Direct Normal Irradiance Nowcasting methods for optimized operation of concentrating solar technologies

Fact Sheet

Project information

DNICAST
Grant agreement ID: 608623
Project website
Status
Closed project
Start date
15 October 2013
End date
14 October 2017

Funded under:
FP7-ENERGY
Overall budget:
€ 3 778 616,29
EU contribution
€ 2 994 758,08
Coordinated by:
OBSERVATOIRE MEDITERRANEEN DE L'ENERGIE
France

Objective

Concentrating solar technologies (CST) have proven to be very efficient sources of “clean” power for the electrical grid. The efficient operation of concentrating solar technologies requires reliable forecasts of the incident irradiance for two main reasons. First, such forecasts yield a better management of the thermodynamic cycle because it becomes possible to dynamically fine tune some of its parameters such as the flow rate of the working fluid or the defocusing mirrors. Second, the electricity production can be optimally connected to the grid.

Currently, forecasts are made by several techniques, which have their own merits and drawbacks. The uncertainty in the forecast of the DNI is still too large and must be reduced. Therefore, we propose a concept of portfolio of innovative or improved methods and possibly hardware that can be assembled by company experts to answer the specific needs of a given plant.

To fulfil the objective, the Consortium will follow a strategy based on interactions with potential users of the system nowcastings, i.e., the plant operators. Requirements expressed by users will be collected and then converted into requirements on optical properties of the clear atmosphere and clouds for the design or improvements of methods. Users’ feedback on the advances will be later collected in the course of the project where intermediate results will be shown. A final workshop will be held for the demonstration of the
final version of the methods and their combinations. Additionally, bilateral face-to-face meetings will collect technical views that cannot be expressed in a general forum comprising competitors. These individual meetings will help in addressing the issue of the further commercial exploitation of the assembled know-how. A detailed plan for the scientific dissemination was developed.

Field of Science

/engineering and technology/electrical engineering, electronic engineering, information engineering/electrical engineering/power engineering/electric power distribution

Programme(s)

FP7-ENERGY - Specific Programme "Cooperation": Energy

Topic(s)

ENERGY.2013.2.9.2 - Methods for the estimation of the Direct Normal Irradiation (DNI)

Call for proposal

FP7-ENERGY-2013-1

See other projects for this call

Funding Scheme

CP - Collaborative project (generic)

Coordinator

OBSERVATOIRE MEDITERRANEEN DE L'ENERGIE

Address

Rue Des 3 Fontanot 103-105
92000 Nanterre
France

Activity type

Research Organisations

EU Contribution

€ 539 290

Website

Contact the organisation

Administrative Contact

Houda Ben Jannet Allal (Dr.)

Participants (11)
<table>
<thead>
<tr>
<th>Organisation</th>
<th>Country</th>
<th>EU Contribution</th>
<th>Address</th>
<th>Activity type</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUNDACION CENER</td>
<td>Spain</td>
<td>€ 127 129,89</td>
<td>Avenida Ciudad De La Innovacion 7, 31621 Sarriguren</td>
<td>Research Organisations</td>
</tr>
<tr>
<td>PANEPISTIMIO PATRON</td>
<td>Greece</td>
<td>€ 153 996,75</td>
<td>University Campus Rio Patras, 265 04 Rio Patras</td>
<td>Higher or Secondary Education Establishments</td>
</tr>
<tr>
<td>IMMO 14 GENOSSENSCHAFT</td>
<td>Switzerland</td>
<td>€ 87 526</td>
<td>Fabrikstrasse 14, 3012 Bern</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
</tr>
<tr>
<td>Organisation</td>
<td>Address</td>
<td>EU Contribution</td>
<td>Activity type</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>---------</td>
<td>----------------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>ASSOCIATION POUR LA RECHERCHE ET LE DEVELOPPEMENT DES METHODES ET PROCESSUS INDUSTRIELS</td>
<td>Boulevard Saint Michel 60, 75272 Paris</td>
<td>€ 258,581.94</td>
<td>Research Organisations</td>
<td></td>
</tr>
<tr>
<td>Rheinisches Institut für Umwelt-Forschung an der Universität zu Köln e.V.</td>
<td>Aachener Strasse 209, 50931 Köln</td>
<td>€ 43,040</td>
<td>Research Organisations</td>
<td></td>
</tr>
<tr>
<td>Sveriges Meteorologiska och Hydrologiska Institut</td>
<td>Folkborgsvägen 1, 601 76 Norrköping</td>
<td>€ 308,487.24</td>
<td>Public bodies (excluding Research Organisations and Secondary or Higher Education Establishments)</td>
<td></td>
</tr>
</tbody>
</table>

Administrative Contact:
- Florence Thépenier (Mrs.) for ASSOCIATION POUR LA RECHERCHE ET LE DEVELOPPEMENT DES METHODES ET PROCESSUS INDUSTRIELS
- Hermann Jacobs (Dr.) for Rheinisches Institut für Umwelt-Forschung an der Universität zu Köln e.V.
- Monica Wallgren for Sveriges Meteorologiska och Hydrologiska Institut
DEUTSCHES ZENTRUM FÜR LUFT- UND RAUMFAHRT EV
Germany
EU Contribution € 987,136.33
Address Linder Hoehe 51147 Koeln
Activity type Research Organisations
Website
Contact the organisation
Administrative Contact Miriam Schuster (Mrs.)

LEIBNIZ INSTITUT FÜR TROPOSPHERENFORSCHUNG e.V.
Germany
EU Contribution € 32,929.87
Address Permoserstrasse 15 04318 Leipzig
Activity type Research Organisations
Website
Contact the organisation
Administrative Contact Ina Tegen (Prof.)

CENTRO DE INVESTIGACIONES ENERGETICAS, MEDIOAMBIENTALES Y TECNOLOGICAS-CIEMAT
Spain
EU Contribution € 249,515.06
Address Avenida Complutense 40 28040 Madrid
Activity type Research Organisations
Website
Contact the organisation
Administrative Contact Anna Collados Martin-Posadillo (Ms.)
<table>
<thead>
<tr>
<th>Organisation</th>
<th>Address</th>
<th>Activity type</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIDGENOESSISCHES DEPARTEMENT DES INNERN</td>
<td>Inselgasse 1, 3003 Bern</td>
<td>Public bodies (excluding Research Organisations and Secondary or Higher Education Establishments)</td>
</tr>
<tr>
<td>THE CYPRUS INSTITUTE</td>
<td>Constantinou Kavafi 20, 2121 Nicosia</td>
<td>Higher or Secondary Education Establishments</td>
</tr>
</tbody>
</table>

**Contact**
- **EIDGENOESSISCHES DEPARTEMENT DES INNERN**
  - Laurent Vuilleumier (Dr.)
- **THE CYPRUS INSTITUTE**
  - Nikos Mihalopoulos (Prof.)