



HELM

Newsletter

VOLUME 1, ISSUE 1

MARCH 2013

INSIDE THIS ISSUE:

Editorial	1
HELM in brief	
Inside Story	2
Past events	3
Future events	4

Editorial

Dear readers,
thank you for your interest in the HELM project and the first issue of the project newsletter, which is also published on the project website

www.helm-project.eu

On the HELM website you can also find the brochure and poster in .pdf version. HELM also has its official Facebook page where you'll find some pictures of past events and news about incoming conferences and workshops.

In this first issue you can read about three of HELM's

partners, know more about what they do and how they contribute to the HELM results.

I hope that this first issue of HELM newsletter is a first step forward to inform you about the latest news and progress along this four-years project.

I hope you enjoy reading this newsletter and we would appreciate your feedback.

Andrea Lazzeri
Project coordinator
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SPECIAL POINTS OF INTEREST:

- ◆ **HELM Website:** launched in December, you can find events, news, conferences and more.



- ◆ **HELM brochure and poster:** you can download them from the HELM website.

- ◆ **HELM is also on Facebook.** On its official page you can find an interesting contest. Vote for the best HELM picture.



HELM in brief

HELM is a large scale integrated collaborative project funded under the EU 7th Research Framework Programme.

HELM consortium comprises 19 partners from 6 European member states and 1 International Cooperation Partner Country (ICPC). The consortium gathers some of the major experts at the European level in the Ceramic Matrix Composites (CMC) and Expanded Graphite (EG) sectors. It involves out-

standing industrial leaders and several innovative SMEs. HELM will investigate advanced processing technologies based on high-frequency electromagnetic waves (MW and RF) for thermal processing/treatment of CMCs and EGs.

HELM will deliver advanced technical solutions and prove their impact and effectiveness well beyond the proof-of-concept, a major goal being the exploitations of the RTD results in relevant industrial sectors.

HELM

Grant Agreement No.:

280464

Programme acronym:

FP7-NMP

Topic:

NMP.2011.4.01 New technologies based on physical processing of materials for mechanical or electrotechnical applications

Start date: June, 1st 2012

End date: May, 31st 2016

EU contribution:

7,151,000 €

Total cost:

10,285,626 €

Brake disks

brembo SGL GROUP
CARBON CERAMIC BRAKES



Ceramic brake disk

Automotive brake disks represent the first large scale application of CMC materials. The use of this high-tech material revolutionized the brake technology: in comparison with the conventional Grey Cast Iron (GCI) brake disk the carbon-ceramic brake disk, weighs 50% less reducing the unsprung mass by almost 20 kg. Thus

there are huge market opportunities for growth and mass production of CMC brakes for future vehicles, such as electro and hybrid cars, where weight reduction of all car components is a must. CMC materials guarantee advantages in terms of performance in dry and wet conditions, weight, comfort, corrosion resis-

tance, long lifetime and technical reliability.

Electro-magnetic process technologies for LSI and pyrolysis are a promising way to converge towards faster multi-step continuous process, cut down energy consumption by about 50%, and therefore reduce production costs (up to 1 euro per rotor).

Brembo SGL Carbon Ceramic Brakes S.p.A., joint venture between Brembo SpA and SGL Brakes GmbH, is a world leader in the sector of carboceramic rotor manufacturing for high performance brake systems. In 2009 BSCCB produced about 70.000 brake rotors with 45 M Euro gross revenue.

SiC Foams



Silicon carbide foam

Porous ceramics, like innovative SiC foams, are becoming increasingly in demand from companies produce components that can withstand high temperatures and harsh environments, requiring materials with high thermal conductivity, high thermal-shock resistance and that are resistant to corrosion. Such products are gas burners, heat exchangers,

hot parts of space vehicles, radiation plates, fuel cell reformers, catalyst support among others. ERBICOL expects to exploit the advantages of the microwave liquid silicon infiltration technique to produce high quality SiC foams at lower costs. The deployment of MW-LSI furnaces, thanks to volumetric heating and reversed temperature pro-

files inside the processed coupon, shall induce faster Si infiltrations and finer Si-SiC microstructures, allowing the processing of volumetric foams and thicker samples. Finally, process time could be reduced by 60%, with energy savings up to 50% and a overall cost saving of 20-25% with respect to conventional furnaces.

Since 1998 Erbicol SA produces porous ceramics made of silicon infiltrated silicon carbide continuously improving its SiC foam quality and widening products range. Besides HELM, Erbicol is currently involved in other EU- FP7 funded research projects (CEREXPRO, THOR, SMARTEES) which aim at development of ceramic composites structures for applications in harsh or aggressive environments.

Expanded Graphite

TIMCAL
GRAPHITE & CARBON



Expanded graphite

EG outperforms non-expanded graphite and other conductive fillers in terms of thermal and electrical conductivity. EG finds application in several market segments and products: mobile energy, engineering materials, lubricants and descaling agents for hot metal forming; conductive polymer applications, flame retardants and refractory mate-

rials. Moreover, there is an enormous interest in enhancing the expansion process in order to obtain highly exfoliated graphite with properties close to those of single graphene layers. Through the new MW-EG technology TIMCAL intends to overcome the drawbacks of the current process for graphite expansion as inefficient heat exchange to the in-

tercalated graphite, the energy lost in heating the transport gas, and in the fixed atmosphere. The new process will allow to: improve the material properties, compatibility of EG with polymers or inorganic compounds; greening the process. develop a more sustainable process. Totally new applications may be viable.

TIMCAL SA (Bodio, Switzerland) headquarters of the TIMCAL Group a business unit for all carbon activities of the French Group IMERYS being a world leader for industrial minerals. TIMCAL produces high quality expanded graphite for energy applications, electrochemical storage devices, fuel cells and solar ovens.

Kick-off Meeting Bologna



**June, 6th, 2012
Royal
Hotel
Carlton –
Bologna
Italy**

Meeting hosted at Royal Hotel Carlton, in downtown Bologna organized by Warrant Group srl. Warrant is a privately held consultancy SME company with his headquarters in Correggio (RE, Italy) who provides full-spectrum consulting in business and enterprise fi-

nance. Warrant Group has been active since 1995, growing over the years to become a leader in this sector. Warrant is the Project Manager of HELM.

The HELM KO provided the opportunity to discuss the role of each partner member and review the definition of the project objectives, milestones and project planning activities. The KO meeting was also a chance to introduce all the members of the project team

to the EC Project Officer, Achilleas Stalios, who gave a foreword and illustrated EC expectations to the Consortium.

During the KO meeting all the project committees were designated, i.e. the Steering and Technical Committee members, the representatives of the Executive Management Committee, and all other relevant subjects (Exploitation and Dissemination Manager, Project Risk Manager). The Coordinator also illustrated the philosophy of the Advisory Board and some candidates were proposed.

TC, ExC, SC Meetings Pisa



**September, 21st, 2012 University
of Pisa, Pisa-Italy**

The 2nd Project Meeting has been held in Pisa (Italy) at the Department of Chemical Engineering, Industrial Chemistry and Materials Science of the University of Pisa (beautiful location just a few hundred

meters from the renowned tower). The Head of Department, prof. Donato Aquaro, opened the meeting with a brief introduction about the

University of Pisa, founded in 1343, that is one of the most ancient and prestigious universities in Europe. Later, in 1982, the Department of Chemical Engineering, Industrial Chemistry and Materials Science was founded the 18th of March 1982, but its beginnings go back to 1919, recently formed

the Civil and Industrial Engineering Department, together with the former departments of Aerospace, Mechanical, Nuclear and Civil Engineering.

The meeting gave the opportunity to the Consortium partners to discuss main technical issues and to review industrial specifications and the workplan for the next six months.

During this Meeting the draft HELM website and private area were presented; the collaborative tool EMDESK was illustrated to all the partners.

TC, ExC Meetings San Sebastián



**December
3-5th, 2012
Tecnalia
Headquarters
San
Sebastián-
Spain**

The 3rd HELM meeting was held in San Sebastián (Spain) at TECNALIA headquarters. Tecnalia, an independent research and technology entity in Spain, is the fifth largest in

Europe. The meeting was hosted by the Particle Technology and Functional Material Department of the Industry and transport Division of Tecnalia, which is involved in HELM. The group, coordinated by Dr Iñaki Caro, is specialized in processing using microwave heating and radio frequency

technology.

The major technical discussion centered on furnace design that is in progress and should be completed by the end of the first project year, according to the planned schedule. During the meeting, HELM partners had a chance to visit the labs.

The Website and Facebook page launched the HELM best picture contest (see more on FB page).

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Future events

March, 18,19, 2013

TC Meeting

Sairem Headquarters-Spain

June, 18-19-20, 2013

TC, ExC, SC Meetings

Fricke und Mallah (FM) Headquarters- Peine (Germany)



2013 Conferences and events

March, 4-5, 2013

Composite Conference and Trade Show

Melbourne, Victoria-Australia

March, 12-14, 2013

JEC Europe

Paris-France

May, 21-24, 2013

HESI3– International Symposium on Heating by electromagnetic Sources

Padova-Italy

June, 17-21, 2013

ICCS/17

Porto-Portugal

June, 18-20, 2013

EuroNanoForum <http://www.enf2013.eu/>

Dublin-Ireland

June, 22-16, 2013

ECCM/16

Seville-Spain

July, 14-19, 2013

Carbon 2013

Rio de Janeiro-Brazil

July, 28-August, 02, 2013

ICCM19

Montreal-Canada

September, 1-6, 2013

Euro CVD

Varna-Bulgaria

September, 8-13, 2013

Euromat 2013

Sevilla-Spain

September, 22-26, 2013

HT_CMC08

Xi'an-China

Sept, 29 October, 4, 2013

ICSCRM2013

Miyazaki-Japan

October, 6-8, 2013

Manufature <http://www.manufature2013.eu/>

www.manufature2013.eu/

Vilnius-Lituania

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HELM Website

<http://www.helm-project.eu>

HELM on the New Social Media



<http://www.facebook.com/pages/HELM/441410005901081>



If you would like to contribute an article or have any events that you would like us to include in the newsletter contact us at info.helmfp7@gmail.com.

If you would like to be added to the mailing list or no longer wish to receive the newsletter please email us at info.helmfp7@gmail.com.