

Fact Sheet

Sliver® cells



Clean energy. Renewable energy. Origin Energy's revolutionary Sliver® cell technology.

Sliver® cells are a new, and revolutionary solar photovoltaic technology, opening up a broad range of module architectures and innovative application possibilities.

Substantially thinner than most solar cells yet highly efficient

Using innovative manufacturing techniques, cells less than 70 microns thick are micro-machined from monocrystalline silicon. This substantially reduces processing effort and silicon use.

Sliver® cells have demonstrated efficiencies of over 19%. Modules tested by the US Sandia National Laboratories show efficiencies of 13.8% with a 50% coverage ratio. A 100% coverage ratio module resulted in an efficiency of 17.7%.

Radically different in size and shape

The size, flexibility and perfectly bifacial nature of Sliver® cells create opportunities for a wide variety of module architectures and applications.

These applications include Building Integrated Photovoltaics (BIPV), semi transparent flexible modules and portable devices.

Dramatically reduces expensive silicon use

Sliver® cell technology uses 90% less silicon than conventional crystalline silicon wafer technologies, at around 1.3-1.6 ton/MW, yet delivers commercially competitive cell and module efficiencies.

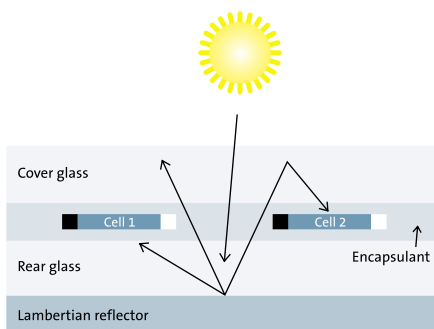
Origin Energy's revolutionary Sliver[®] cell technology

Ultra-thin monocrystalline, bifacial Sliver[®] cells reduce the amount of silicon used in solar panels by up to 90% and allow new and innovative solar applications.



Left: Demonstrating a small solar module and the flexibility of an individual Sliver[®] cell.

Pictured above, Sliver[®] cells are micro-machined to less than 70 microns thick from monocrystalline silicon



The narrow width and the bifacial nature of the Sliver[®] cell enables the cells to be spaced, reducing silicon use further.

Module efficiency and transparency

Using a reflective scattering layer at the rear of the module, the narrow width and bifacial nature of the Sliver[®] cell enables the cells to be spaced out, thereby reducing silicon use further, with only a small fraction of light escaping from the module.

These features can be exploited in novel module designs in which 50% or less of the module surface is covered with cells, yet up to 85% of the incident light is still captured by the cells.

Removal of the scattering reflector opens up a number of opportunities in semi-transparent or transparent applications. For example, modules for architectural applications could be readily fabricated with any desired degree of transparency.

The perfectly bifacial response gives greater energy output

For applications where there is relatively little obstruction of sunlight, the bifacial nature of Sliver[®] cell modules provides a

substantial advantage over conventional monofacial panels in terms of annual energy production for a variety of panel mounting configurations. This feature, combined with the optional transparency of Sliver[®] cell modules, allows for novel applications in road sound barriers and other building applications.

A low temperature coefficient means higher module efficiencies

The low absorptivity of the Sliver[®] cell module, due to the gap between encapsulated cells, allows Sliver[®] Cells to operate around 5°- 6°C cooler compared to conventional silicon PV modules, this improves the efficiency of the module at normal operating temperatures. Testing confirms that modules exhibit a higher efficiency, with a low voltage-temperature coefficient of -2.0mV/°C.

Sliver[®] cells are also more tolerant to partial shading than conventional modules.



Sliver® cell : TRANSPARENT

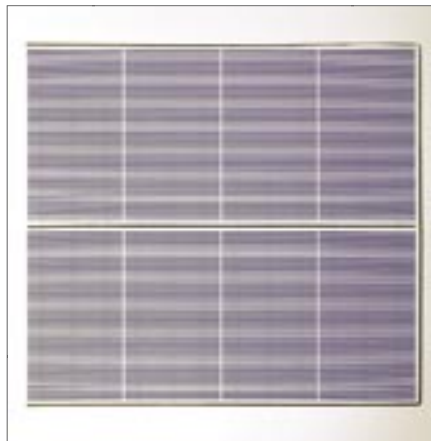
Sliver® cell : FLEXIBLE

Sliver® cell : BIFACIAL

If you are looking for high efficiency cells for BIPV, flexible or transparent applications then Sliver® cells are ideal. The ability to space Sliver® cells means that visually pleasing and innovative transparent modules are a reality. The characteristics of the cells create potential for a broad range of applications.



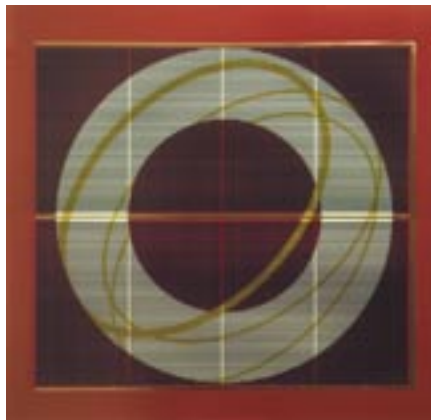
Pictured above, lightweight 0.6 Volt Sliver® cells are ideal for charging portable battery powered devices.



Sliver® cell : MONOCRYSTALLINE

Sliver® cell : HIGHLY EFFICIENT

Next generation solar technology with the reliability of monocrystalline silicon. Sliver® cells uses the best and most reliable solar technology while reducing the silicon content by up to 90%.



Sliver® cell : INNOVATION

The rear reflector of a standard Sliver® panel can be customised to your needs. This means you can create panels for sensitive heritage locations to minimise visual impact or create innovative designs featuring logos or pictures.

New application possibilities

- Transparent Sliver® cell panes for BIPV applications
- Roadside noise barriers utilising the bifacial nature of the Sliver® cell
- Small area / low powered – consumer and industrial applications
- Customised and conformable shape applications
- Multi-Coloured Chamelon™ Modules (pat pending)
- High voltage applications



About Origin Energy



With a history dating back 140 years, Origin Energy is one of Australia's leading energy providers with a market capitalisation of over US\$2 billion. The company participates in most segments of the energy chain including natural gas exploration and production; power generation; and energy retailing and trading. Origin Energy supplies energy to more than two million homes and businesses across Australia and is Australia's second largest energy retailer.

The company is one of the leading national retailers of grid-connected solar systems. In December 2003 Origin Energy announced construction of its US\$15 million solar photovoltaic manufacturing plant located in Adelaide, Australia.

Origin Energy's Solar Plant

Designed to produce 7MW of PV modules per year initially, the plant will be readily expandable to 25MW per year. Solar PV modules incorporating the new Sliver® cell technology will be commercially available in the first quarter of 2005. Sliver® cell modules will suit applications such as powering homes and telecommunications in grid connected and remote locations.

Interested?

If you have an application that may suit the unique properties of Sliver® cell technology, and are interested in becoming an application development partner, Origin Energy would like to hear from you.

We are also seeking expressions of interest from other interested commercialisation parties, including distribution partners and investors, who believe they can add value in accelerating the penetration of this technology into the global energy marketplace.

Advance orders are also welcome.

Contact

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