

**DYESOL**  
GROUP of COMPANIES

*Sylvia Tulloch* – Founder & Director - Dyesol Ltd

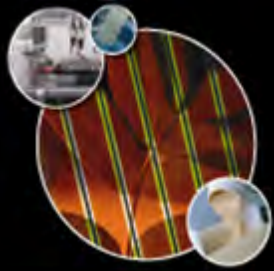
*November 2010*

*Green Device Japan*

Global Leaders in Dye Solar Cell Technology

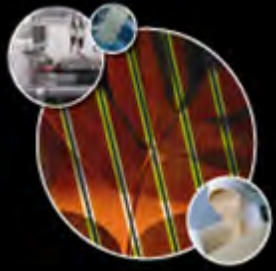
DYESOL LIMITED  
International CleanTech Company  
ASX: DYE

*Confidential – Dyesol Ltd.*



# ***Dyesol Ltd.***

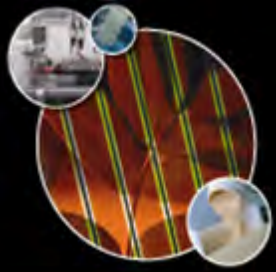
- Public Listed Company - Market Value – AU\$120m
- 15+ Years DSC Experience
- 60+ Employees - 80% Technical
- Cover All Aspects of DSC e.g. R&D to Commercial Production of Products & Materials
- World 1<sup>st</sup> in DSC Manufacturing Processes



# ***Dyesol 's Global Footprint***

## **Dyesol Group Companies**

Australia, Singapore, Switzerland, United Kingdom, Italy, Japan, Korea,  
USA, Germany



# *DSC is the Technology for our Times*

## First Generation

Crystalline Silicon



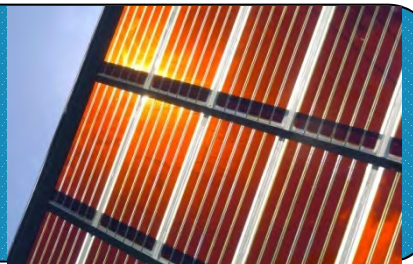
## Second Generation

Thin film Semiconductor

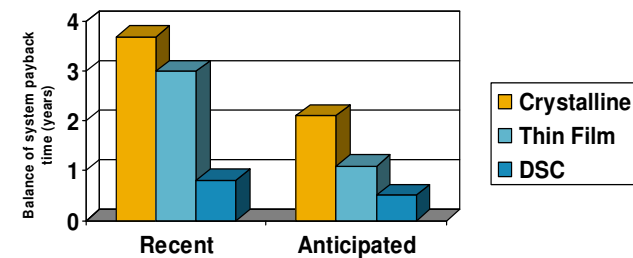


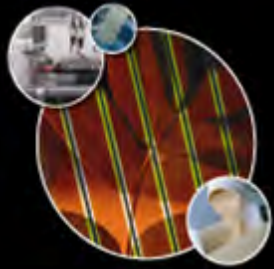
## Third Generation

Artificial Photosynthesis  
Nanotechnology



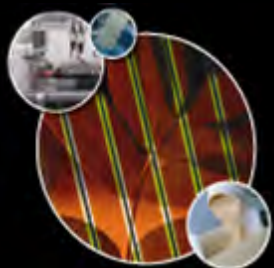
Energy Payback Comparison



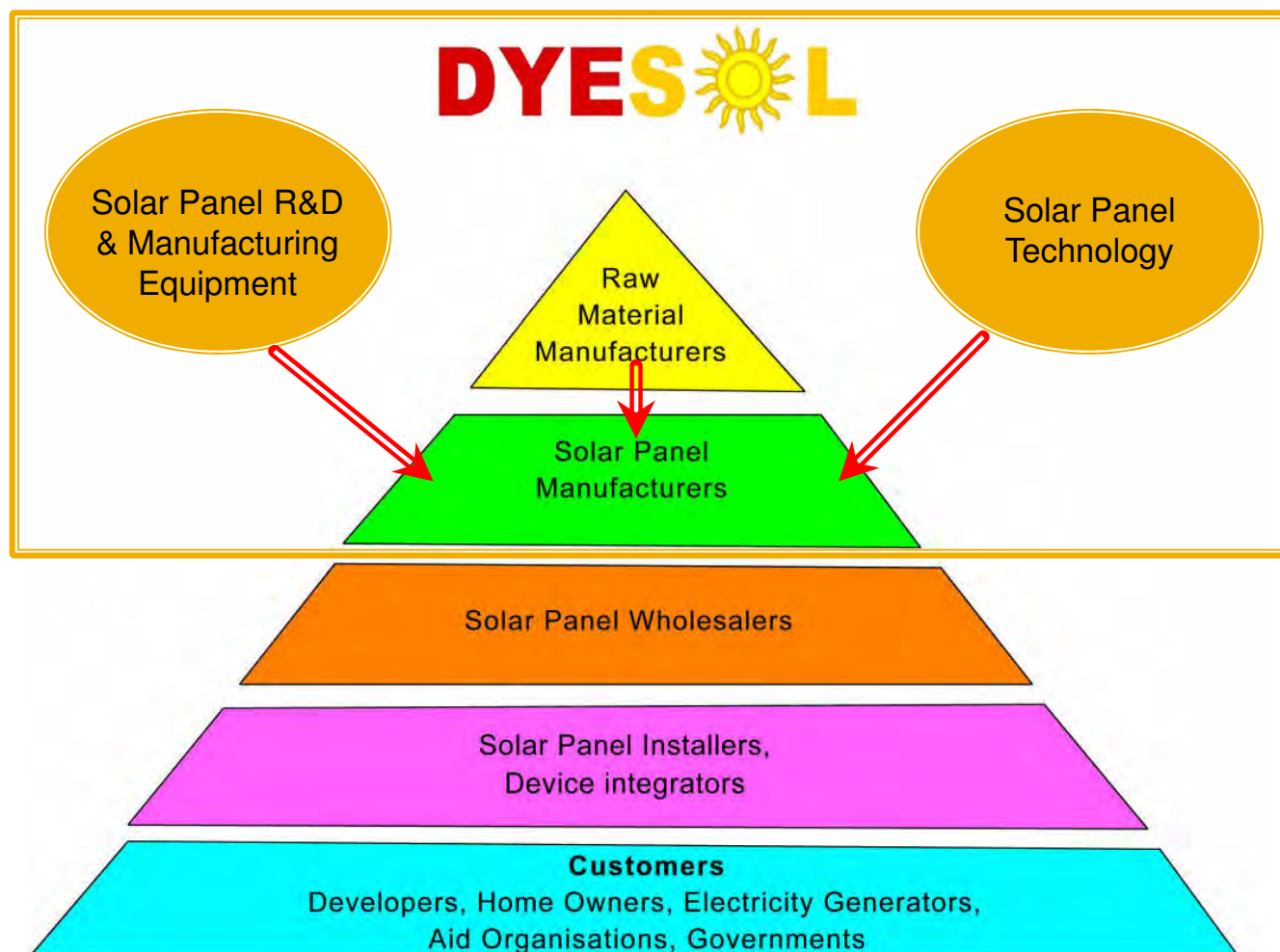


## ***Dyesol's Business Model...***

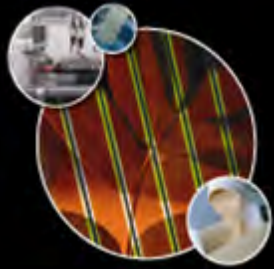
- Focused on the Development of DSC Technology
- Collaborative Programmes On Steel, Glass, Flexibles
- Largest Producer of DSC Materials World Wide
- Joint Development for New Products/Applications/Devices
- Guarantee Supply of Key Materials and Material Suites
- Provide Technology Support/Solutions to Projects
- Provide Access to IP Needed to Meet Commercial Goals
- Provide a Rapid Entry to World-Wide Markets



# Dyesol's Business Model



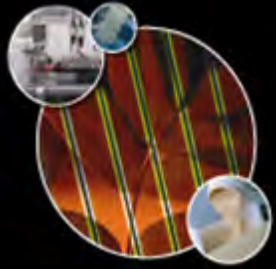
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## ***DSC Addressable Market***

**2015**

- Consumer Electronics est. = \$15B/annum
- BIPV Façade – \$20B to \$200B/annum based on green building forecasts
- Steel Roofing – \$30B to \$250B/annum based on green building forecasts



## ***Key Partners and Projects***

### **Key Strategic Partnerships**

- ❑ **Tata Steel - 6<sup>th</sup> largest Steel Company world-wide, part of the Tata Group - Solar Steel Coil Coating Process.**

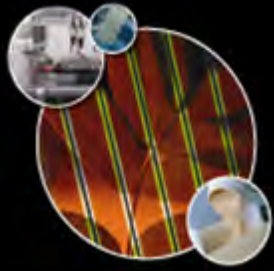
**Objective: 20M m<sup>2</sup> of DSC Steel Building Products Per Year**

- ❑ **DTS - JV Dyesol & Pilkington North America - one of the world's largest manufacturers of glass and glazing products.**

**Objective: Develop and Commercialize Glass Based Commercial Products**

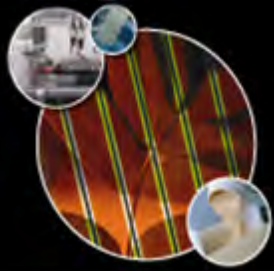
### **Key Collaborative Partnerships**

- ❑ **Merck (Japan), NIMS (Japan), SAM (Singapore), Est. R&D Center Japan, 2011.**



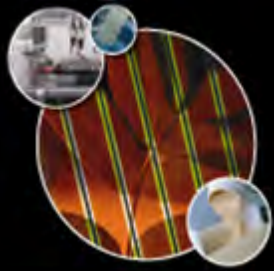
# ***Dyesol in Japan.***

- Dyesol Supply Relationships – 2003
- Dyesol Sales Agency – 2006
- Dyesol Japan KK – 2009



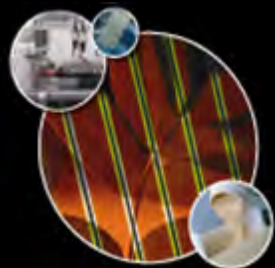
# ***Dyesol Japan Future.***

- Dyesol R&D Collaboration – 2010
- Dyesol R&D Center – 2011



# *Why Japan.*

- Established Long Term Relationships
  - Materials Supply
  - Equipment Supply
  - Product Development Collaborations
- World Leading R&D in DSC
  - Chemistry – dyes, electrolytes, nanoparticles, catalysts, conductors
  - Engineering – process optimisation
  - Electronics – integrated devices



# Advantages of DSC = Better Performance in Diffused light – Real World Conditions



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Journal of Photochemistry and Photobiology A: Chemistry 164 (2004) 203–207

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## Outdoor performance of large scale DSC modules

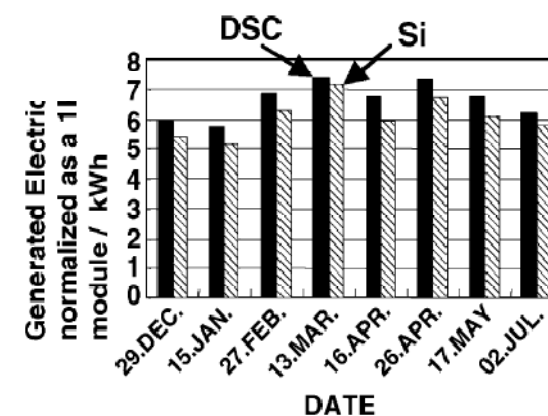
Tatsuo Toyoda<sup>a,1</sup>, Toshiyuki Sano<sup>a</sup>, Jyunji Nakajima<sup>a</sup>, Syouichi Doi<sup>a</sup>, Syungo Fukumoto<sup>a</sup>,  
Atsushi Ito<sup>a</sup>, Tomoyuki Tohyama<sup>a</sup>, Motoharu Yoshida<sup>a</sup>, Tetsuo Kanagawa<sup>a</sup>,  
Tomoyoshi Motohiro<sup>b,\*,2</sup>, Tohru Shiga<sup>b</sup>, Kazuo Higuchi<sup>b</sup>, Hiromitsu Tanaka<sup>b</sup>,  
Yasuhiko Takeda<sup>b</sup>, Tatsuo Fukano<sup>b</sup>, Naohiko Katoh<sup>b</sup>, Akihiro Takeichi<sup>b</sup>, Kensuke Takechi<sup>b</sup>,  
Masahito Shiozawa<sup>b</sup>

<sup>a</sup> Division of Energy Engineering, AISIN, SEIKI Co., Ltd., 2-1, Asahi cho, Kariya shi, Aichi 448 8650, Japan

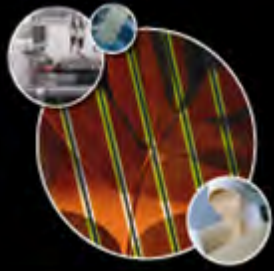
<sup>b</sup> Research-Domain 34, Materials Division, TOYOTA Central R&D Laboratories Inc., Nagakute-cho, Aichi 480-1192, Japan



“DSC modules yearly generated 10–20% more electricity than conventional crystalline-Si modules of the same rated output power.”

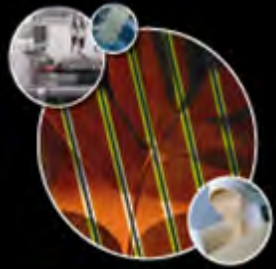


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# ***Dyesol R&D Center***

- R&D of Next Generation of DSC Materials and Processes to Fulfil the Requirements of Dyesol's Many Global Partners e.g. Tata Steel, Pilkington.



# *Thank You*



Photographer - Thomas Bloch

