EUROPEAN COMPOSITES,
PLASTICS & POLYMER PROCESSING
PLATFORM

INTRODUCTION TO A STRATEGIC RESEARCH AGENDA FOR THE EUROPEAN PLASTICS & COMPOSITES INDUSTRY

Entrepreneurial Discovery Process Focus Groups in Furniture, as well as Paper, plastics and packaging in Oradea, North-West Romania

26 October 2016 / Estela Izquierdo, ECP4 Executive Secretary

CONTENT

- About us & activities
- The need and objectives of the SRA
- European plastics and composites industry today
- Need to invest in R&D
- Strategic research needs for the plastics and composites industry
- Final ideas

ABOUT US

- **ECP4** is industry driven and unites top level EU research institutes, regional plastics clusters and industry bodies for plastics and composites processors.
- **ECP4** members are active in supporting **all industrial sectors** using plastics and composites.
- **ECP4** members have a huge range of research and innovation skills, **strongly networked** with each other.

OBJECTIVES

The objectives of ECP4 are based on the innovation-oriented needs of the European composites producers and plastics converting industry:

- To **facilitate access to research and funding** in Europe for the plastics converters and composites producers.
- To **create a cross-border network** of excellence and expertise with critical mass.
- Support **to find suitable partners** and to increase the innovative capacity.

MEMBERS

Full members

- Research organizations active in the field of plastics, polymers and composites
- Cluster organizations of the plastics and composites industry on regional, national and on European level

Associated members

- Plastics converters, composite producers
- Resin suppliers
- Machinery manufacturers

MEMBERS

19 Research centers:

- AIMPLAS (E)
- AIT (IRL)
- Centre of Polymer Systems (CZ)
- CENTEXBEL (B)
- DPI (NL)
- Fraunhofer ICT (D)
- IK4 Cidetec (E)
- IK4 Gaiker (E)
- IK4 Tekniker (E)
- IKT (D)
- IMDEA (E)
- PEP (F)
- PIEP (P)
- RESCOLL (F)
- SIRRIS (B)
- Smithers Rapra (UK)
- TCKT (A)
- VTT (FIN)
- WMG (UK)

3 EU Associations:

- ERFMI
- EuPC
- TEPPFA

4 Clusters:

- Flanders'PlasticVision (B)
- Lithuanian Plastic Cluster (LT)
- Mondragon Corporation (E)
- Proplast (I)

Centre of Polymer Systems (Research Unit of Tomas Bata University in Zlin)

FIGURES AND FACTS

ECP4 members' staff total almost 8,000 full time employees of whom 71% have a science or engineering degree.

Areas of skill:

- Development of new Polymeric, Composite ,Nano and Bio materials
- Smart industrial and energy systems
- Advanced materials for energy systems, batteries ,fuel cells
- Material characterization, development and processing
- New intelligent solutions for materials ,processes and machines
- Extrusion of monofilaments, moulding, coating ,braiding
- Applied Electrochemistry and Environmental engineering

Industrial sectors:

Automotive, Healthcare, Defense ,Energy, Transport, Building and Construction, Aerospace, Space technology, Safety and Security, Biotechnology, Food, Packaging, Sport, Electrical and Electronic, Agriculture, Environmental protection.

EUROPEAN RESEARCH AND INNOVATION PROJECTS

- **Horizon 2020** is the European Union's new Research and Innovation Framework Programme. Running from 2014 to 2020 with a budget of nearly €80 billion.

- ECP4 members have mobilized all together more than 200 projects supported by the European Commission under FP5,FP6 and FP7, with an overall total budget of more € 186 million.

- H2020 also **supports SMEs** with a new instrument which allows SMEs to find opportunities in many calls.

ACTIVITIES

HORIZON 2020 INFODAYS

- **Building and Construction Innovation Workshop 2015**
- **Date:** 16th March 2015
- **Venue:** EuPC, Brussels

40 participants from the plastics construction sector gained an insight into R&D centres and their expertise. Speakers from R&D centres all around Europe presented their work and current projects in the building and construction sector.

Follow up of this workshop was held during the EuPC Building and Construction Forum on 21st May in Warsaw with focus on Horizon 2020 new calls.

HORIZON 2020 INFODAYS

- **Annual Meeting 2015**
- **Date:** 28-29 May 2015
- **Venue:** BBF, Bilbao (Spain).

- 2015 Annual Meeting for ECP4 members will be a two day event focused on potential projects within the new calls of Horizon 2020.

Info Day and Industrial visits to high technology companies for polymer processing in the Basque Country, one of the main industrial areas in Europe.

- BATZ S. COOP.
- MAIER S. COOP.
- FAGOR ARRASATE S. COOP.
- CIKAUTXO S. COOP.
- IK4-IKERLAN
- MONDRAGON UNIVERSITY
- IK4-LORTEK
- LEARTIKER

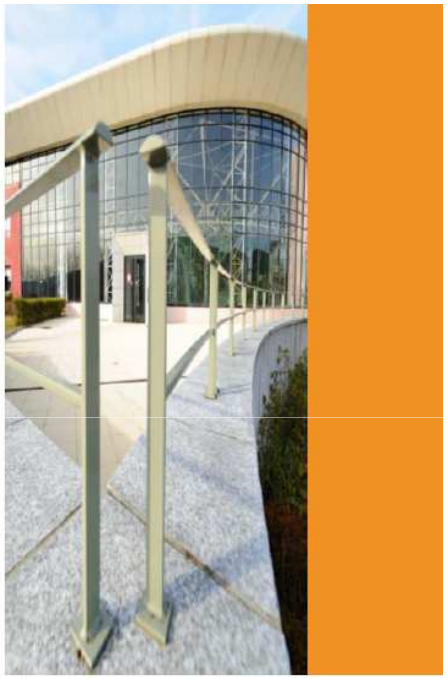
MONDRAGON HUMANITY AT WORK
Finanzas Industria Distribución Conocimiento

HORIZON 2020 INFODAYS

PEP
CENTRE TECHNIQUE DE LA PLASTURGIE ET DES COMPOSITES

PEP

Plastics and Composites Technical Center



- **ECP4 Info Day and 4M2020 workshop**
- **Date:** 17-18 September 2015
- **Venue:** PEP (Centre Technique de la Plasturgie et des Composites) in Bellignat (France).

Info Day and Industrial visits to high technology companies for polymer processing in the Plastic Valley, one of the main industrial areas in Europe.

- Composites Rhône-Alpes
- 4M2020 partners

PEP
CENTRE TECHNIQUE DE LA PLASTURGIE ET DES COMPOSITES

2016 Project: Strategic Research Agenda

The conference was opened by the Portuguese Minister of Economy, Mr. Manuel Caldeira Cabral. From left to right: Mr. Domingos Bragança, President of the Municipality of Guimarães, Mr. Carlos Bernardos, Mr. José -Lorenzo Vallés and Mr. Clement de Meersman.

ECP4 Annual Meeting

Date: 18 May 2016

Venue: PIEP, Innovation in Polymer Engineering, Guimarães, Portugal.

Research investment essential for plastics and composites to be globally competitive

piep
inovação em engenharia de polímeros

2016 Project: SRA Presentation at K 2016

- **Date:** 20 October 2016
- **Venue:** Fraunhofer Institute booth

Download here the brochure with the presentation of the initiative.

Please send us an e-mail (info@ecp4.eu) if you want to request the full report.

2016
19 – 26 October
Düsseldorf, Germany

THE NEED AND OBJECTIVES OF THE SRA

THE NEED

This **Strategic Research Agenda** is a strong call to the European Commission to strengthen efforts to invest sufficiently in research and development targeted towards plastic processors, composite producers, machinery and tooling manufacturers and recyclers.

THE NEED

The **SRA** is a plan to illustrate how European industry, research organisations and the EU Commission can **work together to ensure**:

- we remain globally competitive
- maintain our lead in technology and innovation
- retain and grow investment and employment
- meet societal challenges for a better tomorrow
- fulfil Circular Economy objectives

OBJECTIVES

- Demonstrate the **benefits** of Plastics and Composites Research for the European Union.
- To outline the **future strategic research needs** for the EU Plastics and Composites industry to meet the Commission's objectives and keep us at the forefront of innovation and **globally competitive**.
- To seek under **Horizon 2020** greater recognition of the potential for Plastics and Composites innovation with substantially more **relevant topics** and approvals for funding.

FULFIL CIRCULAR ECONOMY OBJECTIVES

Environmental requirements

- Plastics and Composites must be part of the Circular Economy.
- Recycling of Plastics in Europe is increasing exponentially.

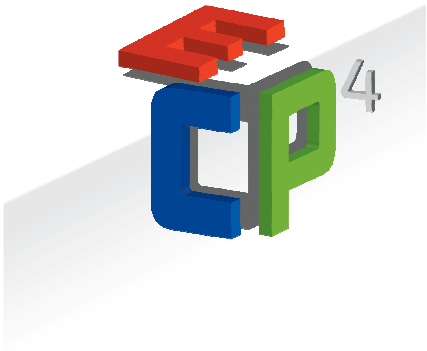
The Industry, ECP4, and the Commission must:

- find new markets and uses for recyclate
- bring down the cost of re-processing
- improve collection systems
- reduce the attractiveness of exporting plastics waste
- encourage Green procurement.

THE EUROPEAN PLASTICS AND COMPOSITES INDUSTRY TODAY

THE EUROPEAN PLASTICS AND COMPOSITES INDUSTRY TODAY

- Plastics greatly contributes to sustainable development
- Plastics is part of the top five most innovative sectors in the EU.



Plastics industry contributes

26.3bn euros

to EU public finance and welfare

each year.

turnover of over

300 bn euros

a year

There are

50,000 EU

plastic processing companies,

employing

1.6 million people

SMEs provide

59% of

manufacturing employment

Plastics Processors produce

45 million

tonnes

of plastic products

Use of plastic and its applications

39.6%
makes **Packaging**
the lead segment overall

20.3%
makes
Building and Construction
the second largest segment

8.5%
puts
the Automotive industry
in third place

5.6%
for
Electrical and Electronic equipment
in fourth place

STRATEGIC RESEARCH NEEDS FOR THE PLASTICS AND COMPOSITES INDUSTRY

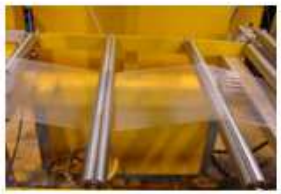
STRATEGIC RESEARCH NEEDS FOR THE PLASTICS AND COMPOSITES INDUSTRY

ECP4 sees these sectors as key for EU Research and innovation support:

- Automotive
- Light rail
- Buildings
- Aircraft
- Space
- 3D Printing
- Healthcare
- Energy
- Smart factory
- Agriculture
- Packaging

Future trends

Processes



The trends in plastic packaging manufacture are:

- Improve converting process, speed, automation and yield.
- Expansion and improvements of machinery for multilayer packaging (co-extrusion, co-injection, etc.).
- Adapt the manufacturing processes to the new materials: biodegradable materials, recycled materials, nanomaterials, etc.
- Adapt the manufacturing processes to recycled plastics.
- New technologies for plastic packaging recycling (e.g. food contact grades).

Plastics in Automotive Lighting

- Trends include technologies that concentrate on reducing glare, illuminating the road along corners, distinguishing obstacles by using infrared (IR) or ultra violet (UV) light, and introducing signal lighting, which is adaptive to varying ambient conditions while responding to emergency braking conditions
- LED is soon expected to phase out incandescent and halogen bulbs from the market. LEDs last about 25 times longer than incandescent lights and three times longer than compact fluorescent lamps (CFL)
- Complex light guide shapes are being developed to follow the contours of the product styling or deliver light from remote light sources to the illumination target surfaces

New material technologies meet processing technologies: window of opportunities and/or challenges

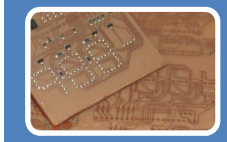
feeding systems

mixing and compounding

on-line monitoring for dispersion

recycling and utilisation of recycled plastics

- Filled commodity plastics replace engineering plastics
- Single-material components with functionalities
- Aesthetic surface factors and feel of quality



- Functional & intelligent materials
- NPs and nanocomposites
- Hybrid materials

- Biocomposites, WPCs, natural fiber composites
- Bioplastics
- Recycled materials

moulds (new design)

fiber treatments compacting and fractioning of fibres

Pictures from: VTT

HEALTHCARE

Growing opportunities for plastics in intelligent devices and advanced diagnostics to detect and treat patients remotely.

A plastic sheet with two layers one of carbon nanotubes the other of sprayed on ultra thin electrical circuits can as an artificial skin provide a sense of touch to people with prosthetic limbs.

A soft granular gel made from polymeric micro particles can be used to 3D print material out of living cells including blood vessels. Body parts or organs could be created from a patient's cells.

3D printing can offer fast production of complex and tailor made devices also cranial and dental implants.

HEALTHCARE

Example of hearing implant by additive manufacturing

COMPOSITES

Composites have enormous **potential** but these limitations need to be overcome:

- High materials cost
- Lack of high volume processes for structural parts
- Repair and recyclability
- Joining technologies. Knowledge of adhesive technology needs to increase.

CONCLUSION

We are seeking the Commission's support through **Horizon 2020** to explore the full potential of the European Plastics and Composites industry, to maintain our lead in technology and innovation, remain globally competitive, grow investment and employment particularly in **SME companies**, and meet the Commission's **societal challenges.**

Thank you for your attention

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