High-frequency ELectro-Magnetic technologies for advanced processing of ceramic matrix composites and graphite expansion

Fact Sheet

**Project Information**

**HELM**

Grant agreement ID: 280464

Project website [link]

**Status**

Closed project

**Start date**

1 June 2012

**End date**

31 May 2016

Funded under

FP7-NMP

**Overall budget**

€ 10 584 254,14

**EU contribution**

€ 7 151 000

Coordinated by

CONSORZIO INTERUNIVERSITARIO NAZIONALE PER LA SCIENZA E TECNOLOGIA DEI MATERIALI

Italy

**Objective**

"Lightweight ceramics and fibre reinforced ceramic composites, such as non-oxide Ceramic Matrix Composites (CMCs) and Expanded Graphite (EG), represent very promising solutions for high temperature applications in strategic industrial sectors, such as transport and energy. In fact, these materials are one of topical priorities of the European Technology Platform EuMAT and a strategic issue of the EC Research Roadmap on Materials. Huge market opportunities are expected for CMC and EG provided to overcome the
three major identified gaps: high cost, difficulty of processing and materials reliability. New and more efficient manufacturing technologies can pave the way to improve material quality, reduce processing time, converge towards near-net shape fabrication, trim energy spent and abate production costs. HELM will address these challenges by proposing innovative high-frequency electromagnetic, microwaves (MW) and radiofrequencies (RF), heating technologies for integrating and, in the long term, replacing standard thermal processing routes, i.e.: Chemical Vapour Infiltration (CVI), Liquid Silicon Infiltration (LSI), Polymer Impregnation and Pyrolysis (PIP), and Graphite Exfoliation (GE). MW/RF heating owns peculiar features (rapid selective bulk heating, reversed thermal gradients, more homogeneous heat distribution) that will enhance materials performance. It can bring 60% processing time reduction (or even higher), with subsequent trimming of production costs, and cut of energy consumption up to 50-60%.

HELM RTD activities involve some of the principal European experts in the field, including research institutes, innovative SMEs, and end-users for industrial validation. A full product assessment, including energy and cost evaluations, will be performed through proper Life Cycle Assessment and thermo-economical analysis. A risk assessment and management plan is included to mitigate innovation related risks and reduce the time to market of the new solutions."

**Field of science**

/engineering and technology/materials engineering/composites
/social sciences/economics and business/business and management/commerce
/engineering and technology/materials engineering/ceramics
/natural sciences/chemical sciences/inorganic chemistry/inorganic compounds
/social sciences/social and economic geography/transport

**Programme(s)**

**Topic(s)**

**Call for proposal**

FP7-NMP-2011-LARGE-5

**Funding Scheme**

CP-IP - Large-scale integrating project
Coordinator

CONSORZIO INTERUNIVERSITARIO NAZIONALE PER LA SCIENZA E TECNOLOGIA DEI MATERIALI

Address
Via Giusti 9
50121 Firenze
Italy

Activity type
Research Organisations

EU contribution
€ 644 109,25

Website
Contact the organisation

Administrative Contact
Andrea Lazzeri (Prof.)

Participants (20)

SNECMA PROPULSION SOLIDE

Address
Les Cinq Chemins
33187 Le Haillan Cedex

Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)

EU contribution
€ 68 688

Website
Contact the organisation

Administrative Contact
Jean-Eric Barbier (Mr.)

WARRANT HUB SPA

Address
Corso Mazzini 11
42015 Correggio Re

Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)

EU contribution
€ 360 960

Website
Contact the organisation

Administrative Contact
Isella Vicini (Dr.)
SCUOLA UNIVERSITARIA PROFESSIONALE DELLA SVIZZERA ITALIANA

Switzerland

EU contribution

€ 503,196

Address
Stabile Le Gerre
6928 Manno

Activity type
Higher or Secondary Education Establishments

Website
Contact the organisation

Administrative Contact
Franco Gervasoni (Mr.)

FUNDACION TECNALIA RESEARCH & INNOVATION

Spain

EU contribution

€ 482,710

Address
Parque Cientifico Y Tecnologico De Gipuzkoa
Paseo Mikeletegi 2
20009 Donostia/san Sebastian (Gipuzkoa)

Activity type
Research Organisations

Website
Contact the organisation

Administrative Contact
Jorge Barcena (Dr.)

ARCHER TECHNICOAT LIMITED

United Kingdom

EU contribution

€ 396,415,50

Address
Unit E Progress Road Sands Industrial Estate
HP12 4JD High Wycombe

Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)

Website
Contact the organisation

Administrative Contact
Calvin Prentice (Mr.)
<table>
<thead>
<tr>
<th>Organisation</th>
<th>Spain</th>
<th>EU contribution</th>
<th>Address</th>
<th>Activity type</th>
<th>Website</th>
<th>Administrative Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saïrem Iberica S.L</td>
<td></td>
<td>€ 284 720</td>
<td>Carrer De La Farga 23 08755 Castellbisbal</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
<td></td>
<td>Corinne Clavaron (Ms.)</td>
</tr>
<tr>
<td>FRICKE UND MALLAH MICROWAVE TECHNOLOGY GMBH</td>
<td>Germany</td>
<td>€ 476 662.34</td>
<td>Werner Nordmeyer Str 25 31226 Peine</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
<td></td>
<td>Marcel Mallah (Mr.)</td>
</tr>
<tr>
<td>FUNDACION CIRCE CENTRO DE INVESTIGACION DE RECURSOS Y CONSUMOS ENERGETICOS</td>
<td>Spain</td>
<td>€ 236 800</td>
<td>Parque Empresarial Dinamiza, Avda. De Ranillas, 3D 50018 Zaragoza</td>
<td>Research Organisations</td>
<td></td>
<td>Elena Calvo Gallardo (Ms.)</td>
</tr>
<tr>
<td>Organisation</td>
<td>Country</td>
<td>EU contribution</td>
<td>Address</td>
<td>Activity type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-------------</td>
<td>-----------------</td>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BREMBO SGL CARBON CERAMIC BRAKES SPA</td>
<td>Italy</td>
<td>€ 389 030</td>
<td>Viale Europa 2, 24040 Stezzano</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIRBUS DEFENCE AND SPACE GMBH</td>
<td>Germany</td>
<td>€ 282 304,16</td>
<td>Willy-messerschmitt-strasse 1, 82024 Taufkirchen</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erbicol SA</td>
<td>Switzerland</td>
<td>€ 410 898,62</td>
<td>Viale Pereda 22, 6828 Balerna</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Administrative Contact

- Emiliano Brambilla (Dr.)
- Werner Lang (Mr.)
- Sandro Gianella (Mr.)
PETROCERAMICS SPA

Italy

EU contribution

€ 601 159,06

Address

Viale Europa 2
24040 Stezzano

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Website

Contact the organisation

Administrative Contact

Massimiliano Valle (Dr.)

SCHUNK KOHLENSTOFF-TECHNIK GMBH

Germany

EU contribution

€ 480 820

Address

Rodheimer Strasse 59
35452 Heuchelheim

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Website

Contact the organisation

Administrative Contact

Sarah Heidt (Mrs.)

HERAKLES SA

France

Address

Rue De Touban - Les Cinq Chemins
33185 Le Haillan

Activity type

Private for-profit entities (excluding Higher or Secondary Education Establishments)

Website

Contact the organisation

Administrative Contact

Jean-Eric Barbier (Mr.)

IMERYS GRAPHITE & CARBON SWITZERLAND SA

Switzerland
CVT GMBH & CO KG
Germany
EU contribution € 150 000
Address
Romantische Strasse 18
87642 Halblech Buching
Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)
Website
Contact the organisation
Administrative Contact
Philipp Goetz (Mr.)

BALTIC STATE TECHNICAL UNIVERSITY VOENMEKH NAMED AFTER D F USTINOV
Russia
EU contribution € 165 313,50
Address
Ul. Krasnoarmeiskaya 1St 1
190005 St Petersburg
Activity type
Higher or Secondary Education Establishments
Website
Contact the organisation
Administrative Contact
Victor Kulik (Prof.)

UNIVERSIDAD DE ALICANTE
Spain
EU contribution
€ 153 680

Address
Campus De San Vicente
Raspeig
03690 Alicante

Website [ ]

Activity type
Higher or Secondary Education Establishments

Administrative Contact
Carolina Fernández López
(Ms.)

------------------

STEINBEIS ADVANCED RISK TECHNOLOGIES GMBH

Germany
EU contribution
€ 308 000

Address
Fangelbachstrasse 14
70178 Stuttgart

Website [ ]

Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)

Administrative Contact
Snezana Jovanovic (Dr.)

------------------

CONSIGLIO NAZIONALE DELLE RICERCHE

Italy
EU contribution
€ 485 120,56

Address
Piazzale Aldo Moro 7
00185 Roma

Website [ ]

Activity type
Research Organisations

Administrative Contact
Maurizio Picchi (Dr.)

Last update: 10 March 2015
Record number: 103660