

PROJECT FINAL REPORT

PICTURES, FIGURES AND TABLES

Grant Agreement number: 285775

Project acronym: MAC-RTM

Project title: Microwave Assisted Curing for Resin Transfer Moulding

Funding Scheme: Research for the benefit of specific groups

Period covered: from 1/11/2011 to 31/10/2013

Name of the scientific representative of the project's co-ordinator, Title and Organisation:

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Project website Error! Marcador no definido. **address:** www.macrtm.eu

- Description of the main S&T results/foregrounds,

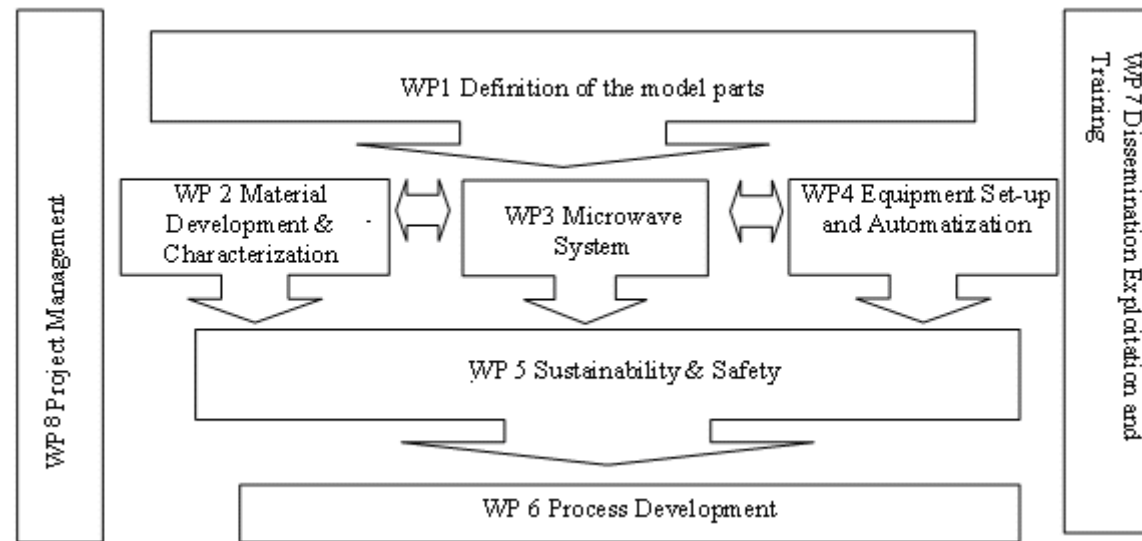
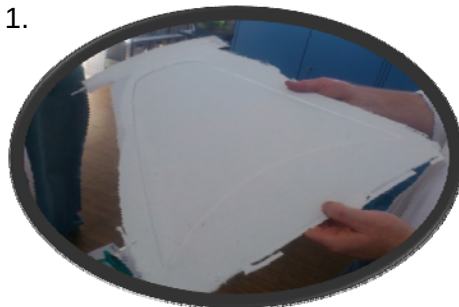
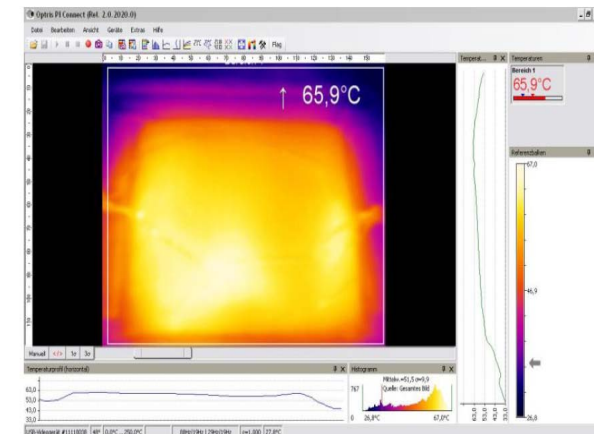
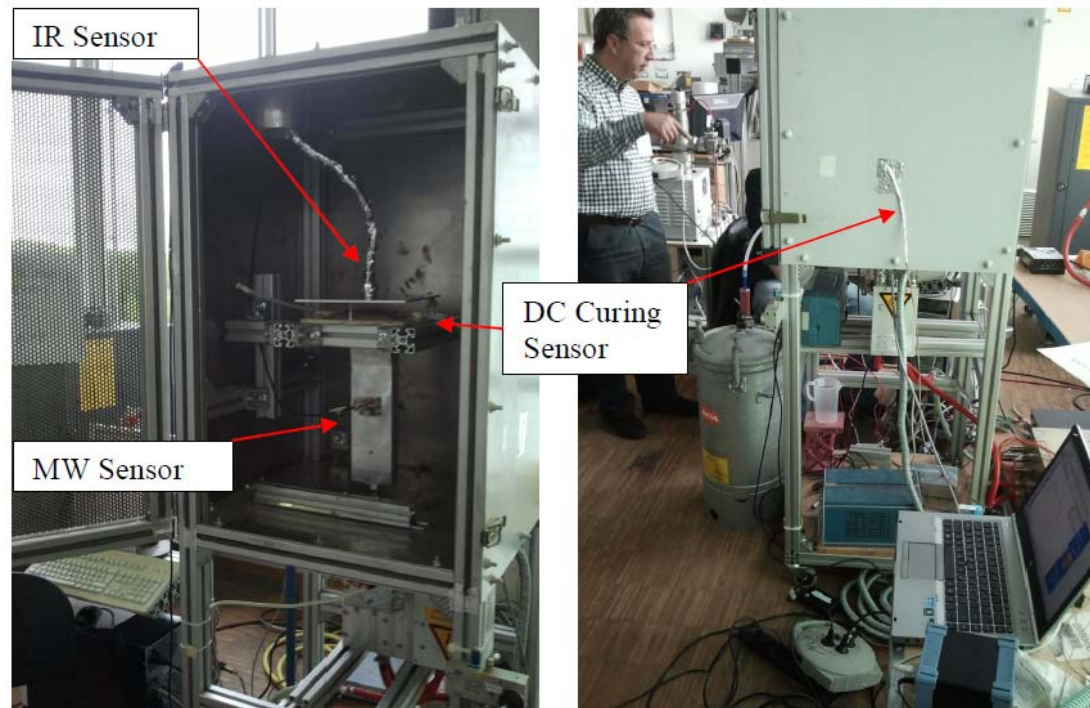


Figure 1. Graphical presentation of the components showing their interdependencies (Pert diagram)

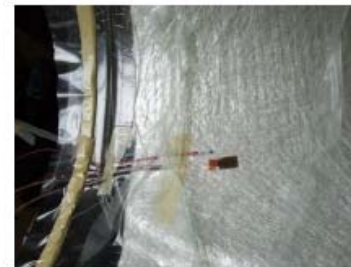
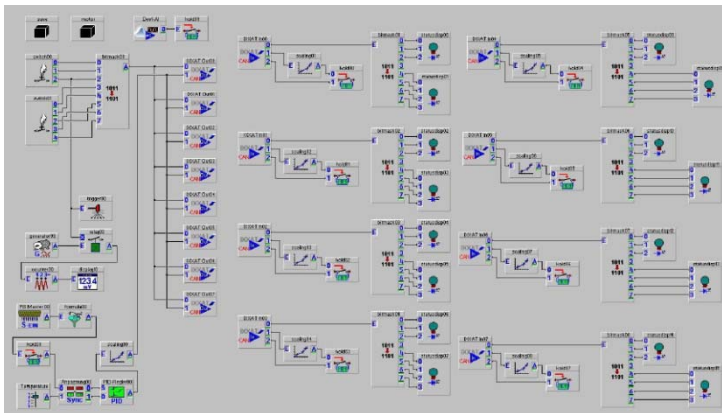
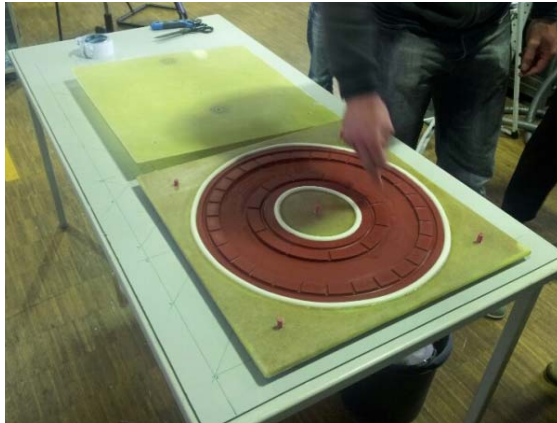
Work Package 1.



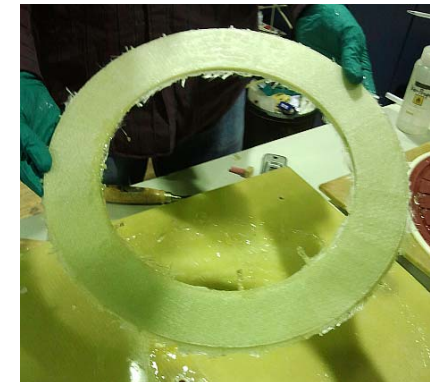
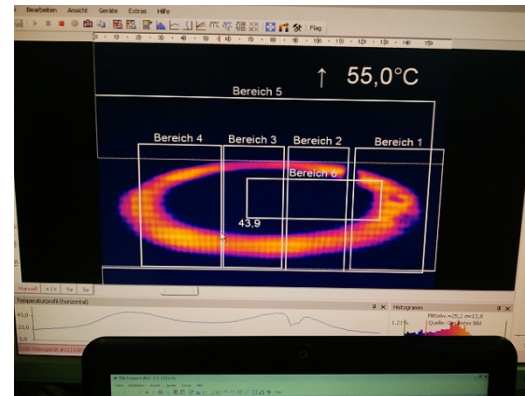
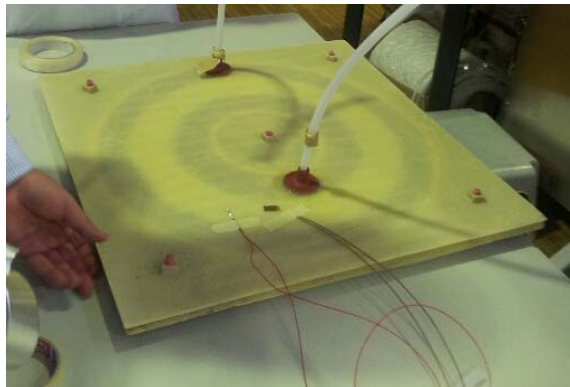
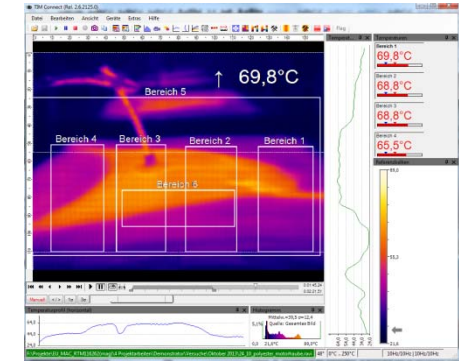
Work Package 3 pictures



Work Package 4 pictures



Work Package 6 pictures



Work Package 7 figures

MAC-RTM PROJECT

MAC-RTM project aims to develop an alternative highly innovative microwave-assisted curing (MAC) technology for thermoset materials with improved flexibility and more cost and energy effective than current curing technologies. The MAC technology will be developed and adapted to the Resin Transfer Moulding (RTM) and RTM-Light industries for composites production. [Read More...](#)

AIMPLAS presents a poster of MAC RTM Project in EUROMAT 2013, the European Congress and Exhibition on Advanced Materials and Processes.

AIMPLAS has presented a poster in the framework of the EUROMAT 2013 congress held in Seville, Spain, from 8th to 13th September 2013. [Read More](#)

Partners

The project management structure for MAC-RTM consortium, which consists of 7 SME participants and 2 RTD Performers, has been conceived to ensure competent knowledge, PR and other innovations-related activities management, and to enable efficient integration and communication throughout the management chain.

Technological Watch

- Use of molded plastics components in smart phones is expected to grow by... NEW - 16/03/2013
- Kick-off of the COALRE project NEW - 14/03/2013
- Frimo and 3D Core develop lightweight construction solutions for... NEW - 13/03/2013
- Partnership to develop cost-effective lightweight construction NEW - 13/03/2013
- BioComposites Tormestables: Mercado, Aplicaciones, Materias Primas y... EVENT - 10/02/2013
- Scalable Microwave Curing System of Long Fiber Reinforced Composites for... TECHNICAL ARTICLE - 04/03/2013
- Structure and properties of aeronautical composites using carbon... TECHNICAL ARTICLE - 04/03/2013
- Resin flow monitor for a vacuum assisted resin transfer moulding process PATENT - 12/03/2013
- HIGH-BASIC WEIGHT CARBON FIBER SHEET FOR RTM PROCESS, AND RTM PROCESS PATENT - 24/03/2013

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Intranet

In this section you can find all confidential information related to the project. See the project plan and technical and administrative documentation. [View Intranet](#)

AIMPLAS and Fraunhofer-ICT patents applications

The invention provides for a method for producing plastics moldings having a cured plastics matrix. The invention provides for a method for heating materials by means of high-frequency electromagnetic radiation. The invention provides for a method for heating materials being capable of absorbing high-frequency electromagnetic radiation, in particular microwaves, by means of insulating said materials with high-frequency electromagnetic radiation. In order to achieve an essentially consistent heating of the material and, in particular, to avoid hot spots in the material, the high-frequency electromagnetic radiation...

The research leading to these results has received funding from the European Community's Seventh Framework Programme FP7/2007-2013 under grant agreement n° 282557

MAC-RTM project website

Partnership

The Project Consortium consists of 7 SMEs and 2 RTD performers. The main role for each consortium partner could be summarized in the following structure:



- 1.- Specification of a model part
- 2.- Assessment of resins for alternate curing technology during RTM and RTM-Light processes.
- 3.- Development and optimisation of the alternate curing technology.
- 4.- Industrial sale of the new technology



Picture above: MAC-RTM Consortium during the Kick-off meeting in AIMPLAS, Spain, on the 22nd November 2011

Additional information

www.macrtm.eu

Contact

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The investigation leading to these results has received funding by the EU Seventh Framework Programme (FP7/2007-2013) under grant agreement no. 285775.



MAC-RTM

Microwave Assisted Curing for Resin Transfer Moulding



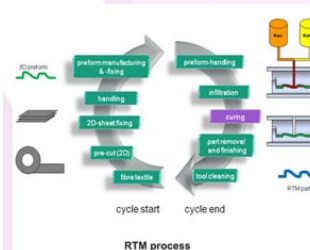
Examples of RTM parts from XOUQUER and SCHMUHL

The project

MAC-RTM project aims to develop an alternative microwave-assisted curing (MAC) technology for thermoset materials (polyester, vinyl ester, and epoxy resins) with improved flexibility and more cost and energy effective than current curing technologies.

The project MAC-RTM will cover the development of an innovative system for curing resins through microwaves.

This promising technology will be optimized by using powerful simulation tools of filling and interaction between the electromagnetic field and the resin.



Objectives

The developments in the project MAC-RTM will allow the adaptation to resins processed by RTM and RTM light to microwave curing process in order to produce medium-volume components with the following advantages:

- Reduction of the cycle time by 40 %, leading to increase productivity and efficiency.
- Decrease energy consumption by 70 %.
- Reduce styrene emissions by 90 % in comparison with open-mould processes.
- Increase polymerization level by 100 %.
- Reduce mould costs by 30 %.
- Reduce material usage, since parts over-sizing is not necessary.

The MAC - RTM project will contribute to enhance the competitiveness of the European SMEs in the global market with the development of an integrated system that is technically innovative, environmentally friendly, and economically viable.

MAC-RTM

Partners



Funding:

The research has duration of 2 years, being its completion expected for October, 2013. The project of the Capacities programme "Research for the Benefit of SMEs", has a budget of nearly € 1.1 million.

Flyer front and back

Work Package 7 figures



(a)



(b)

Examples of Dissemination activities: EUROMAT 13 (a) and ICCST-9 (b)

MAC-RTM project poster

- Address of the project public website, consortium and relevant contact details.

<http://www.macrtm.eu/>



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Beneficiary Number	Beneficiary name	Beneficiary short name	Beneficiary logo	Type	Country
1 (Coordinator)	Asociación de Investigación de Materiales Plásticos y Conexas	AIMPLAS	 AIMPLAS INSTITUTO TECNOLÓGICO DEL PLÁSTICO	RTD	ES
2	CLERIUM	CLERIUM	 Clerium	SME	NL
3	Schmuhl Faserverbundtechnik GmbH & CO KG	SCHMUHL	 SCHMUHL	SME	DE
4	RESOLTECH	RESOLTECH	 rēsoltech ADVANCED TECHNOLOGY RESINS	SME	FR
5	Alberto Mora Galiano	OMAR	 INDUSTRIAS OMAR	SME	ES

6	Talleres Xúquer SL	XUQUER		SME	ES
7	Material Eléctrico y Suministros Industriales SL	MEYSI		SME	ES
8	Synthesites Innovative Technology	SYNTHESITES		SME	GR
9	Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.	FRAUNHOFER		RTD	DE

