

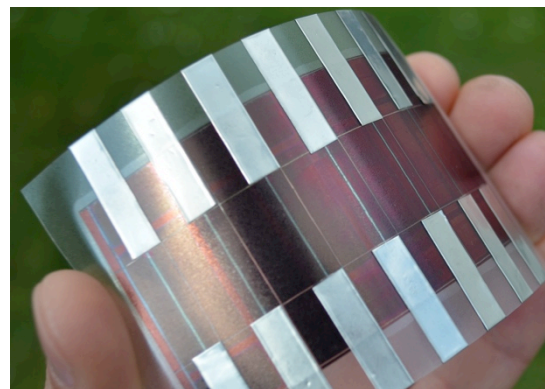
The Eight19 Investment Premise

Eight19 is bringing to commercial reality a new generation of Printed Plastic Solar Cells developed at the world-renowned Cambridge University in the UK.

The solar cell market has grown at a CAGR of 65% over the last 5 years, reaching \$38Bn in 2009. Today the majority of solar production is on glass plates using processes that require labor and energy intensive fabrication methods and hundreds of millions or billions of dollars of capital for each factory. Despite the huge investment in solar technology in the last decade it still only represents a fraction of a percent of global power generation and the high cost of plant means the conventional industry has a major scaling problem.

Plastic solar cells use organic chemistry and room temperature printing processes to make solar cells on continuous flexible thin films in a non-stop process. These have the ability to run at high speed, similar to machines printing newspapers, reducing the manufacturing costs of solar cells to a fraction of existing technologies while correspondingly increasing the volume output.

Eight19 is pioneering the commercialization of these plastic solar technologies to create a new generation of lightweight, flexible, lower cost solar cells aimed at the rapidly growing market for smaller "off-grid" solar power applications. This approach offers low manufacturing costs and forecast plant capital costs a factor of 10 lower than conventional techniques for the same output capacity.



Flexible plastic solar cell

The company has a clear position in the value chain as a manufacturer of solar cells on a roll for supply to tier-1 OEMs that integrate solar cell modules into end products for their selected markets. The robustness, low weight, flexibility and ease of customization combine to make the product a significant step up from existing solutions for the intended markets.

Eight19 is an early stage business that received a Series A investment of £4.5M (\$7M) in September 2010 from the Carbon Trust and French chemical manufacturer, Rhodia. Eight19 will be sampling cells in 2012 and expects commercially viable solar cells to be manufactured in 2013. The company will seek a Series B round in 2012.

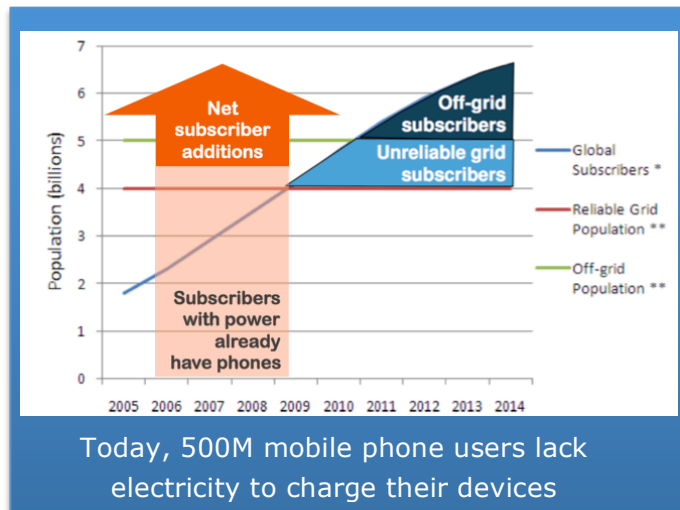
Target Market

The conventional solar market is characterized by on-grid power generation, be it in domestic applications or at utility scale. However, there exists a very large and broadly untapped market for off-grid solutions that will benefit from solar power.

The “off-grid” emerging market is huge and long-lived. Today there are some 1.5Bn people without access to electricity worldwide and this number is predicted to remain persistently high at about 1.2Bn individuals in 2030. In some areas, particularly Africa, population growth is predicted to outstrip electrification rates, actually increasing the number of people without electricity.

At first glance it might appear that such consumers would lack the disposable income to represent a viable market but this is not the case as the following examples demonstrate.

Mobile phone charging: Today over 500M people can afford to run their mobile phones yet have no access to electricity. Instead, according to the industry body the GSM Association, users spend \$15-35/year simply on charging their phones in many emerging economies. Low cost solar-based chargers have a payback time of months and can be provided using the same channels as mobile phones and plastic solar cells are ideally suited to this market.



Off-grid lighting is another important market opportunity with a current spend of some \$37Bn/year on fuel-based lighting according to the World Bank. Individuals routinely spend up to \$50/year on fuel to power lanterns that can be replaced with solar powered lights. Even at a market price of \$35, these lanterns have a payback period of less than 2 years and it is expected that with the reduction in cost of LEDs and cost reductions from low cost solar cells, these lanterns are expected to achieve end user price points between \$10-20 within 18 months, enabling explosive growth in the market. Eight19’s printed plastic solar cells are ideally suited to these products and discussions are well advanced with suitable OEM integrators.

These high volume, moderate cost products act as an on-ramp for the company’s commercial roll-out. As the technology matures and product lifetimes extend, so the plastic solar cells will be applied to wider markets including building-added applications world-wide.

The Eight19 Solution

Eight19 is developing roll-to-roll manufacturing capability to fabricate plastic solar cells. The company has assembled a team of experts from all the key areas of required expertise, including cell design, high throughput testing, coating and printing techniques and organic chemistry.

The materials needed for organic solar cells are being developed by the major chemical companies world-wide, where rapid progress is being made and efficiency is increasing quarter on quarter. Already materials have been demonstrated with efficiencies of 8% or greater from several manufacturers and reported efficiencies are increasing at over 1% per year.

Eight19 is focusing on the next step in the process, fabricating solar cells from these chemicals. The cost, efficiency and lifetime of plastic solar cells depends intimately on the design of the module, the selection of the chemicals and the processing techniques used. Within each of these areas there is a large body of IP that is needed to make successful devices. Some of this IP is formally protectable using patents and some relies on a large number of in-house trade secrets that are difficult for an external company to copy even if they reverse engineer the resulting product. The design and manufacturing expertise that enables reliable, efficient, cost-effective solar cells to be made is the core of Eight19's differentiator.

In addition to internal R&D, Eight19 has a pipeline agreement with the University of Cambridge, giving the company first option to acquire exclusive rights to all of the IP resulting from some 50 researchers at the University in the field of plastic solar cells.

The company has the following near term milestones:

- Q1 2011 Build out of a 2000 Sq. Ft. clean room and achievement of small plastic solar cells within the facility [achieved on schedule and budget]
- Q2 2011 Commissioning of high throughput robotic test facility
- Q3 2011 Commissioning of high speed, multi station reel-to-reel printing machine
- Q1 2012 First roll-to-roll plastic solar cell modules

Routes to Market

Eight19's role is to manufacture solar cells on a roll, sold to tier-1 OEM/integrators whose low cost consumer manufacturing capability and go-to-market channels complement Eight19's product offering. The company has established relationships with a number of leading OEMs and validated both the market opportunity and eight19's product specifications.

For example, the mobile phone chargers have an established channel hierarchy involving a combination of handset vendors, operators and independent retailers. A solar charger can be considered to be a straight replacement for existing products and use the same channels. Solar lanterns have a more complex channel, comprising both retail and government-subsidized distribution. Nevertheless, with over 1 million lanterns sold in India alone by end 2010, it is clear that substantial routes to market have been established.

The role of manufacturer of solar modules on a film enables Eight19 to retain significant value and at the same time minimizes the potential IP retention issues that would otherwise be associated with licensing if manufacturing were to be done by a 3rd party subcontractor / licensee. Initial estimates suggest that the manufacturing represents only about 10% of the end-product cost of the film (the majority being in the materials) and therefore the benefits of in-house control and responsiveness outweigh the limited economic advantage in offshoring manufacturing.

Conclusion

Eight19 is an exciting opportunity in the field of plastic solar cells. The market demand is clear and printed plastic technology has many advantages that will allow solar technology to grow to a mass market without the prohibitive capital costs and material supply issues that restrict more conventional approaches.

Today no company has commercially viable plastic solar cells on the market. Eight19 benefits from IP from Cambridge University that shows significant promise in addressing some of the known issues with the technology. The company is organised to commercialise this technology by developing the manufacturing processes and device designs that will make printed solar technology a reality.

Eight19 has a well-defined 5 year plan which takes the company into profitability based on a volume manufacturing capability. The company raised a series A round of £4.5M in September 2010. The company will seek to raise £7M between 2012 and 2014, in tranches as company milestones are met, spread between existing and new investors.

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