Solid sorption cooling in tri-generation (SOCOOL)

From 2002-11-01 to 2006-04-30

Project details

<table>
<thead>
<tr>
<th>Total cost:</th>
<th>Topic(s):</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUR 2 398 109</td>
<td>1.1.4.-5. - Key action Cleaner Energy Systems, including Renewable Energies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EU contribution:</th>
<th>Funding scheme:</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUR 1 450 217</td>
<td>CSC - Cost-sharing contracts</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coordinated in:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
</tr>
</tbody>
</table>

Objective

Title: SOCOOL - Solid Sorption System for Cooling in Tri-generation

Objectives and problems to be solved: The project is focused on the development of a small-scale combined cold, heat and power (tri-generation) system, which utilises the engine waste heat for cold production. Development of this tri-generation system will lead to improved exploitation and more effective use of CHP systems. The general objective of the project is to reduce primary energy usage and to avoid CFC/HFC usage for cooling purposes. This contributes to the achievement of the Kyoto targets and to the development of more sustainable energy systems and services, to the diversity of energy supply, and will reduce the environmental impact for cooling, heating and power generation. An increase in the overall energy efficiency of tri-generation systems of 15-20% will be realised by utilisation of the waste heat of a CHP system for the production of cold by means of solid sorption cooling technology. In addition peak electricity demands for cooling purposes will be reduced. The major issue is the development of a small solid sorption system with high power density, by applying new working pairs as well as innovative system designs to achieve high rates of heat and mass transfer. The new cooling machine developed within this project will be low in cost (cheap to manufacture), will have a high efficiency, and will operate with a high reliability. Description of the work: The consortium will produce an update of market prospects, characteristics, and trends for cooling applications in the residential sector and will determine the most promising field of application for the solid sorption cooling device in a tri-generation system. Specifications for the cooling machine will be established and solid sorption working pairs will be screened, tested and selected for use in lab-scale prototypes. For the prototypes the key components of the system must be developed and tested with emphasis on efficiency, simplicity and compactness. The test results from the prototype cooling systems will lead to the final design of a cooling machine for the tri-generation system. A prototype of this tri-generation system will be constructed and tested. On the basis of the results achieved, evaluated against the required specifications, the partners will take forward a plan for further commercial development of the tri-generation system. If results are unsatisfactory, a review of the solid sorption-cooling concept will be undertaken and recommendations for further basic research produced. Expected Results and Exploitation Plans: The key milestones of the project are:- Global product specifications of solid sorption cooling system for the chosen application- Selection of two fully characterised working pairs for use in prototypes- Prototype solid sorption cooling systems + test reports- Construction and full-scale test of a prototype tri-generation system The expected result of the project is a new, well-characterised, tri-generation system both with high energy efficiency and that is competitive with conventional means for producing heating, cooling and power. The continuing existence of positive and realistic perspectives for the exploitation of the results and the continuing commitment of the partners to the objectives of the project will be a requirement for the continuation after the mid-term assessment. Information will be gathered about costs of the device and operational performance. The exploitation of the results is assured since the main subcontractor is a European company leader in the domain of thermal management and co-generation plant installation and also by the participation of CRF. Commercialisation is to be initiated by CRF together with the above-mentioned company. The other participants will assist in this commercialisation process by performing additional development work, dissemination or even testing, if necessary. In this phase an important role will be played by CRF, thanks to its relationships with other Fiat companies belonging to the Fiat Group.
Coordinator

CENTRO RICERCHE FIAT S.C.P.A
50, STRADA TORINO, 50
10043 ORBASSANO
Italy
See on map

Administrative contact: Massimo CASALI, (Public funding director)
Tel.: +39-0119083492
Fax: +39-0119083786

Participants

ENERGY RESEARCH CENTRE OF THE NETHERLANDS
3, Westerduinweg 3
1755 ZG PETTEN
Netherlands
See on map

Administrative contact: Wouter SCHATBORN
Tel.: +31-22-4564475
Fax: +31-22-4568486
E-mail

INSTITUTE OF FUNDAMENTAL TECHNOLOGICAL RESEARCH - POLISH ACADEMY OF SCIENCES
Swietokrzyska 21
00 049 WARSZAWA
Poland
See on map

Administrative contact: Jozef MIASTKOWSKI
Tel.: +48-22-8269111
Fax: +48-22-8269815

NATIONAL RESEARCH COUNCIL OF ITALY
Via Salita Santa Lucia sopra Contesse 5
98126 MESSINA
Italy
Administrative contact: Gaetano CACCIOLA
Tel.: +39-09-0624246
Fax: +39-09-0624247
E-mail
Subjects
Energy Saving - Environmental Protection - Renewable Sources of Energy

Last updated on 2005-07-28
Retrieved on 2019-07-24

© European Union, 2019