

Integrated Catalytic **Recycling** of Plastic Residues Into Added-Value

Chemicals

### The 2<sup>nd</sup> period of the iCAREPLAST project started

NEWSLETTER

Julv 2021

Welcome to the iCAREPLAST newsletter!

This is the fifth edition of our semi-annual newsletter series.

This SPIRE project started in October 2018 and has received funding from the European Union's Horizon 2020 research and innovation programme (G.A. Nº 820770).

**iCAREPLAST** addresses the cost and energy-efficient recycling of a large fraction of today's non-recyclable plastics and multi-layered films. The process combines chemical routes (pyrolysis, catalytic and separation steps) to produce valuable chemicals.

Please, visit the website in order to learn more about the **iCAREPLAST** project in general, as well as find more detailed information on upcoming activities: <u>https://www.icareplast.eu/</u>

Your **iCAREPLAST** Team



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## What TUBS does?

The Institute of Machine Tools and Production (IWF) of the Technische Universität of Braunschweig (TUBS) is focused on the life-cycle oriented optimization of processes and products. Production processes of technical products are often very complex systems that can have a more or less significant impact on the environment through the use of raw materials and/or energy. This type of problem can be tackled through various methods, one of them being the utilization of analysis methodologies such as Life Cycle Assessment (LCA) and Life Cycle Costing (LCC), based on the use of modern computational and analytical approaches such as visual analytics. The objective of the Life Cycle Engineering (LCE) research group is to minimize risks and environmental impacts along with the costs of the process and product.

In the specific case of plastic waste recycling for the production of value-added chemical products, the IWF is developing an integrated methodology for environmental and life-cycle cost assessment, specifically a live LCA model which takes the real process values from the iCAREPLAST pilot plant, calculating instant impact assessment results which allows decision-making based in robust data.



Preliminary results display the contribution analysis of the different units in the global warming potential (GWP) impacts category. The GWP is depicted as 50,74 kg  $CO_2$ -Eq. for the treatment of 100 kg mixed plastic waste (MPW) for the background and foreground activities. The utilization of virgin-like chemical products (alkyl benzene and benzene) substitutes production from virgin materials, therefore, gives credits to the system. The credits from the products may offset the burdens of the recycling process. However, the preliminary results do not include these credits at this stage of the project and might change in the future months of the project.

# Which is TUBS role in iCAREPLAST Project?



Technische Universität Braunschweig



Development of a **methodology for the live assessment of life-cycle (LCA)** environmental impacts of secondary chemical commodities from the recycling of plastic containing products.



**Dynamic calculations** of the life-cycle **environmental impacts and costs** per functional unit of the manufactured product.



iCAREPLAST Meetings

All partners met virtually via Microsoft TEAMS to have a Plenary Meeting corresponding to M30. The Plenary Meeting took place online with great success due to the support collaboration from the whole consortium. Learn more about the meetings <u>here</u>.



#### 1<sup>st</sup> iCAREPLAST Workshop – Plastic waste chemical recycling technology

On May 6th, 2021, the first workshop of the iCAREPLAST project was held, oriented to the chemical recycling of plastics, its regulation, as well as the sustainability of this type of processes through the use of Life Cycle Engineering (LCE). The event was very successful, with more than 160 people registered and a very active participation of the audience.

Click for more info about the event



#### iCAREPLAST Videos

If you are interested in the project and want to know more about it, you are in luck because we have published several videos on the YouTube platform to tell you what we do and how we do it. A picture is worth a thousand words!

Visit iCAREPLAST Youtube Channel



#### iCAREPLAST joined Plastics Circularity Multiplier (PCM)

iCAREPLAST joined <u>PCM</u> and takes part of a group of the most interesting innovation projects related to boost circular economy for plastics. The initiative aims to perform the synergies of EU-funded projects in the field of plastic circularity and coordinating communication and dissemination activities.



Several videos as learning resources about the different technologies involved in the iCAREPLAST project are being prepared, stay tuned to the social networks and visit our website if you don't want to miss them.











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