

OPTICAL FILM FOR ULTRA-LOW-COST SOLAR CONCENTRATORS

LEAD ORGANISATION

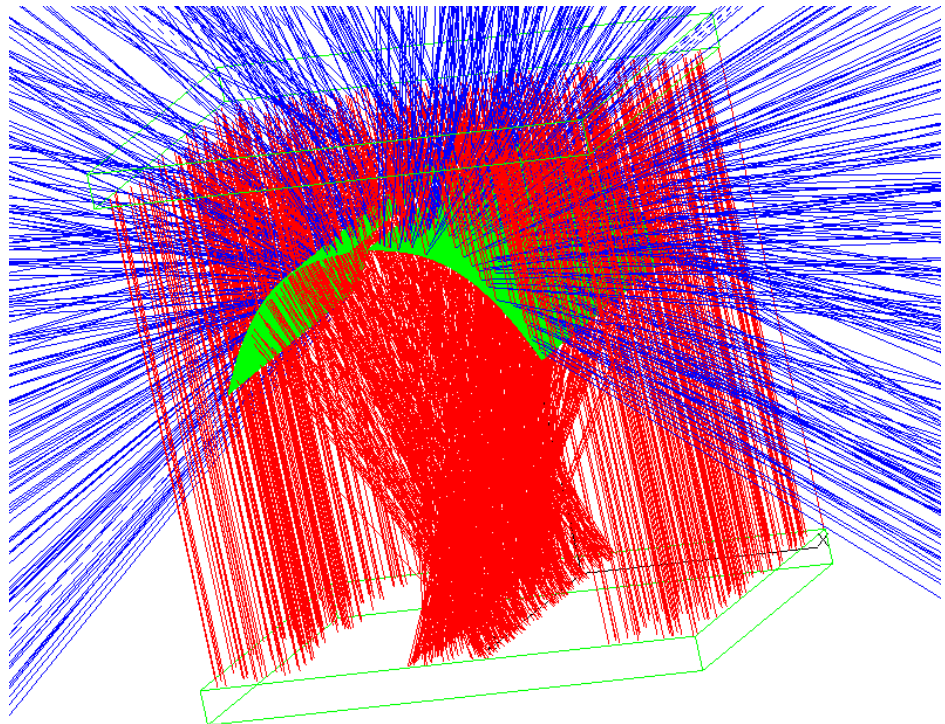
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COST AND DURATION

The Carbon Trust
contribution towards this
project is £176,372. The
project started in June 2006
and is due for completion in
June 2008.

PROJECT REFERENCE NUMBER

051-109



Linear concentrator modelling image

OBJECTIVES

To develop an ultra-low-cost solar concentrator based on an optical film that is manufactured using a reel-to-reel process

SUMMARY

Solar concentrators offer advantages for photovoltaic (PV) and solar heating applications. For PV, they may significantly decrease the total cost by reducing the area of expensive PV solar cells required for a particular power output, so long as the additional elements of the system are themselves low cost. In solar heating, they offer the potential for heating systems which can operate earlier in the day and for longer periods of the year. However, concentrator systems can be expensive, and require enclosures, lenses and active solar tracking.

Therefore, the design and manufacture of the concentrators must be very carefully considered and new technologies incorporated to achieve the desired overall system goals. In particular, low initial overall costs, low maintenance and sufficient lifetimes are required.

The film developed in this project will have a micro-prismatic fresnel lens on the inner side and a self-cleaning film on the outer side. The film concentrator will be integrated with energy production (PV cells, evacuated tube solar heating and solar hydrogen cells) and sun tracking. Its performance and cost benefits will be examined in detail and updated throughout the project. At the end of the project, the best technical approach and optimal way to produce such an ultra-low-cost concentrator and its role in solar power generation will be clear. Microsharp and its partners will then move forward, where results indicate, to develop a commercial system.

