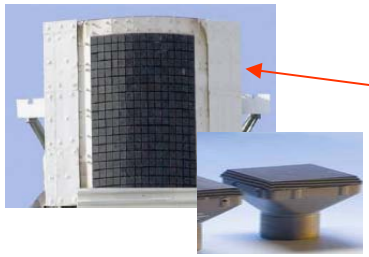
Solar in Saint-Gobain

SUMMARY

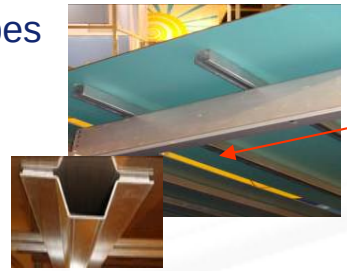
SAINT-GOBAIN
MATERIAUX INNOVANTS

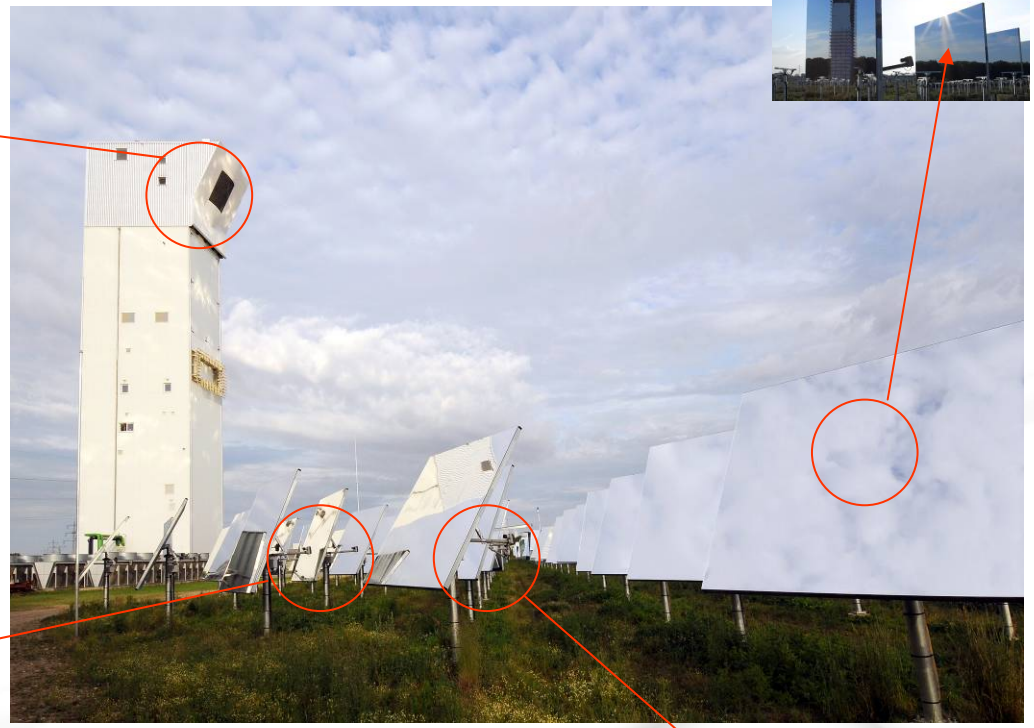
Saint-Gobain's components offer for CSP

SiC ceramics for high temperature receivers



High performance foam bonding tapes





Extraclear mirrors High Reflectivity & durability:
- Flat for solar towers and fresnel power plants

- Curved for parabolic concentrators (Saint-Gobain Solar Covilis)

Maintenance free, low friction PTFE bearings

Solar in Saint-Gobain

SUMMARY

I. Solar power market dynamics

II. Saint-Gobain's growth in solar

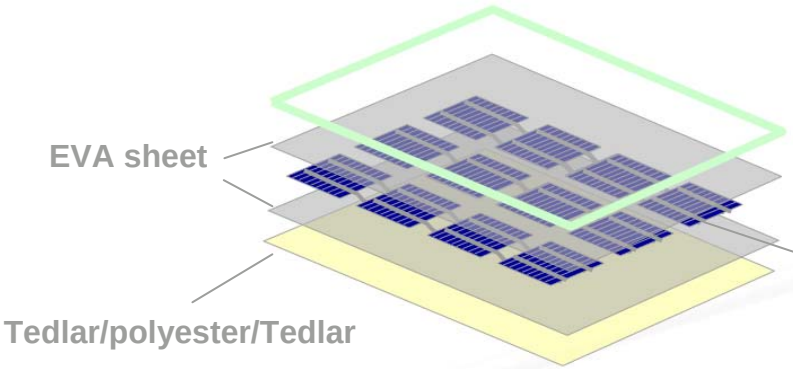
1. Saint-Gobain structure
2. Components
   i. CSP (Concentrated Solar Power)
   ii. Solar photovoltaics: PV
3. Modules (Avancis)
4. Saint-Gobain Solar System

Conclusion

Saint-Gobain, European leader in cover glass

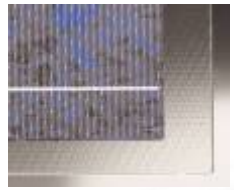
Protect and optimize the sun energy transmission

An offer for **c-Si modules**



Cover glass

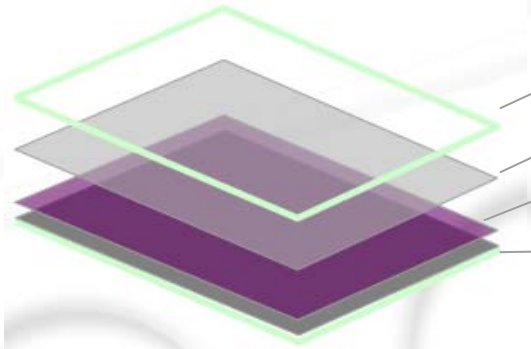
SGG ALBARINO ®
High energy transmittance extra-clear patterned glass



SGG DIAMANT SOLAR ®
High energy transmittance extra-clear float glass

SGG PV-AR ®
Anti-Reflective Coating

An for **thin-films modules**



Cover glass

PVB (ou EVA)

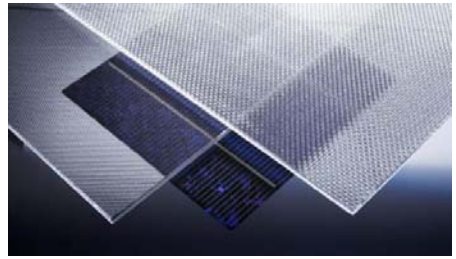
CIS ou CIGS

SGG PV-Mo ®
= Planilux ® + Mo layer

AVANCIS

Saint-Gobain accompanies the growth of the PV glass market

- **Global** PV glass **Market:** annual market growth rate around 20%
- Large-scale **industrial projects** to accompany the manufacturing shift to Asia
- Possibility to sell the equivalent **production of 2 to 3 floats in 2015 compared to 1 today**
- Solar glass: **continuous innovations**
- **Manufacturing facilities** are sufficiently **flexible** between solar / non-solar

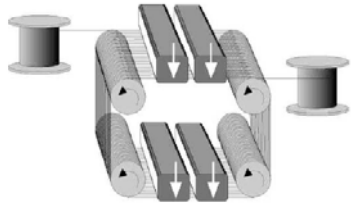


SAINT-GOBAIN
MATERIAUX INNOVANTS

HPM components for the PV market

SiC Wiresaw

- Silicon Carbide grains to wire saw silicon wafers



Crystals

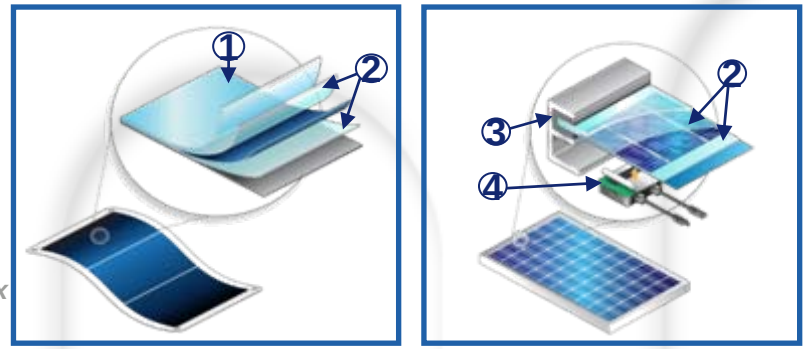
- Quartz crucibles for the processing and growth of high-purity silicon ingots

Performance plastics

- Plastic films
- Foams

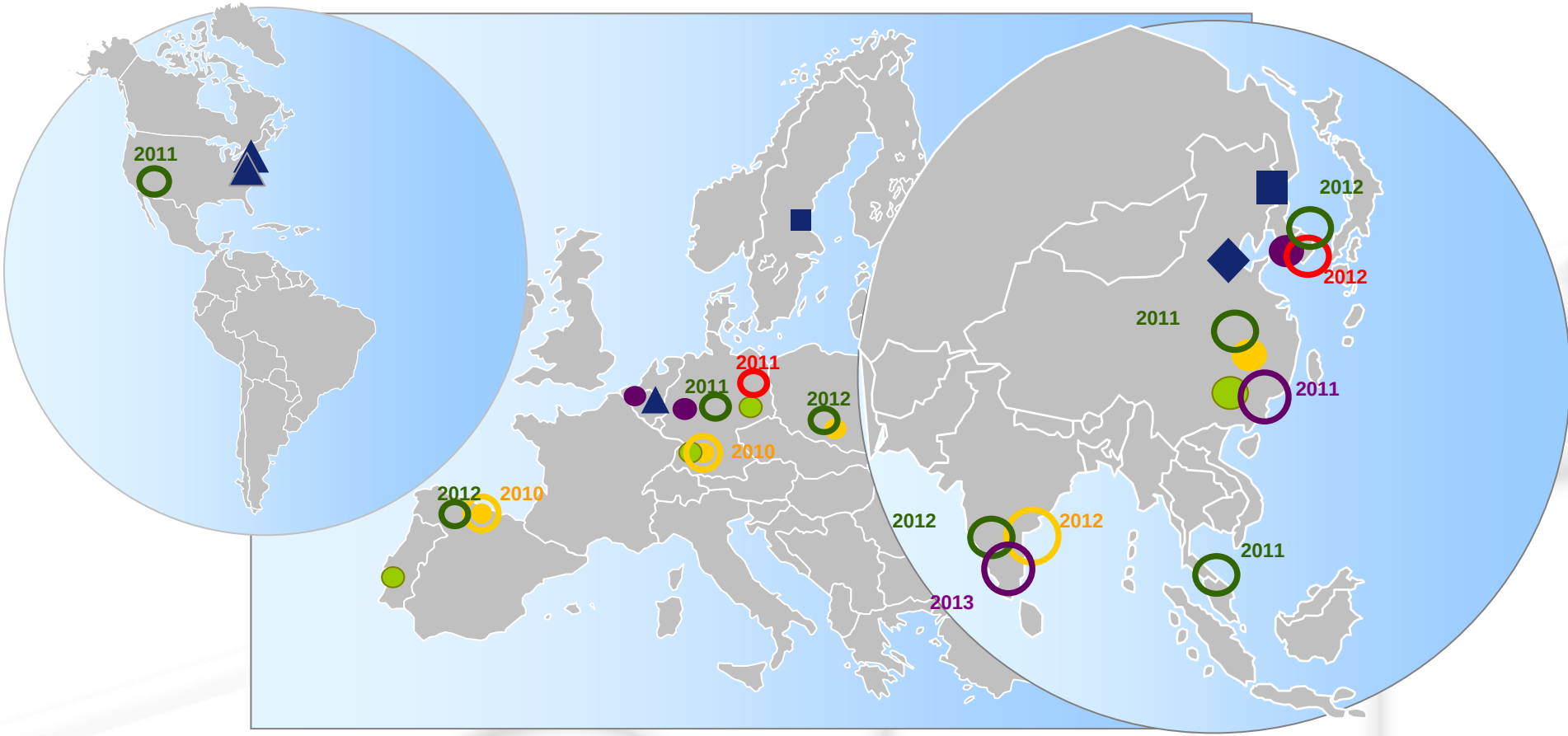
Flexible module

Rigid module



1. Flexible front coating
2. Encapsulating
3. Frame
4. Ribbon for junction box

A worldwide presence to provide local customer support



Solar Glass

- Albarino ®
- Diamant ®
- Dedicated tempering plants

- Extensions / New projects
- New Diamant ® projects

- Main PVMo coater projects
- Main dedicated tempering projects

HPM

- PPL
- SiC
- Crystals

Solar in Saint-Gobain

SUMMARY

I. Solar power market dynamics

II. Saint-Gobain's growth in solar

1. Saint-Gobain structure
2. Components
3. **Modules (Avancis)**
4. Saint-Gobain Solar Systems
5. Objectives

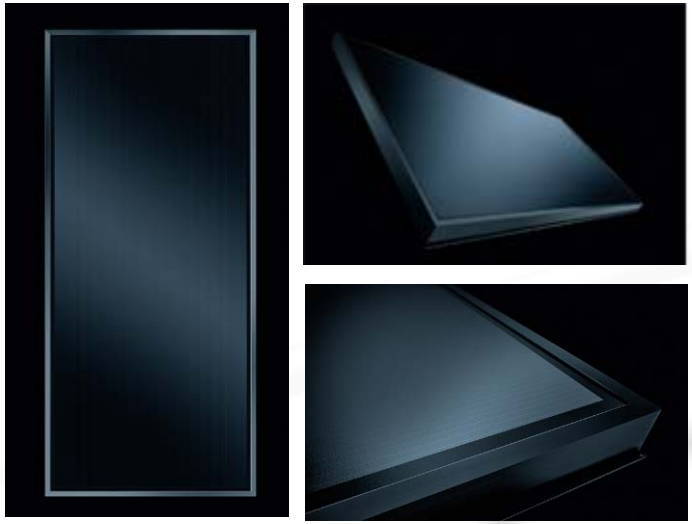
Conclusion

SAINT-GOBAIN
MATERIAUX INNOVANTS

Avancis today

- **30 years of experience** in thin films
- One existing plant with a **20 MWp** capacity
- **200 employees**
- **Two plants** launched/under construction for an additional capacity of **200 MWp**

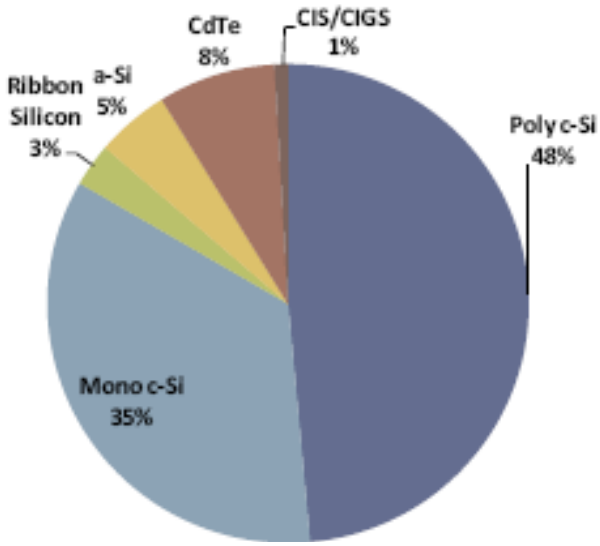
Gen 2 (plant 1)



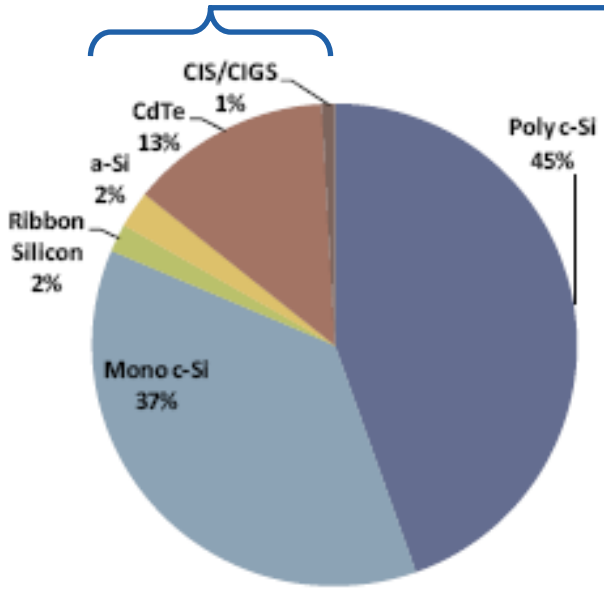
Gen 3 (project)

SAINT-GOBAIN
MATERIAUX INNOVANTS

Thin films are gaining in maturity



2008



2009

Thin films could represent around **30% of the market in 2015**
(23% of which CdTe and 8% CIS)

- First Solar (CdTe) gained market share between 2008 and 2010
- Amorphous silicon (a-Si) is slipping back

Source: Navigant Consulting, 2010

Among thin films, CIS has considerable assets

- **Similar production processes and costs per m²** to thin film technologies
- The **lowest cost per Wp** will come from the most efficient technology
- **CIS technology** offers very good prospects:

	Cell efficiency world record (%)	Estimated industrial efficiency (%)
Crystalline Si	20	15 – 16
CdTe	17	6 – 10.5
CIS	20	8 – 12

Source : US National Renewable Energy Laboratory

Avancis already at 12%

SAINT-GOBAIN
MATERIAUX INNOVANTS

Avancis is at the leading edge of CIS technology

- Main **key strengths of Avancis**
  - **Very competitive design** (Gen 3 modules)
    - Sodium control
    - Absence of Cadmium
  - **Full process control**
  - **State-of-the-art technology**: close ties with the University of Erlangen, specialized in solar

- **Avancis aims for:**

Efficiency comparable to that of crystalline Silicon …

- 15% efficiency* on 30x30cm surfaces (world record for thin films in January 2010)
- 12% efficiency for a module currently in production

…with the cost per Wp of thin films

- Target: €0.50/Wp

* “aperture efficiency”

SAINT-GOBAIN
MATERIAUX INNOVANTS

Partnership with Hyundai Heavy Industries

- First **joint production** facility in Ochang (Korea)
- Investment:
  - **100 MW** Capacity
  - Operational in March 2012
  - Distribution & sales: 50% Avancis, 50% HHI
- **HHI Experience**
  - Crystalline Silicon, 650 MW installed by end-2010
  - Sale of solar farms

HYUNDAI HEAVY INDUSTRIES CO., LTD.

Solar in Saint-Gobain

SUMMARY

I. Solar power market dynamics

II. Saint-Gobain's growth in solar

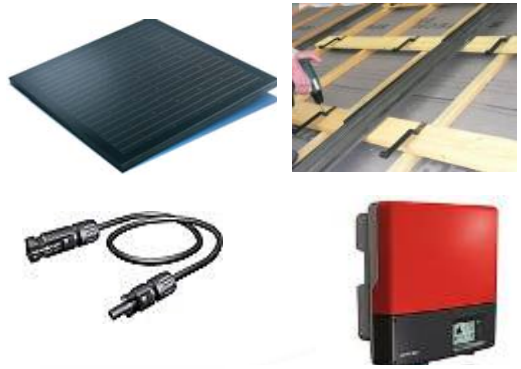
1. Saint-Gobain structure
2. Components
3. Modules (Avancis)
4. Saint-Gobain Solar Systems

III. Conclusion

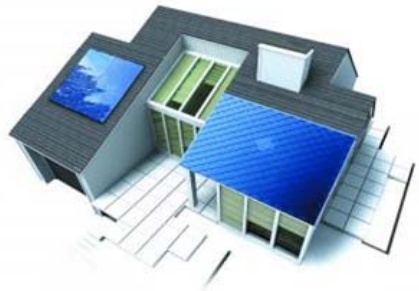
SAINT-GOBAIN
MATERIAUX INNOVANTS

Saint-Gobain Solar Systems: PV systems supplier

- **Photovoltaic system**: a set of components to mount the solar solution in an effective manner
  - **Components offer**
  - **Range of services**



- An **offer to suit every kind of roof**
  - **Residential** (tiles and panels)
  - **Apartment blocks, industrial, farm buildings and non-residential** (tiles and panels)



- Offer completed by the **Building Distribution sector** for sale to **small diverse customers** and **pooling of purchases**

Solar in Saint-Gobain

SUMMARY

I. Solar power market dynamics

II. Saint-Gobain's growth in solar

Conclusion

SAINT-GOBAIN
MATERIAUX INNOVANTS

Conclusion

- A solar market still **growing fast** but **yet to find its profitability** without public subsidies
- An **organization** in place: **Saint-Gobain Solar** became a **reality in 2009**

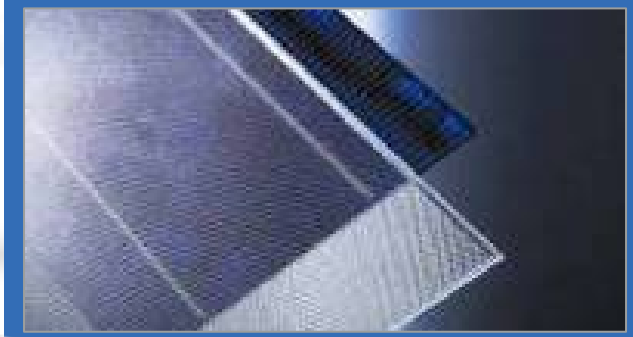
SAINT-GOBAIN
SOLAR

- **CSP**: Grow sales of components, particularly through **partnerships**
- **PV** Components: deliver **glass growth** through **innovation** (deep structures, AR, TCO) and **geographic expansion** (Southern Europe, China)
- **Avancis**: reinforced confidence in the **technology**
- **Solar Systems**: growth through **innovation** (products and services) and by envisioning **external growth**

Objectives

SAINT-GOBAIN SOLAR

- A strong ambition in **Avancis modules** and in **integrated PV systems**
- The **Components** activities (Glass, Mirrors, SiC, Crystals and Plastics) supporting growth within the Group's traditional businesses
- **Investments** (~ €200m/y) to be completed without delay, either alone or through partnerships
- Sales of **€2bn** achieved by **2015**
- **Medium term profitability** meeting the **standard returns of the Innovative Materials sector**



Investor Day

Our development in Solar

Jean-Pierre FLORIS

Les Miroirs, November 15, 2010

SAINT-GOBAIN

MATERIAUX INNOVANTS