

## Australian Excellence in Sustainability Distributed Around the World

The world needs global energy solutions capable of delivering gigawatts of electricity.

Dye solar cell (DSC) technology is a leading candidate because it uses plentiful, inexpensive, safe raw materials, and requires less energy to manufacture its solar panels.

The Dyesol group is the world leader in development and industrialisation of 3<sup>rd</sup> generation photovoltaics - solar cells that mimic nature – based on the principles of photosynthesis and nanotechnology. These 3<sup>rd</sup> generation devices are sometimes termed organic photovoltaics, and more accurately dye solar cells (DSC). DSC has several advantages over the classical silicon cells and the more recent thin film technologies:

- Better performance in normal solar conditions
- Can be used at any angle or even in shade, with output voltage constant
- Low temperature dependence
- Range of natural colours and can be transparent translucent or opaque
- Bifacial performance and non-reflective
- Low energy of manufacture
- Clear path to grid parity

These advantages provide DSC the broadest possible range of applications including:

- Building Integrated PV with particular advantage on façades – an untapped building product market
- Low cost metal roofing particularly for large structures such as distribution warehouses, malls and airports
- Infrastructure such as highway noise barriers, bus shelters, carparks, marine buoys, street lights
- Remote power where regular full sun is not readily available
- Consumer and professional electronic power, indoor security power such as motes and displays
- Fashion goods with integrated PV

Dyesol was founded in 2004 to globalise the results of research and development carried out in Australia for the previous ten years on DSC and related nanotechnology.



More than 500 person-years of scientific endeavour resulted in a portfolio of IP encompassing all aspects of DSC technology, materials, components, device design device manufacture, manufacturing equipment, test procedures and equipment. The Dyesol team had established the first industrial pilot plant for DSC in the world in 2001 and produced demonstration products. Dyesol is now represented or has subsidiaries in 17 countries/regions, of which the major initiatives to date are in Europe and East Asia. Australia remains the centre for new technology development and initial scale up studies, while products and materials will be manufactured wherever the market demand is strong. Dyesol also forms alliances with world leading materials companies for contract manufacture and collaborative development of next generation DSC materials.

Dyesol, through its technology and commercial centres in key countries such as Italy and UK, is a core player in the new generation of renewable energy, 3<sup>rd</sup> generation biomimetic nanotechnology photovoltaics.

*DYESOL*

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