

PLAS • CARB

INNOVATIVE PLASMA BASED TRANSFORMATION
OF FOOD WASTE INTO HIGH VALUE GRAPHITIC
CARBON AND RENEWABLE HYDROGEN

D 10.6 INDUSTRY SEMINARS



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement No 603488

Project deliverable

Project Number	Project Acronym	Project Title
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Instrument:	Thematic Priority
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Title
D10.6 Industry seminars

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Dissemination level (Project co-funded by the European Commission within the Seventh Framework Programme)

PU	Public	X
PP	Restricted to other programme participants (including the Commission)	
RE	Restricted to a group defined by the consortium (including the Commission)	
CO	Confidential, only for members of the consortium (including the Commission)	

Abstract:

The PlasCarb consortium has planned, organised and implemented industry seminars, within the framework of two high-level European events. The purpose of these industry seminars has been twofold. Firstly, PlasCarb-specific knowledge was transferred to the project's target groups and secondly contacts have been built with interested potential stakeholders to ensure the continuation of PlasCarb's commercialisation as well as research and development efforts.



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1 Introduction

This deliverable gives an overview of the planning, organisation, implementation and results of the two industry seminars carried out by the PlasCarb project. Within the consortium it was agreed that the impact of the industry seminars for PlasCarb could be increased by co-locating them to relevant, regular, high-level, multi-stakeholder European events as opposed to organising stand-alone project seminars.

Such European events to host the PlasCarb industry seminars were strategically chosen for the second half of the project, namely July and September 2016, for two reasons: (a) At this mature stage of the project substantial results, findings and presentable content have become available and have been agreed on by all partners to disclose and (b) the remaining project time after the events has allowed for an effective follow-up with the industry seminar visitors (e.g. inclusion into regular dissemination activities, responses on individual enquiries etc).

Since the field of activity of PlasCarb incorporates areas of both research and scientific advance as well as industrial engineering and commercial development, host events were selected to represent the project's achievements in both areas. The ANM2016, 7th International conference on Advanced Nanomaterials and 2nd International conference on Graphene Technology and 1st International conference on Spintronics Materials, was selected to approach predominantly scientific communities of the relevant sectors. With the second event the RWM2016 PlasCarb addressed the predominantly industrial and business oriented resource efficiency and waste management sectors.



2 PlasCarb Industry Seminars

This section presents the two PlasCarb industry seminars with experiences, lessons, their respective dissemination strategy starting from the early promotion and targeted invitation over the actual implementation until the visitor follow-up.

2.1 ANM 2016, 7th international conference on Advanced Nanomaterials, 25th - 27th July 2016, Aveiro, Portugal

2.1.1 Executive summary

With this largely science-oriented conference the first PlasCarb industry seminar aimed to present PlasCarb's fields of activity, applied methodologies and the project result to the scientific and academic community predominantly active in advanced nanomaterials and graphene technology.

The presence of the PlasCarb consortium at this conference has provided added value to dissemination and exploitation efforts, but also to the methodological approaches and strategies, of the project. Members of the consortium presented the project in general, the project result material called Renewable PlasCarbon (RPC) as well as potential future industrial applications of RPC to visitors of the PlasCarb stand. Materials and approaches used to present the industry seminar are described in more detail in chapter 0

The presentation by consortium members evoked many in-depth discussions with visitors on scientific approaches, technical and methodological details in the area of carbon morphology as well as on the areas of the potential future applications. Additionally, visitors were interested in the sustainability of the entire PlasCarb process as well as of life-cycle engineering behind the single process chain steps. The business potential of the project and especially of single industrial applications for RPC, e.g. conductive inks in printable electronics, was discussed and visitors enquired more information in this respect.

The ANM 2016 reached out to a total of 228 participants throughout the three conference days and 20 people thereof visited the PlasCarb stand. The visitors of the stand represented mainly scientific institutions such as universities or research institutes but also enterprises active in technology and industry.

The first industry seminar of PlasCarb was a successful event and experience for the project since the scientific aspects of the project could be discussed with and communicated to the scientific community.



2.1.2 Dissemination and Communication

A number of promotional activities have been undertaken prior to the event to introduce this industry seminar and to invite PlasCarb's community and the wider public (or other interested social groups/civil society):



Figure 1: Banner for the usage in email signatures to promote PlasCarb's industry seminars.

A banner was created to promote the two industry seminars of PlasCarb (Figure 1). This banner was provided internally to all project partners to be used in various communications with contacts in their networks in respect to PlasCarb's industry seminars.



An information and invitation email (Figure 2) was sent out to a database of approximately 800 contacts in relevant or related fields of activity. The letter has also been made publicly available in the download section of the PlasCarb webpage as [Newsletter no. 2](#).

[Click here to view the Newsletter in your browser >>](#)

PLASCARB

Dear #Reader#

PlasCarb is a 3 year EU funded project using innovative technology to produce graphitic Carbon and renewable Hydrogen from food waste, with the objective to see how food waste could be utilized instead of sending it to landfill or just putting it through an anaerobic digester to generate electricity.

PlasCarb produces renewable PlasCarbon - nanographitic carbon particles composed of graphene multilayers. While the quality of the renewable PlasCarbon is still being researched and optimized by the PlasCarb partners, its economic value is expected to be very high. With the world graphite market forecast to grow at a CAGR of 3.7% from 2014 – 2020, PlasCarb offers a sustainable contribution to this growing demand by the production of renewable PlasCarbon from food waste. Potential applications include but are not limited to:

- Inks for 2D and 3D printing, printable electronics
- Composites in rubber, plastic, etc.
- Electrodes, batteries, capacitors

PlasCarb has the potential to generate renewable Hydrogen (RH₂), albeit at low mass flow rate and currently at long payback. The ability to sustainably produce this element has added economical value, as nearly 96% of Hydrogen is produced from fossil fuels. Predicted global demand in 2020 is 324 million m³ worth 125 billion EUR. Hydrogen is used in significant quantities by industry, applications ranging from ammonia production to petroleum refining and electronics. Hydrogen is increasingly recognized as a potential future transport fuel for a low carbon economy (including use in the emerging fuel cell technology).

By the time the project ends in November 2016, we will operate the plant for at least one month, processing over 150 tons of food waste into more than 25 000 cubic meters of biogas. To learn more about the project please check our website: <http://plascarb.eu/>

We would proudly like to share with you our **results, different market application potential, to see how industry players and researchers can benefit from the PlasCarb process and the PlasCarb product.**

That's why, and in view of the occasion, we would like to **invite you to find more about PlasCarb** and our partners at [7th International conference on Advanced Nanomaterials](#) on the 25-27 July 2016 in Aveiro, Portugal, and at [RWM – Europe's premier event for resource efficiency and waste management solutions](#) on the 13-15 September 2016 in NEC, Birmingham, UK. You will have the opportunity to meet with our experts and get involved with the PlasCarb project. Please register for both events at the organizers' websites mentioned above.

We are looking forward to seeing you at these special events!

PlasCarb Team



ANM 2016 25-27 JULY 2016
UNIVERSITY OF
AVEIRO / PORTUGAL

STAND IN THE FOYER, RECTOR BUILDING



RWM 13-15 SEPTEMBER 2016
NEC BIRMINGHAM

IN PARTNERSHIP WITH CIWM
RESOURCE EFFICIENCY AND WASTE MANAGEMENT SOLUTIONS

STAND A420



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement No 603488





Figure 2: Personalised email to invite the PlasCarb community and the general public to PlasCarb's industry seminars.



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement No 603488

A [news article](#) was published on PlasCarb's webpage to promote the project's industry seminar at the ANM 2016 in Aveiro, Portugal (Figure 3).

The event was also promoted and continuously accompanied with messages and real-time posts via PlasCarb's social network channels such as [LinkedIn](#), [Facebook](#) and [Twitter](#) and [Google+](#).

PLASCARB EXHIBITS AT ANM2016

25- 27 July 2016
Aveiro, Portugal

Are you interested in finding out more about PlasCarb, its activities and results as well as its partners in person?

Then we invite you to meet the project team at the ANM - 2016, an event combining the at the University of 7th International Conference on Advanced Nanomaterials, the 2nd International Conference on Graphene Technology and the 1st International Conference on Spintronics Materials Aveiro, Portugal from 25th to 27th July 2016.

PlasCarb will have a stand in the Foyer, Rector Building of the university and visitors will have the chance to:

- Read, hear, see and experience the PlasCarb journey with all its experiences and results.
- Get first hand information in personal talks with our consortium partners.
- Get involved into the PlasCarb project.
- Hear high profile oral presentations from our researchers and get engaged in the scientific background of PlasCarb.

Alain Pénicaud, PlasCarb's lead scientist from the National Centre for Scientific Research (CNRS), Bordeaux, France will speak about the: "Nanocarbon Dissolving Toolbox : From Food Waste Generation of Multilayer Nanographene to Additive Free, Single Layer Graphene in Water". His presentation will take place in Room A (Reitoria) on the 27th July from 10.30 - 11.00 AM under the speaker's ID 320.

Ferdinand Hof, Post Doc at CNRS will speak about "[Charged Nanocarbons as Effective Reducing Agent in Nanoparticle Synthesis](#)". Please find the abstract to his oral presentation [here](#). The talk will take place in Room A (Reitoria) on the 27th July from 10.00 - 10.30 AM under the speaker's ID 315.

Follow us on [LinkedIn](#), [Twitter](#), [Facebook](#) and [Google+](#) to get the latest updates and profiles of our partners who will be present at the conference.

READ MORE

Figure 3: News on the PlasCarb webpage to introduce and promote PlasCarb's industry seminar at the ANM 2016.





PlasCarb's coordinator: Neville Slack

Published on July 14, 2016

PLAS-CARB PlasCarb Project
PlasCarb's Partner at Geonardo Environmental Technologies Ltd.

We are counting down the days until PlasCarb will be at the ANM 2016. Visit us during the next three weeks to get all the profiles of our partners who will be presenting at the Stand in the Foyer, Rector building.

Let us begin with PlasCarb's coordinator: Neville Slack.

A Business Development Manager/Project Manager at Geonardo Environmental Technologies Ltd. which is part of the Centre for Process Innovation. He has over 15 years of technical, operational and commercial experience in the polymer, in-organic and petrochemical sectors. He is also a member of the Royal Society of Chemistry.

A chemist by background with degrees in Chemistry and an MBA from Durham University Business School. He is also a member of the Royal Society of Chemistry.

Stay tuned and see who is next in the row of presentations.



Andy Wiltshire, PlasCarb partner attending ANM-2016.

Published on July 20, 2016

PLAS-CARB PlasCarb Project
PlasCarb's Partner at Geonardo Environmental Technologies Ltd.

As part of our round of posts introducing the PlasCarb partners attending the ANM2016, 25-27 July, 2016, this time we are excited to introduce Andy Wiltshire, Technical Director at GAP Waste Management.

Andy Wiltshire is part of GAP Group North East and seeks to identify and develop waste streams with high potential value returns. As a result, GAP has identified these new waste to energy opportunities at the forefront of new opportunities and Best Available Technology. This includes the development of new energy from waste technologies.

Andy is responsible for research and development of new technologies throughout the GAP group, including strategic partnership work. GAP has identified these new waste to energy opportunities further extended in the development of secondary material energy generation.

Andy has 14 years experience of working in the waste industry as a developer/ portfolio manager, Assessor and mentor for Waste to Energy certification. He has 4 years' experience of working with regeneration Charity managing the delivery of a strategic plan for a municipality to improve recycling systems and rates, including waste streams and community engagement. Before working for GAP, Andy had amassed 13 years experience within banking sector and consultancy company that reduced waste sent to landfill.



PlasCarb's partners attending the industry seminar at the ANM 2016 where introduced with a short biography. The messages were posted on LinkedIn and shared via social media channels on Facebook, Twitter and Google+.



Alain Pénicaud, PlasCarb partner

Published on July 19, 2016

PLAS-CARB PlasCarb Project
PlasCarb's Partner at Geonardo Environmental Technologies Ltd.

We are happy to share with you the second profile of our partners who will be presenting PlasCarb at the #ANM2016, 25-27 July, 2016. This time we want to introduce you to:

Alain Pénicaud is Directeur de Recherche CNRS. Alain has developed ways of dissolving carbon nanomaterials (CNTs, graphene, nanohorns, etc.), thermodynamics and in particular entropy driven dissociation. Key point is that dissolution is spontaneous and no sonication is needed. He has over forty five articles in international journals, six patents and one patent license.

He is advisor for 3 post-docs, 6 PhDs and 1 master thesis. He has been invited to present at 27 international conferences, has given 28 seminars in laboratories and has published two scientific books, one book chapter, three conference proceedings.

He is also founder and member of the organizing committee of ChemOnTubes 2006, 2008, 2010, 2012 and 2014: International conferences series on chemistry of nanotubes and graphene; Member of the council of the research network GDR-I on Science and Applications of carbon nanotubes and graphene; Member of the council (G30) of the French carbon research group (GFEC) and Reviewer for Science, Nature Communications, Nature Materials, Nature Nanotechnology, J. Am. Chem. Soc., ACS Nano, Angewandte Chemie, Carbon, J. Chem. Eur. J. Phys. Chem. and Langmuir.



Being in regular contact with the organisers of the conference, the PlasCarb logo was published on the front page of the ANM 2016 on the 29 June 2016 for further promotion purposes of both the ANM 2016 conference as well as the PlasCarb project.

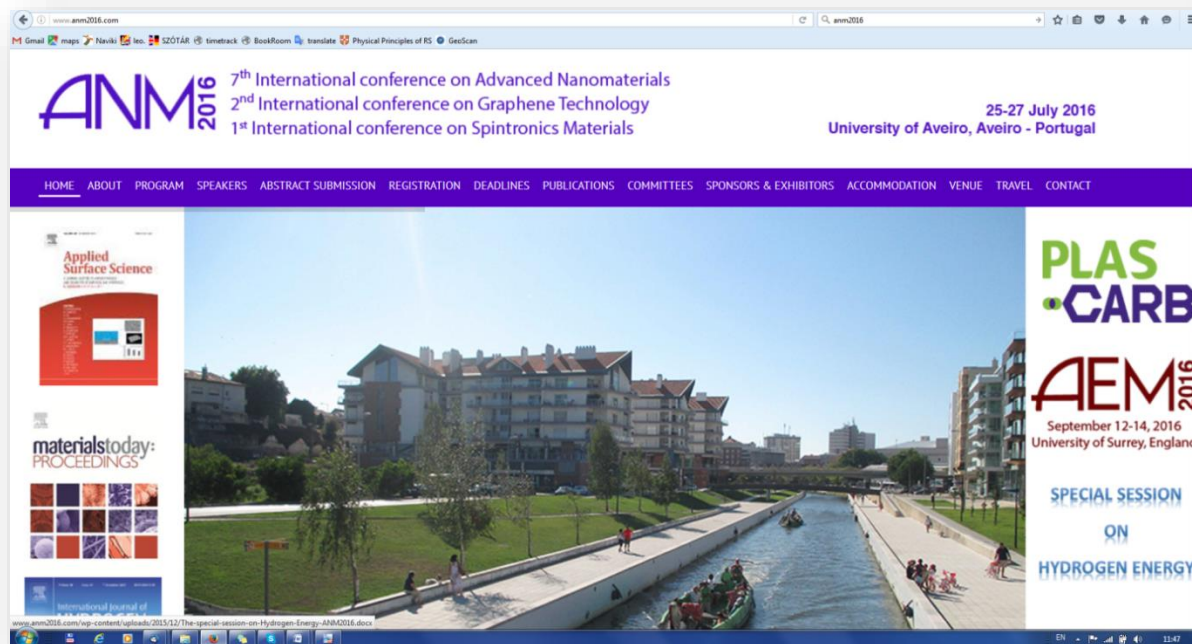


Figure 4: Screenshot of the 29 June 2016. The PlasCarb logo, linked to the PlasCarb webpage, appears on the front page of the ANM 2016 conference in Aveiro, Portugal.



PlasCarb's exhibition stand at the ANM 2016

Dissemination materials and media to introduce the PlasCarb project to the visitors of the project exhibition stand at the industry seminars included a wide selection of equipment such as: Printed project brochures, PlasCarb-design stationary, business cards, furnishings (Figure 5), samples of industrial applications based on Renewable PlasCarbon (Figure 6) as well as two posters (Figure 6 and Figure 7) and one project presentation which can be accessed via the following link:

http://prezi.com/frdnz911l9ga/?utm_campaign=share&utm_medium=copy&rc=ex0share

(The presentation has been created and is shown in portrait orientation since it was presented at the industry seminar on a large, portrait display screen).



x-banner

PLASCARB

Innovative plasma based transformation of food waste into high value graphitic carbon and renewable hydrogen (H₂)

FOOD WASTE
An EU report from 2010 estimated that food waste in the EU27 was 89 million tonnes per year rising to 126 million tonnes per year by 2020. This waste would generate 170 million tonnes of CO₂ per year equivalent to 36% of EU27 Green House Gas (GHG) emissions. PlasCarb is aiming to transform food waste into high value renewable PlasCarbon and H₂.

BIOGAS
The biogas feedstock arises from residential and industrial food waste collection. Inside an enclosed anaerobic digester, microorganisms decompose the organic matter (OM) by weight which is then fed into an intermediate holding tank before being pumped to the 2nd stage fermenters for anaerobic fermentation. After the digestion process the remaining material is pasteurized and stored in a separate holding tank prior to utilization in local agriculture. The facility has been designed to meet the EN12401 standard for Biogas.

ANAEROBIC DIGESTION PLANT

PROCESS ENGINEERING
The anaerobic digestion and distribution processes in to increase the value of the outputs. PlasCarb will research and investigate a range of gas-liquid and gas-liquid separation techniques to determine the most cost effective technologies and define the optimal process to separate the contained carbon species and then the ability to store any other gases.

BIOGAS ANALYSIS
CH₄, CO₂, impurities (H₂S, NH₃, etc.)

PLASMA PROCESS
Cambridge Nanosystems has developed and patented a process involving energy efficient microwave induced plasma discharge of CH₄ into a porous carbon with no CO₂ emissions. This process uses a non-equilibrium plasma induced by microwave energy, in which the microwaves provide a unique means of efficiently transferring energy directly into the bonds in the CH₄ molecules.

MARKET APPRAISAL
The carbon products of the PlasCarb process have significant market potential. Graphite is one of EU's 14 exponentially critical raw materials required in substantial quantity for 95% of the European Union. Graphite market consists of synthetic graphite, carbon fibre and natural graphite with a total global market of nearly 10 billion EUR. The market application opportunities for renewable PlasCarbon:
 • Ink and Materials for 2D and 3D printing, printable electronics
 • Composites in water, plastic
 • Electrodes, batteries, capacitors
 Hydrogen is used in significant quantities by industry. Predictable global demand in 2020 is 324 million m³ worth 125 billion EUR. Hydrogen uses range from ammonia production, chemical industries and refining, electronics, metal and glass industries. Hydrogen has been also identified as a future transport fuel.

FORMATION OF RENEWABLE PLASCARBON
This figure illustrates the dispersion of the carbon from water using surfactant and after the separation treatment. Optical microscopy, transmission electron microscopy (TEM) as well as static light scattering (SLS) are presented to characterize the dispersions. Optical microscopy shows the absence of aggregates. TEM shows the presence of graphitic plates. Static light scattering shows the presence of two size populations. After identification the location of the smallest size population is achieved.

RENEWABLE PLASCARBON **RENEWABLE HYDROGEN**

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 Fraunhofer IPT
 Fraunhofer IPT
 Fraunhofer IPT
 Fraunhofer IPT
 Fraunhofer IPT

leaflet

PLASCARB

Innovative plasma based transformation of food waste into high value graphitic carbon and renewable hydrogen

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business card

PLASCARB

Innovative plasma based transformation of food waste into high value graphitic carbon and renewable hydrogen

E-mail: info@plascarb.eu
 Web: www.plascarb.eu
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notepad

PLASCARB

PLASCARB pen

table clothes

PLASCARB

Figure 5: Dissemination material and visuals for the PlasCarb exhibition stand at the ANM 2016



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement No 603488

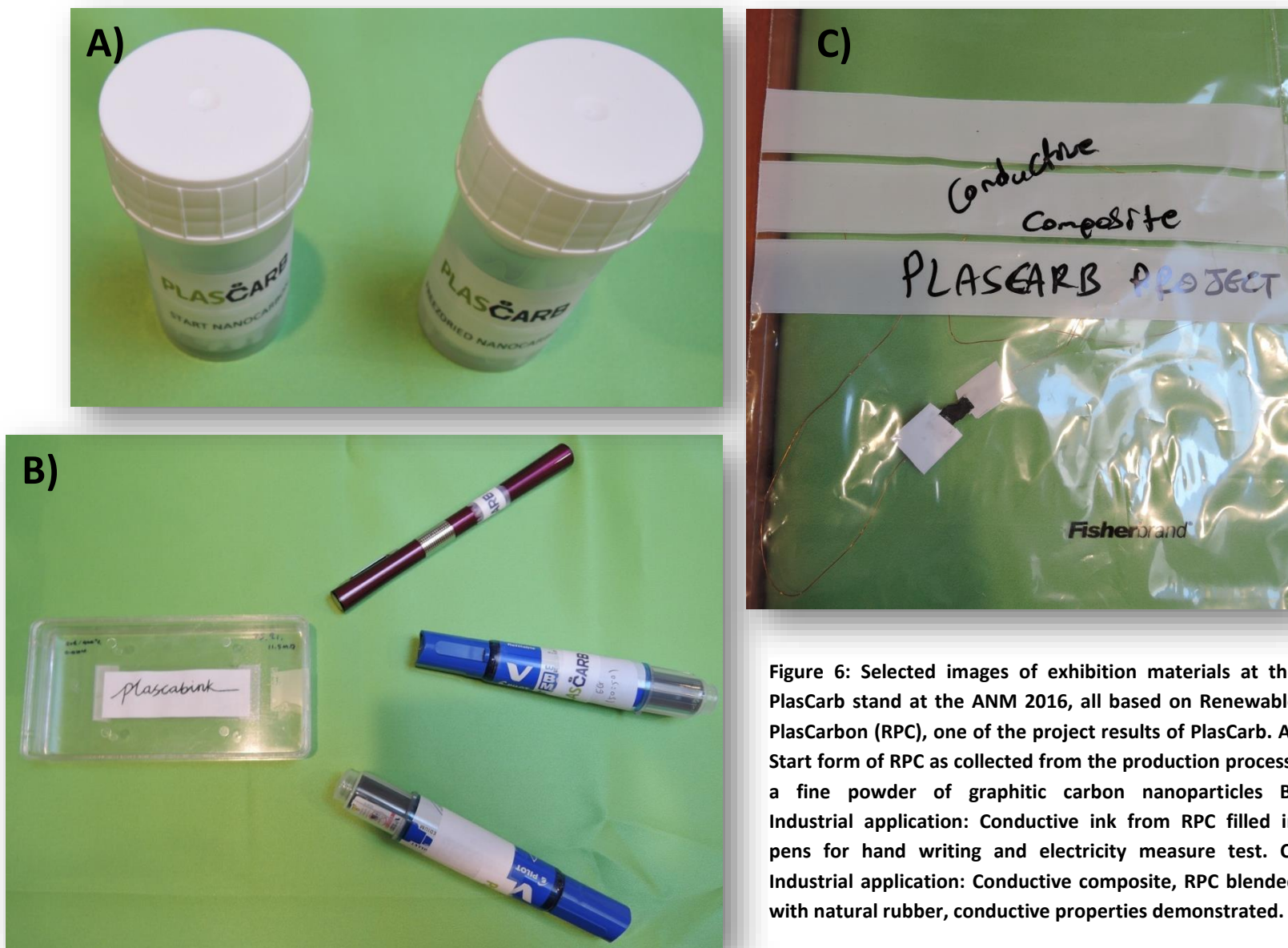


Figure 6: Selected images of exhibition materials at the PlasCarb stand at the ANM 2016, all based on Renewable PlasCarbon (RPC), one of the project results of PlasCarb. A) Start form of RPC as collected from the production process, a fine powder of graphitic carbon nanoparticles B) Industrial application: Conductive ink from RPC filled in pens for hand writing and electricity measure test. C) Industrial application: Conductive composite, RPC blended with natural rubber, conductive properties demonstrated.

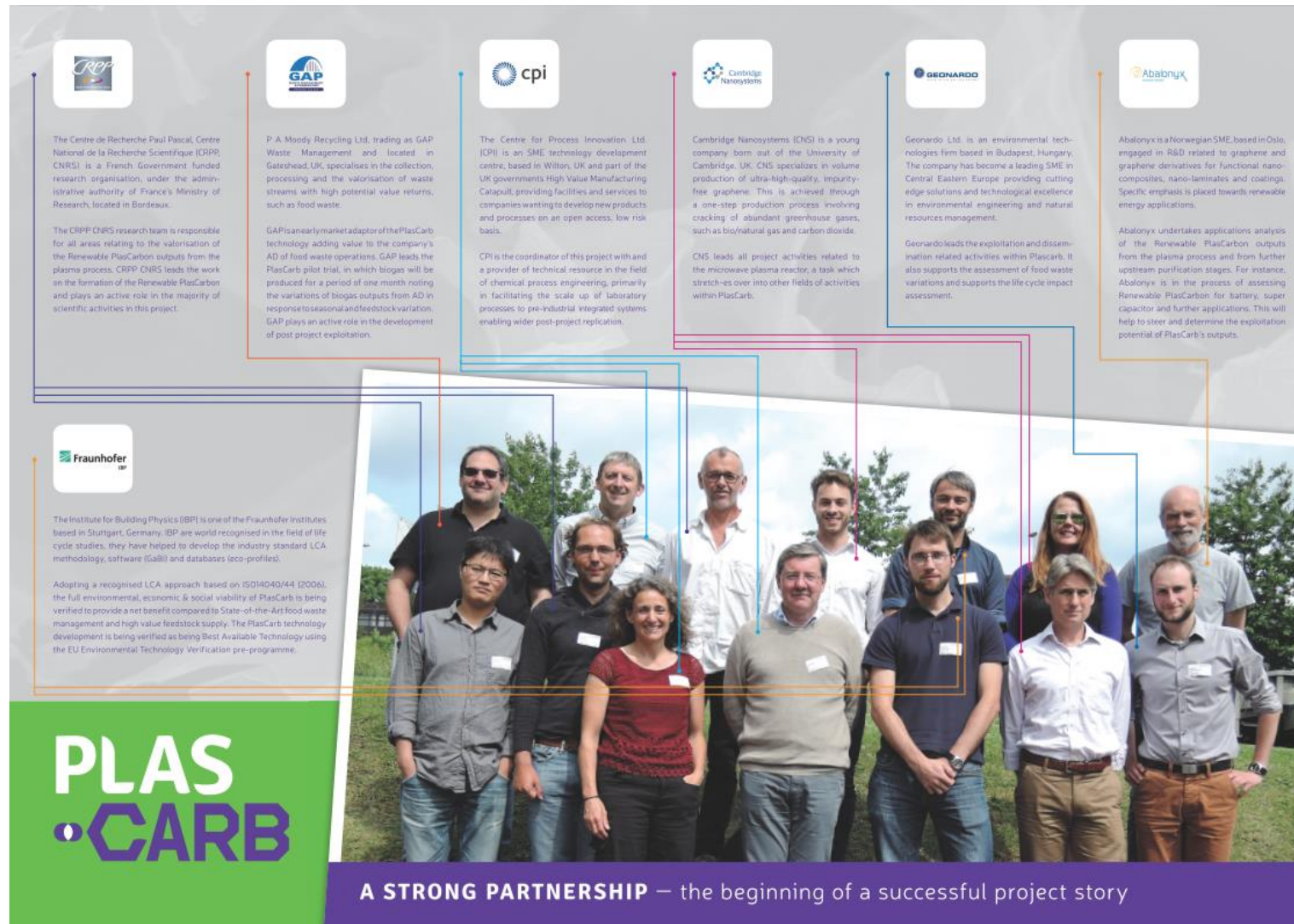


Figure 7: PlasCarb Project Poster: A Strong Partnership



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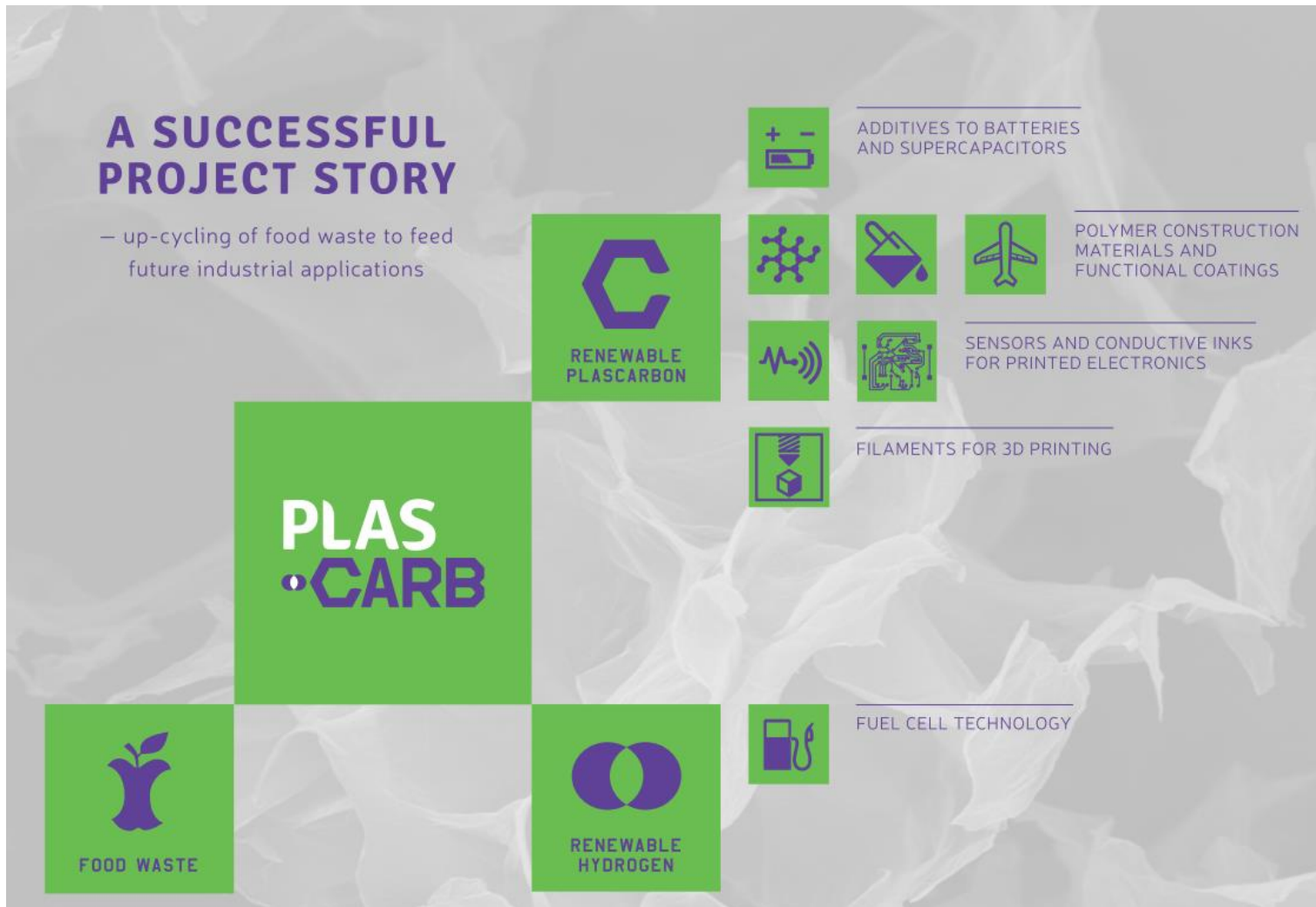


Figure 8: PlasCarb Project Poster: A successful project story



This project has received funding from the European Union’s Seventh Framework Programme for research, technological development and demonstration under grant agreement No 603488

The 3-days industry seminar in Aveiro, Portugal was summarised, described and concluded in a news article which was published on [PlasCarb's website](#) as well as on the [blog](#) of Europa Media, Geonardo's sister company.

**PLASCARB
NEWS AND
EVENTS****PLASCARB GOES TO INDUSTRY- EXHIBITING AT THE
ANM 2016**

28 July 2016

PlasCarb was presented with an exhibition stand at the ANM2016 - 7th international conference on Advanced Nanomaterials from the 25th -27th July in Aveiro, Portugal. The three-years project is to conclude in November 2016. Partners of the consortium can look back on a wide range of activities as well as results achieved which have been presented at this conference.



Over the three days of the conference PlasCarb's partners offered interested visitors a wealth of informative and interactive materials, personal discussions as well as two oral conference presentations about ongoing research ventures.

Visitors had the chance to receive first hand information about PlasCarb, its progress and results to-date not only through slide shows and the information fact sheets but also through personal discussions with our experts.



Renewable PlasCarbon (RPC) is one of these products, generated by the PlasCarb technology through the cleavage of biogas which is derived by anaerobic digestion from food waste. RPC is produced from a renewable resource (waste) and has the potential to compete against conventional carbon products from fossil origin in a sustainable (environmentally and socio-economically) way and is now being tested in a range of industrial applications.

The exhibition samples, with RPC as the basis for materials like conductive inks, rubber, or filaments for 3D printing, arrived freshly from the scientific laboratories of the PlasCarb partners CNRS (FR) and Abalonyx (NO). Moreover, a variety of exhibition samples from PlasCarb's products were presented. Interested visitors could investigate the samples directly at the PlasCarb booth and observe the outstanding properties of RPC. Visitors could probe pens containing conductive ink based on RPC.



Any hand-writing could be tested on electric conductivity by simply applying a voltage on either end of the drawn line. The conductivity of the ink became apparent through visualization on the display of a multimeter.

With these and other illustrations at the PlasCarb booth, the consortium partners highlighted the results and achievements of the project on the one hand. On the other hand, they seek to set up contacts for potential future collaboration with interested people in follow-on research and development as well as commercialization of the PlasCarb technology.

[READ MORE](#)



2.2 RWM 2016, 13th - 15th September 2016, Birmingham, United Kingdom

2.2.1 Executive summary

As the second industry seminar the PlasCarb consortium participated with an exhibition stand among the just over 600 fellow exhibitors at the [RWM 2016](#). As the Energy Event, the Renewables Event and also the Water Event took place simultaneously on the three exhibition days, the audience was diverse. Not only representatives from businesses and institutes in the renewables and waste management sector (specific to the RWM) visited the PlasCarb stand but also people from those co-located events.

The presence of the PlasCarb project at this event was focused on the presentation of a) the PlasCarb value chain 'up-cycling from food waste to industrial relevant materials' as an innovation in the waste management sector and b) potential industrial applications for PlasCarb's product RPC and commercial opportunities in this respect. Materials and approaches used to present the industry seminar are described in more detail in chapter 2.2.2.

The feedback of most visitors at the PlasCarb stand was very positive and showed that they perceived the project as an innovation well-placed and even going beyond conventional waste management technologies of organic waste. A large share of the interested visitors of the PlasCarb stand originated from the conventional waste-to-energy sector and expressed the interest of integrating the PlasCarb technology in their already existing set-up i.e. anaerobic digestion plants. Great interest by visitors has also been expressed in the commercialisation opportunities of industrial applications from RPC such as conductive inks, conductive composites/rubbers and conductive filaments for 3D printing. PlasCarb received a large number of enquiries and expressions of interest on this 3-day exhibition leading to the creation of business contacts with opportunities to follow-up and to inform about further project outputs.

186 interested people visited the PlasCarb stand at the second industry seminar at the RWM 2016. With this number PlasCarb engaged more people than the average of 136 visitors gained by exhibitors who used onsite data collection¹ at the RWM 2016.

¹http://www.rwmexhibition.com/files/rwm_infographic_flyer.pdf



2.2.2 Dissemination and Communication

A number of promotional activities have been undertaken prior to the event to introduce this industry seminar and invite the PlasCarb community and the wider interested audience:

A banner was created to promote PlasCarb's participation at the RWM 2016 (Figure 9). This banner was provided internally to all project partners to be used in various communications with contacts in their networks in respect to PlasCarb's industry seminars.



Figure 9: Banner for the usage in email signatures to promote PlasCarb's participation at the RWM 2016



Similarly to the 1st industry seminar an information and invitation email (Figure 10) was sent out to a database of approximately 800 contacts from relevant or related fields of activity and a reminder was sent out (Figure 11) in due time to increase the effect of the invitation.

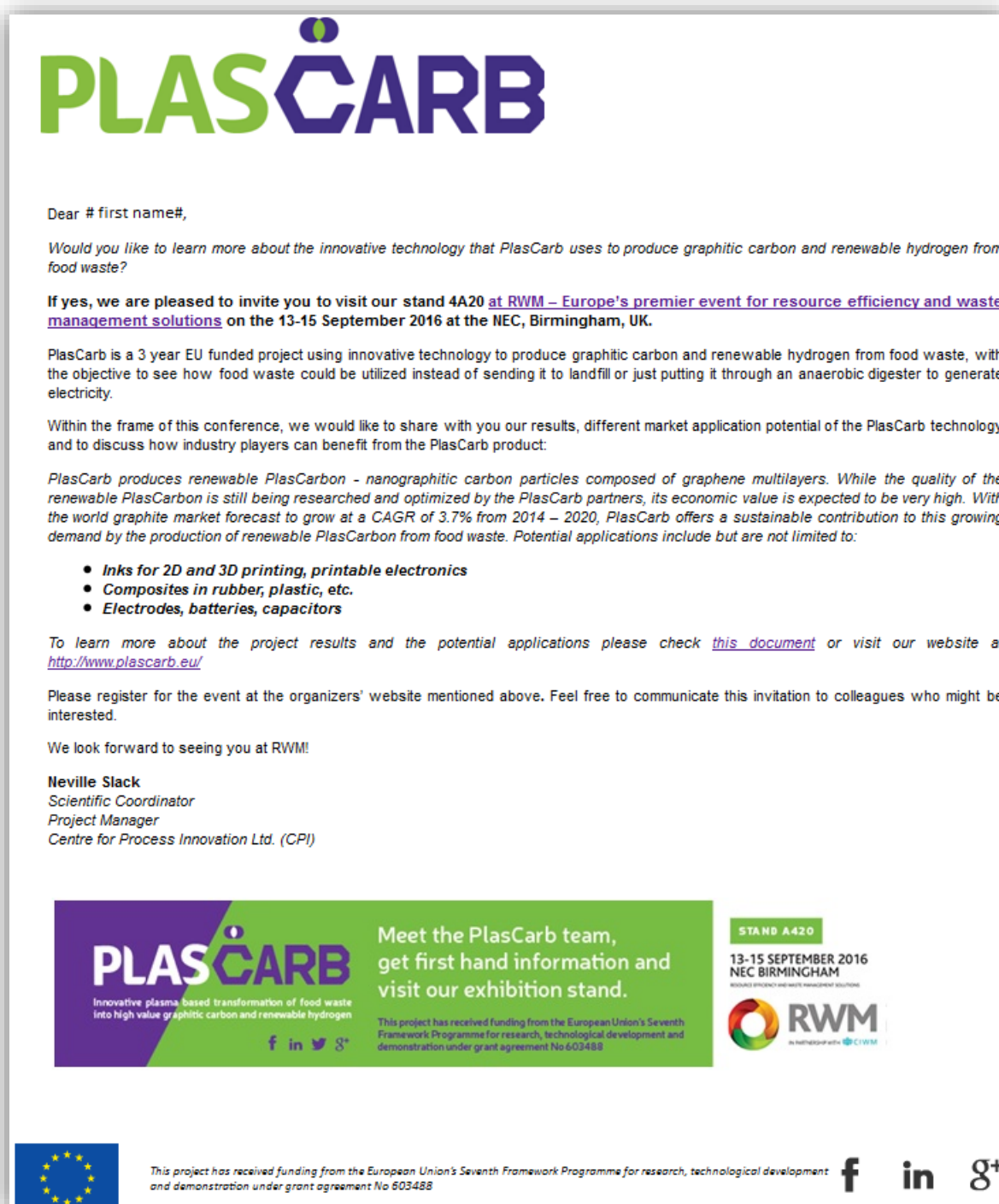


Figure 10: Personalised email to invite the PlasCarb community and the wider interested civil society to PlasCarb's industry seminar at the RWM 2016





PLASCARB

Dear #first name#,

Would you like to learn more about the innovative technology PlasCarb uses to produce graphitic carbon and renewable hydrogen from food waste?

If yes, the last days to register for free to the [RWM – Europe's premier event for resource efficiency and waste management solutions](#) on the 13-15 September 2016 at the NEC, Birmingham, UK are running.

Visit the PlasCarb team at the stand 4A20. You can get the chance to speak with our experts, investigate the PlasCarb product produced from food waste on spot and find out how this product is applicable in many industrial sectors.

PlasCarb is a 3 year EU funded project using innovative technology to produce graphitic carbon and renewable hydrogen from food waste, with the objective to investigate how food waste could be utilized instead of sending it to landfill or putting it through an anaerobic digester to generate electricity.

Within the frame of this conference, we would like to share with you our results, different market application potential of the PlasCarb technology and to discuss how industry players can benefit from the PlasCarb product:

PlasCarb produces renewable PlasCarbon - nanographitic carbon particles composed of graphene multilayers. While the quality of the renewable PlasCarbon is still being researched and optimized by the PlasCarb partners, its economic value is expected to be very high. With the world graphite market forecast to grow at a CAGR of 3.7% from 2014 – 2020, PlasCarb offers a sustainable contribution to this growing demand by the production of renewable PlasCarbon from food waste. Potential applications include but are not limited to:

- **Inks for 2D and 3D printing, printable electronics**
- **Composites in rubber, plastic, etc.**
- **Electrodes, batteries, capacitors**

To learn more about the project results and the potential applications please check [this document](#) or visit our website at <http://www.plascarb.eu/>

Did this arouse your interest? Please register free of charge for the event at the organizers' website mentioned above.

Feel free to communicate this event to colleagues who may be interested.

We are looking forward to seeing you at RWM!

Neville Slack
 Scientific Coordinator
 Project Manager
 Centre for Process Innovation Ltd. (CPI)



Innovative plasma based transformation of food waste into high value graphitic carbon and renewable hydrogen

[f](#) [in](#) [t](#) [g+](#)

Meet the PlasCarb team, get first hand information and visit our exhibition stand.

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement No 603488

STAND A420

13-15 SEPTEMBER 2016
NEC BIRMINGHAM
RESOURCE EFFICIENCY AND WASTE MANAGEMENT SOLUTIONS



RWM
IN PARTNERSHIP WITH CIWM



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement No 603488



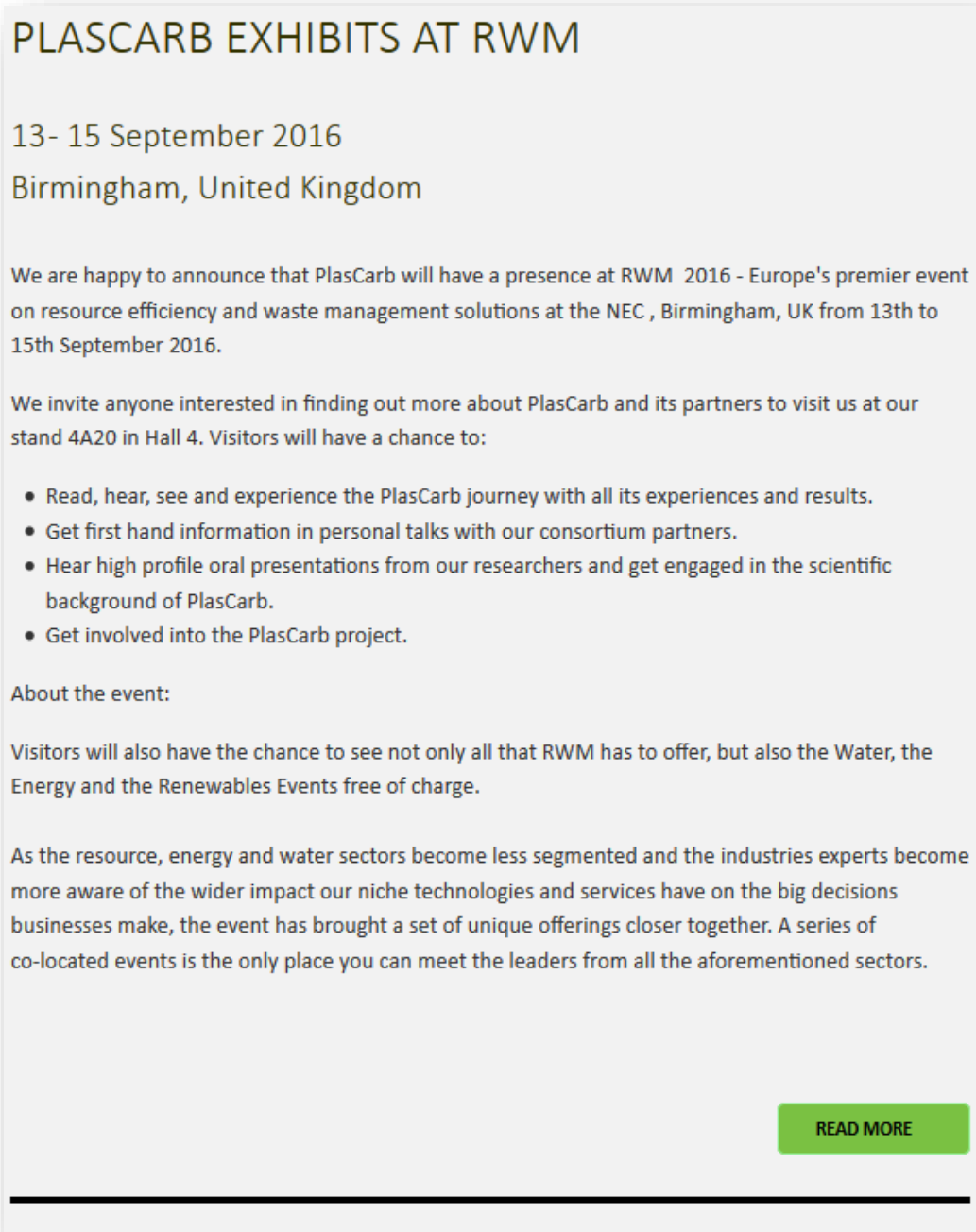


Figure 11: Personalised email to remind and invite the PlasCarb community and the wider public audience to PlasCarb's industry seminar at the RWM 2016



A news article was published on PlasCarb's webpage to promote the project's industry seminar at the RWM 2016 (Figure 12).

The event has also been promoted and continuously accompanied with messages and real-time posts via PlasCarb's social network channels such as [LinkedIn](#), [Facebook](#) and [Twitter](#) and [Google+](#).



PLASCARB EXHIBITS AT RWM

13- 15 September 2016
Birmingham, United Kingdom

We are happy to announce that PlasCarb will have a presence at RWM 2016 - Europe's premier event on resource efficiency and waste management solutions at the NEC , Birmingham, UK from 13th to 15th September 2016.

We invite anyone interested in finding out more about PlasCarb and its partners to visit us at our stand 4A20 in Hall 4. Visitors will have a chance to:

- Read, hear, see and experience the PlasCarb journey with all its experiences and results.
- Get first hand information in personal talks with our consortium partners.
- Hear high profile oral presentations from our researchers and get engaged in the scientific background of PlasCarb.
- Get involved into the PlasCarb project.

About the event:

Visitors will also have the chance to see not only all that RWM has to offer, but also the Water, the Energy and the Renewables Events free of charge.

As the resource, energy and water sectors become less segmented and the industries experts become more aware of the wider impact our niche technologies and services have on the big decisions businesses make, the event has brought a set of unique offerings closer together. A series of co-located events is the only place you can meet the leaders from all the aforementioned sectors.

[READ MORE](#)

Figure 12: News on the PlasCarb webpage to introduce and promote PlasCarb's industry seminar at the RWM 2016.

The exhibitor profile of PlasCarb on the RWM webpage is accessible via the following link:

<http://www.rwmexhibition.com/Exhibitor/CPI>. On this profile, information material such as the PlasCarb flow diagram, a press release and a short project description were featured in order to introduce the project to potential visitors as well as to the fellow exhibitors of the RWM 2016 event.

PlasCarb's exhibition stand at the RWM 2016

The dissemination materials and media to introduce the PlasCarb project to the visitors of the project exhibition stand at the RWM 2016 included a wide range of equipment and were to a high extent similar to the equipment developed and used in the first industry seminar, ANM 2016. A new feature at this industry seminar was the live-on-stand inkjet printing of circuits or RDFI-tags with conductive ink based on RPC, one of PlasCarb's potential industrial applications. The project consortium partners provided also the 3rd newsletter, titled [latest news](#), in printed form to interested visitors and could on this basis share important and most up-to-date information about the PlasCarb pilot trial in summer 2016.

The 3-days industry seminar in Birmingham, UK, was summarised and concluded in a news article which was published on [PlasCarb's website](#):

**PLASCARB
NEWS AND
EVENTS**

PLASCARB GOES TO INDUSTRY- EXHIBITING AT THE RWM2016

16 September 2016

Close to the end of the FP7 [PlasCarb](#) project in November 2016, the PlasCarb team travelled to Birmingham, UK, to share the project's story at the [RWM 2016](#) on 13-15 September 2016. The presence of PlasCarb at this event concluded the PlasCarb goes to Industry series of two industrial conferences (read here about the first conference - [ANM2016 in Aveiro, PT in July 2016](#)) where the project was presented.



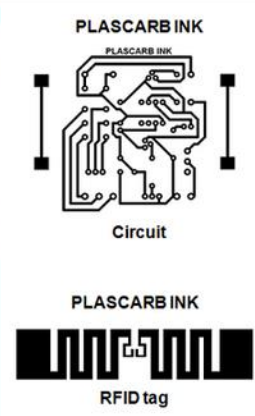
The aim of this series has been to bring the research and development results of PlasCarb closer to industry and establish contacts with people interested in the future development of the PlasCarb technology.



The RWM 2016 was a three days event co-located with the Energy-, Renewables- and Water Event and as such

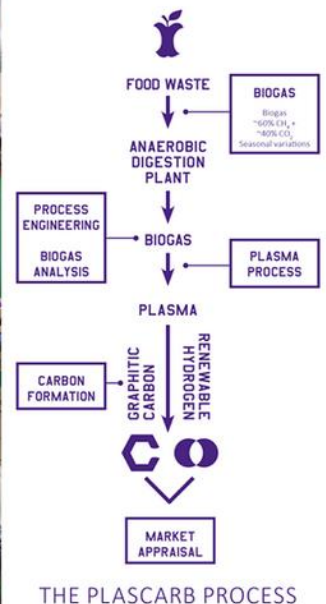


the perfect showroom to present the transdisciplinary work of the PlasCarb project. The project team had a busy time presenting not only the project's process, namely the up-cycling of food waste to the high-value products Renewable Hydrogen and Renewable PlasCarbon (RPC), but also showcasing live on stand the properties of RPC in a range of future industrial applications.



To mention one of those applications, PlasCarb's partners printed on the stand samples of conductive circuits and RFID tags with a conductive ink produced from RPC. By doing so, two aspects of RPC applied in conductive inks were proven: (a) The ability to formulate inks for the usage in market-available ink-jet cartridges and (b) the conductivity of the printed circuits and RFID tags measured by an apparatus on spot.

Over the three days, approximately 190 visitors engaged with experts of the PlasCarb consortium at the stand in in-depth discussions. People showed interest in the project from different angles, from specific details of technical and engineering related topics over the comprehensive process flow until future business, commercialisation and exploitation opportunities.



All in all, the series of PlasCarb goes to Industry was a success for the PlasCarb consortium from a dissemination and exploitation viewpoint.



The presentation and exhibition of PlasCarb at this industry seminar was well received by the visitors of the PlasCarb stand. Numerous contacts were created and enquiries for further collaboration or the provision of more information were acquired during the exhibition. These newly created contacts were followed-up with an email in Figure 13.

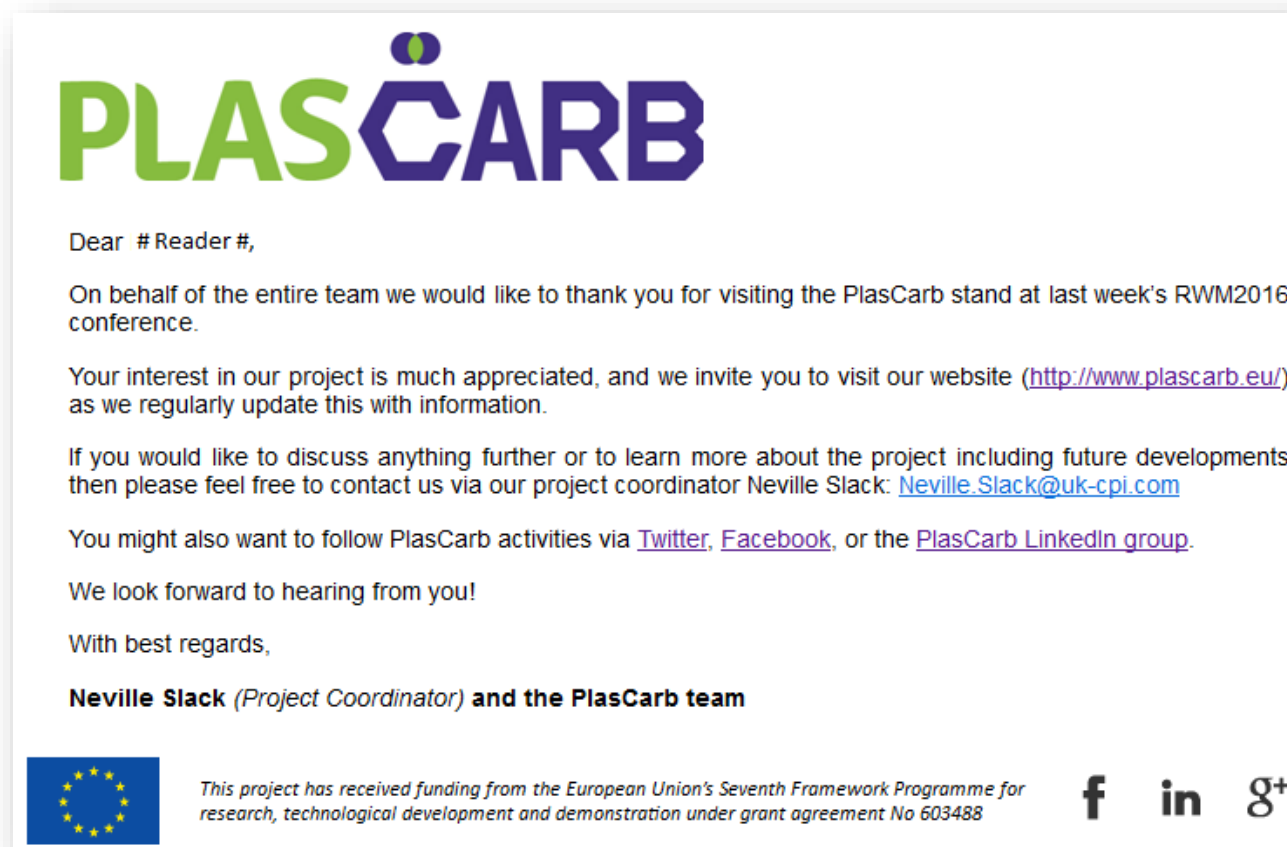


Figure 13: Follow-up email directed to all visitors of the PlasCarb stand at the RWM 2016 in Birmingham, UK.

3 Visitors at PlasCarb's industry seminars

With 186 visitors at the exhibition stand of PlasCarb at the RWM 2016 and 20 visitors at the ANM 2016, PlasCarb's industry seminars attracted 206 visitors in total. The majority of those visitors showed genuine interest in the PlasCarb project from multiple angles such as further cooperation within project funding frameworks, scientific cooperation opportunities as well as interest in PlasCarb business and commercialisation options. As a result, approximately 65 business contacts were set up during the total 6 days of PlasCarb's industry seminars.

All visitors of the two PlasCarb industry seminars will be informed about further project outcomes. As soon as results on the sustainability (social, environmental and economic) of the PlasCarb process as well as case studies of PlasCarb in different contexts are going to be published, visitors as well as business contacts will be informed about these developments. The project has also brought forth a Policy Brief (downloadable on www.plascarb.eu) to advocate eco-innovations such as PlasCarb. Moreover, PlasCarb aims to follow-up all contacts created via the industry seminars, but also a possible larger audience, with a specifically developed PlasCarb viability assessment. This tool on the PlasCarb homepage provides interested people with the possibility to overview the requirements of the PlasCarb technology and to estimate the viability of PlasCarb in a personalised, chosen context based on custom input parameters.

