

Profile View

Details

Title:	Performance simulation tool for concentrated solar power systems
POD Reference:	TOIT20131210001
Summary:	An Italian research team, dealing with software applications in renewable energy field, developed a software tool that perfectly fits the need to measure and analyse the performance of solar receiver systems. The group is interested in finding companies or engineers willing to implement the simulation tool within the plants they are designing, through technical cooperation agreements.
Description:	<p>Concentrated solar power is a clean, efficient and competitive renewable energy source that represents an alternative to fossil fuels. Compared to other sources, concentrated solar power offers the possibility to store thermal energy, ensuring continuity and predictability of production necessary for industrial needs.</p> <p>Concentrated solar power fields are made of several hundreds of mirrors called "heliostats", that are placed around a central receiver which examines the collected solar power.</p> <p>In the actual implementation, solar fields can be made of both planar and concave heliostats, that may be mixed together; attention is given to grant the maximum flexibility concerning the number, size, shape and respective position of the heliostats.</p> <p>Fundamental to measure the performance of the solar field, is the orientation of the heliostats, and with respect to this special item, numerical simulation can give a great impact in designing well performing solar power plants.</p> <p>An Italian research team has developed a flexible solution to measure performance of central receivers by applying numerical simulation. This thanks to a deterministic mathematical model that represents an alternative to existing statistical models both in the representation of the solar field and in the simulation of multi-tower systems with variable number of towers, height, position and concavity of heliostats.</p>
Advantages and Innovations:	<ul style="list-style-type: none"> - More accurate than existing mathematical models; - Flexible in defining number, position, height and geometry (flat or concave surface) of the heliostats; - Flexible in defining number, position and height of the towers; - Accuracy in the delineation of shadows (to avoid blocking effects) increases with the level of tessellation of the surface of heliostats.
Stage of Development:	Field tested/evaluated
IPR status::	Copyright
Profile Origin:	National R&D programme

Keywords

Technology Keywords:	001002006 Computer Software 002006009 Simulation, Simulation Engineering 004001001 Heat storage 004005006 Solar/Thermal energy 005004003 Statistical Analysis
Market Keywords:	002007026 Other software services 006005001 Solar energy 006008 Energy Conservation Related 008002001 Energy management 008006 Industrial Services
NACE Keywords:	J.62.0.9 Other information technology and computer service activities

Partner Sought

Type and Role of Partner Sought:	The research group is looking for designers, engineers, and companies interested in applying the tool developed within their own plant; technical cooperation agreements are envisaged.
Type and Size of Partner Sought:	>500 >500 MNE 251-500 SME <10 SME 11-50 SME 51-250
Type of Partnership Considered:	Technical cooperation agreement

Client

Type and Size of Client:	R&D Institution
Already Engaged in Trans-National Cooperation:	Yes
Languages Spoken:	English
Client Country:	Italy

Dissemination

Sector Group:	ICT Industry and Services
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