2010 City of Springfield Developers Conference

# *Solutia*

## Innovation at Indian Orchard

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# Solutia Overview

- $1.8 billion annual sales
- 70% of sales outside U.S.
- No. 1 or No. 2 in markets served
- 3,400 employees worldwide
- World headquarters: St. Louis, MO
- Indian Orchard plant established in 1904
- Manufacturing Saflex PVB sheet at Indian Orchard since 1938!

1938: Saflex team, Indian Orchard, MA, USA

**We aspire to become the world leader in performance materials of scale**

# Solutia Business Units

- **All have #1 or #2 market position in markets served**
- **Traditional end markets: Automotive, construction, & aerospace**
- **Solutia now focused on fast growing solar energy market**

## Technical Specialties

Therminol®, the world's leading heat transfer fluid, is the preferred fluid for concentrating solar power plants (solar mirrors)

## Performance Films

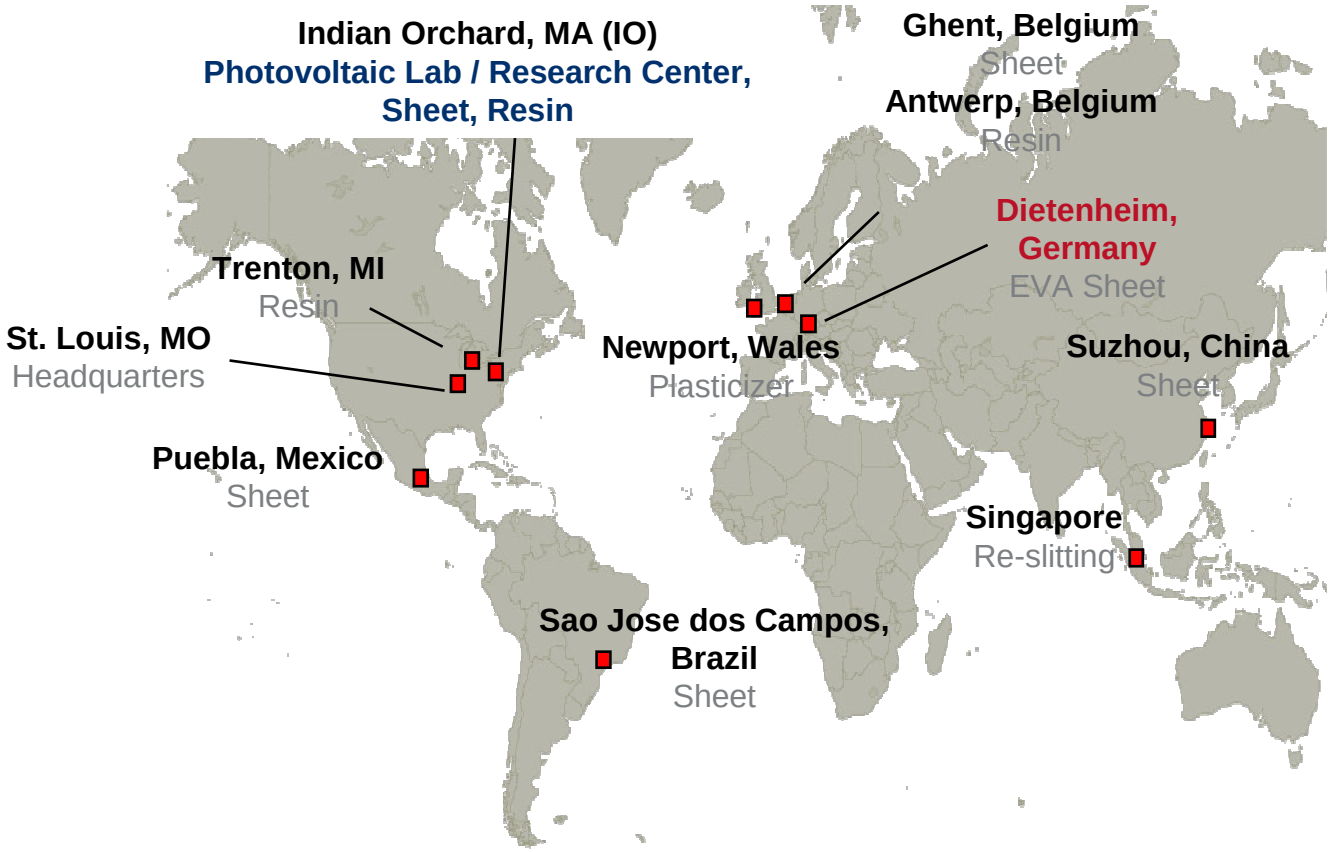
Advanced film technology (sputtered, coated, anti-corrosive) used for photovoltaics, solar mirrors and portable electronics

## Advanced Interlayers

Only global manufacturer of both major encapsulants (EVA & PVB) for use in the solar panels. Protects modules from weather and increases panel efficiency performance.

# Global facilities

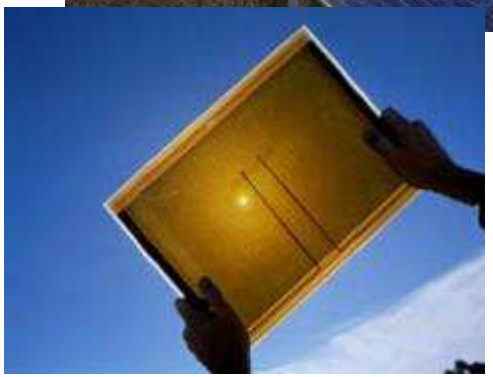
## Manufacturing Sites



# Solutia Solar Innovation at Indian Orchard

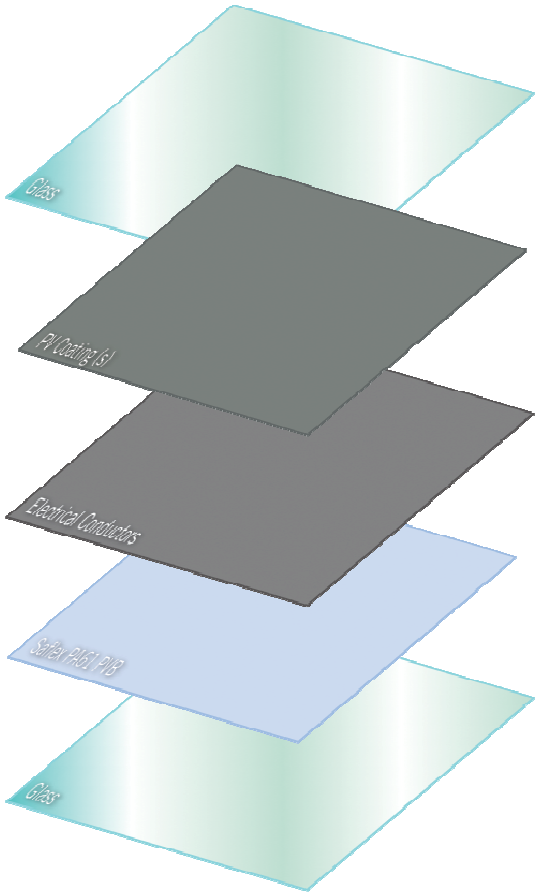
# Solar Energy Capture

- Solar Energy
  - Solar Heating
  - Concentrated Solar
  - Photovoltaics
    - Silicon Wafers
    - Thin Film
    - Emerging Technologies
      - Organic
      - Nano-materials
      - Dye sensitized



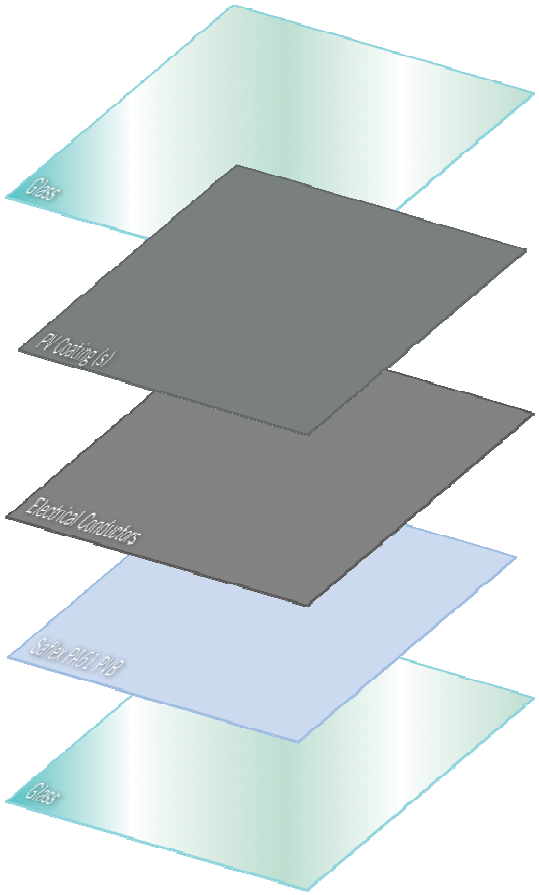
# Photovoltaic Thin Film Module Composition

- Glass
- PV Coating
- Solar cell
- Encapsulant
- Glass



# Role of Encapsulant in Photovoltaic Module

- **Saflex® PVB or Vistasolar® EVA serve as the encapsulant**
- **Encapsulant provides strength and durability to the finished module**
- **Seals out environment**
- **Utilizes best known technology for lamination**
- **Contributes to a lower cost per watt delivered cost**



# Photovoltaic Applications

Building Applied - Residential

Traffic lights / signs

Building Applied – Commercial

Solar Farms

# Photovoltaic Innovation Challenges

- Reducing material usage / cost
- Increasing solar panel efficiency
- Increasing product throughput
- Higher production yields
- Increasing solar panel durability
- Reducing energy required for the manufacture, shipping, and installation of solar panels

# Innovation case study #1

## Problem:

- Customer reported discoloration in solar modules which raised questions of durability and long term performance.

## Root cause:

- Metal electromigration: a well documented problem in the electronics industry. Occurs when metal (i.e. silver) migrates into an insulating material which can lead to cell corrosion / discoloration.

## Solution:

- Solutia developed a patent-pending formulation to prevent discoloration of solar cell and encapsulant.
- New product is code-certified and available.

New Saflex PS41

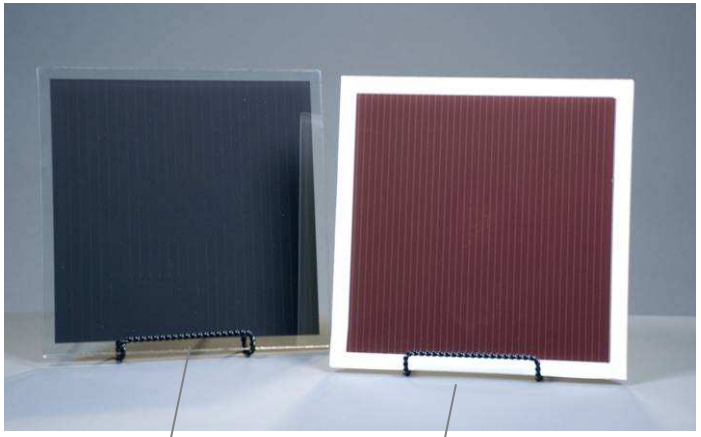
# Innovation case study #2

## Opportunity:

- Module manufacturers aggressively seeking cost reduction and ideas to increase solar panel efficiency

## Challenge:

- The traditional role of encapsulants is to protect critical electrical components within the panel.
- Focus is now shifting to increasing overall panel efficiency.



**Standard encapsulant**

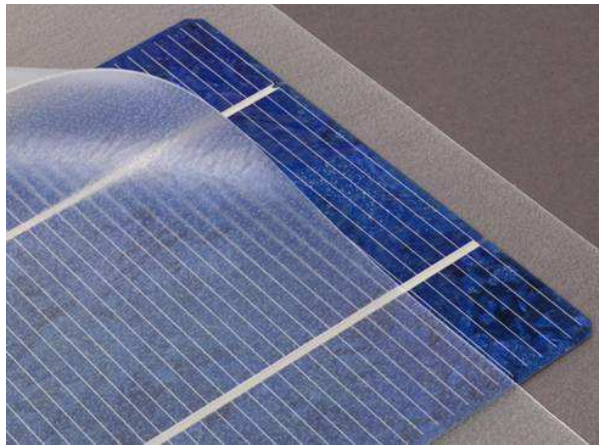
**New Saflex Radiant White PA27**

## Solution:

- Solutia developed new reflective encapsulant with multiple benefits:
  - Eliminates complex / costly painting process
  - Ultra thin encapsulant reduces material usage
  - Increases power generation from each module

# Solutia is Committed to Solar Energy

- **Acquired Etimex Solar / EVA Technology**
  - Solutia is now the only manufacturer of both major encapsulant technologies for use in solar panels



- **Announces new capacity expansions in Suzhou, China for the production of EVA encapsulants**

# Solutia is Committed to the Pioneer Valley

- **Solutia opens new Photovoltaic Lab (Indian Orchard, MA)**
  - Indian Orchard facility is the main R&D hub for Solutia's Advanced Interlayers division
  - Houses comprehensive laboratories and pilot lines
  - New Photovoltaic Laboratory is designed to
    - drive innovation
    - accelerate commercialization of new products
    - provide critical testing / development support to solar module manufacturers

# *Thank you!*

Visit www.solutia.com for more information.