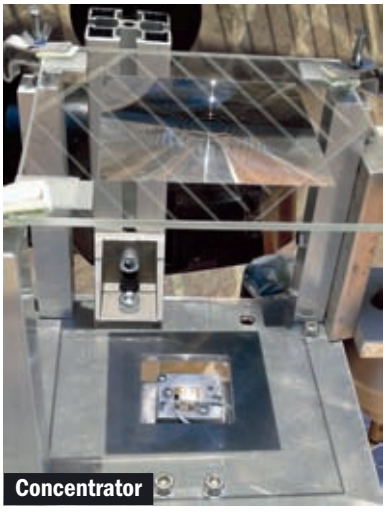
The Ecosole project

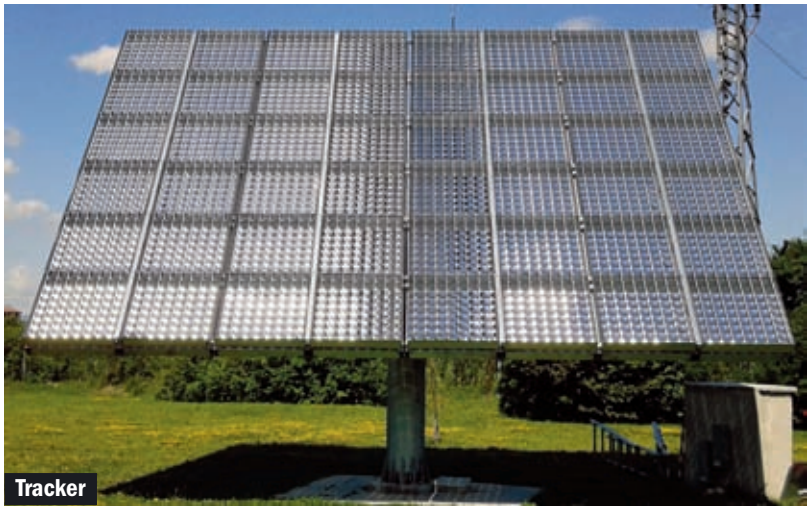
From Becar (Beghelli Group) high concentration photovoltaic generators

The Ecosole project is focused on design, development, industrial prototyping and field experimentation of high solar concentration photovoltaic generators. The purpose of the project is to demonstrate the competitiveness of the Hcpv (High Concentration Photo-Voltaic), through the use of photovoltaic cells with high conversion efficiency and high concentration factor (>1000X), the effective production of photovoltaic modules, construction of self-adapting solar trackers and power conversion optimization. High concentration photovoltaic generators offer great advantages when building large-sized solar farms in geographical regions with a high direct insulation (such as desertified areas). The advantage of these systems as against standard photovoltaic systems derives from a greater conversion efficiency (+50%), improved exploitation of the surface area due to a high yield, simple, rapid installation of large solar farms without the necessity of cooling water, power generated continually throughout the insulation hours, possibility of using the land where the installation stands in other ways. The Ecosole project is coordinated by Becar Srl, a research and development company in the Beghelli Group already operating for several years in the photovoltaic sector, in a consortium comprising famed European research institutes and enterprises: Enea (Portici solar research centre in Napoli), Universidad Politecnica di Madrid Upm (solar research centre in Madrid), Fundacion Tecnalia Spagnola (alternative Energy R&I), Ben Gurion University Israel (Pv research centre Negev desert), German Oec AG (optical design), German Evonik Industries AG (optical component production), Plamtex Slovenia (plastic moulding) and Aurel Spa (hybrid technology development). The European Funding Division at Warrant Group has been working as a consultant since the project's concept and still assists the consortia in project management. The new high concentration photovoltaic module comprises 72 high performing cells (>40%) on which glass special lenses concentrate the sun over 1,000 times. Each module has a power of about 200W. Over 120 modules, with peak power exceeding 25kW, are assembled on a solar tracker, measuring about 110 square metres, on a pole that keeps them aligned with the sun with an angular precision grade of less than a tenth. Energy is converted by innovative devices rendering the numerous modules independent one from the other to guarantee maximum production under all conditions. Trackers can be easily installed as a matrix on all types of land, rapidly building plants with a range of MW power. The project, the only one led by Italians and classified in first place amongst the 12 projects funded by the call Energy2011, is valid for 3 years, ends in the second half of 2015, is co-funded by the European Union under the VII Framework Programme (Ener/FP7/295985) and is entitled "Elevated Concentration photovoltaic solar energy generator and fully automated machinery for high throughput manufacturing and testing".

PH. BECAR



Concentrator



Tracker