03

NEWSLETTER #3,
DECEMBER 2021

1-2-2022
SAVE THE DATE
DISSEMINATION
EVENT (p.11)

LIFE PlasPLUS

NEWSLETTER #3

LIFE PlasPLUS is a project within the EuropeanUnion's LIFE programme for Environment and Resource Efficiency.

With €1.43M EU support and a total budget of €3.17M.

Aims to improve the recycling of high-purity secondary thermoplastic and enhance a circular value chain

Recover Antimony, a critical raw material, coming from plastic waste in EoL and WEEE sectors.

Run by a consortium of 5 partners, covering the full value chain from recycling to car manufacturing

Welcome to our third LIFE PlasPLUS Newsletter.

The LIFE PlasPLUS project revisits the concept of recycling with its holistic approach to simultaneously close the loop for two traditionally siloed material value chains, plastics and minerals, by producing high purity recycled thermoplastics and antimony.

5 EU PARTNERS

The project is run by a consortium of five EU partners covering the full value chain from recycling to car manufacturing as illustrated below.

comet traitements — **Waste sorting and valorisation**

LIÈGE université — **Research and development**

Campine — **Production of antimony**

SERI PLAST POLYPROPYLENE COMPOUNDS — **Plastic compounding**

CRF — **Car manufacturing**

3 STEPS

1. **Production of high purity thermoplastics**
2. **Automated multi-class sensor-based sorting and separation of FR Plastics (FRP)**
3. **Recycling of by-product Sb through catalytic conversion and hydrometallurgy**

FROM JULY 2019 TO DECEMBER 2022

Preparatory actions ✓
Suppliers - outputs specs - demo completed - equipment installation

Project management ✓
First periodic progress report - Risk Monitoring & management plan I

Public awareness and dissemination ✓
Official website - Project Video - Dissemination plan and materials

Monitoring of the impact of the project

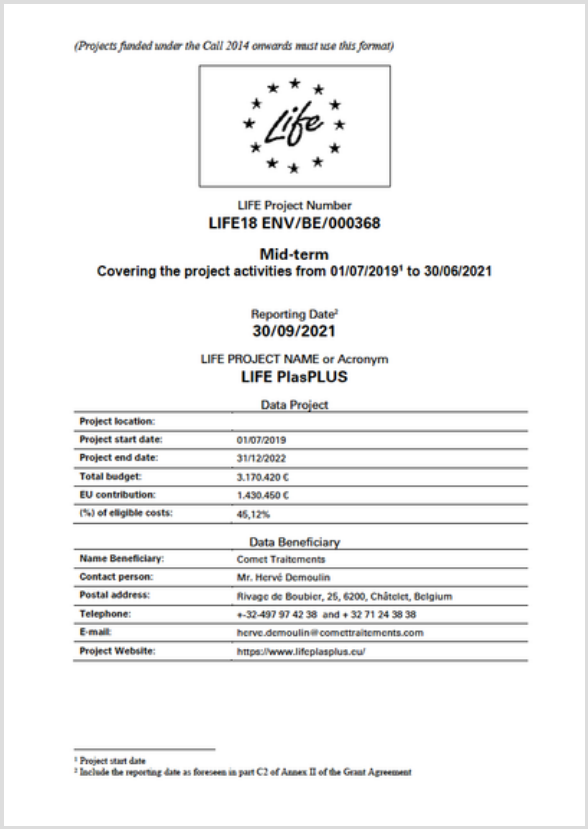
Implementation actions ✓
Operation protocols - Characterisation of input - First production trial complete

Implementation actions ✓
LIBS sensor finetuning
Specifications require for hybrid PP and ABS compounds: automotive sector & EEE sector

2019 2020 2021 december 2022

PROJECT NEWS

On September 30, 2021, the consortium submitted the project Midterm report to the EU authorities.
A series of important milestones were achieved as reported below.



(Projects funded under the Call 2014 onwards must use this format)

LIFE Project Number
LIFE18 ENV/BE/000368

Mid-term
Covering the project activities from 01/07/2019[1] to 30/06/2021

Reporting Date[2]
30/09/2021

LIFE PROJECT NAME or Acronym
LIFE PlasPLUS

Data Project

Project location:	
Project start date:	01/07/2019
Project end date:	31/12/2022
Total budget:	3.170.420 €
EU contribution:	1.430.450 €
(%) of eligible costs:	45,12%

Data Beneficiary

Name Beneficiary:	Comet Traitements
Contact person:	Mr. Hervé Demoulin
Postal address:	Rivage de Boubier, 25, 6200, Châtelet, Belgium
Telephone:	+-32-497 97 42 38 and + 32 71 24 38 38
E-mail:	herve.demoulin@comettraitements.com
Project Website:	https://www.lifeplasplus.eu/

[1] Project start date
[2] Include the reporting date as foreseen in part C2 of Annex II of the Grant Agreement

STEP 1 PRODUCTION OF HIGH PURITY THERMOPLASTIC

High purity thermoplastics value chain

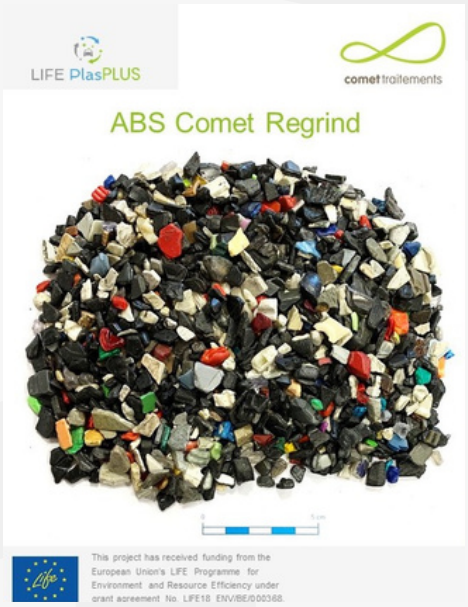
This step being the first one in the project value chain, it has been the one first implemented and is therefore showing the most advanced results at this stage.

PROJECT NEWS

STEP 1 PRODUCTION OF HIGH PURITY THERMOPLASTIC

High purity thermoplastics value chain

Six months after start-up, 1,355 tons of purified secondary plastics (FPP, ABS, PS) have already been produced and sold to Comet Traitements' compounder customers. If the current throughput is maintained, around 3,000 tons of high-quality thermoplastics should be recycled by the end of the project, greatly exceeding the project's objective.



SERI PLAST started its compounding activity with Comet Traitements' FPP and the first formulations indicate that an incorporation of 70% FPP secondary plastics in the final compound can be achieved with the main mechanical properties being attained. This greatly surpasses the project's objective of 40% reduction in the use of virgin plastic for the manufacture of new products.

A major simplification of the ABS/PS/FPP sorting process has been demonstrated. The desired quantities and qualities of recycled thermoplastics can be obtained with the optimal operation only on the tribo-electric unit and the Froth Flotation is totally abandoned. This important improvement simplifies the process and thereby avoids the use of water, reagents and energy, notably as flotation intermediate products had to be dried before entering the tribo-electric unit.

PROJECT NEWS

STEP 2 AUTOMATED MULTI-CLASS SENSOR-BASED SORTING AND SEPARATION OF FLAME RETARDANT PLASTIC (FRP)

Extraction of Flame Retardant Plastics

In the framework of the LPP project, Université de Liège is adapting the PICKIT technology, a robotic sorting line with real-time multi-sensors acquisition, to identify and extract Flame Retardant Plastics ("FRP") containing elements such as Br and Sb by modifying its LIBS-based detection system. Magnetite-based slurry is used for heavy media gravity separation which is the fundamental process to treat Comet Traitements plastics and produce the DrainaPlus fraction. DrainaPlus is the commercial name for the non-recyclable plastics with a density over 1.08 which is the plastic fraction enriched in FRP. A specific procedure is being developed to circumvent the magnetite residual surface contamination of FRP fragments which interferes with the detection of Sb.

On the antimony recovery front, Sb-rich plastics have been extracted in February 2021 with the alternative REDWAVE XRF sorting technology from a masterbatch of DrainaPlus coming from the recycling of WEEE plastics. This material served as input to the pyrolysis process at Comet Traitements in order to supply the Université de Liège hydrometallurgy team with first Char samples.

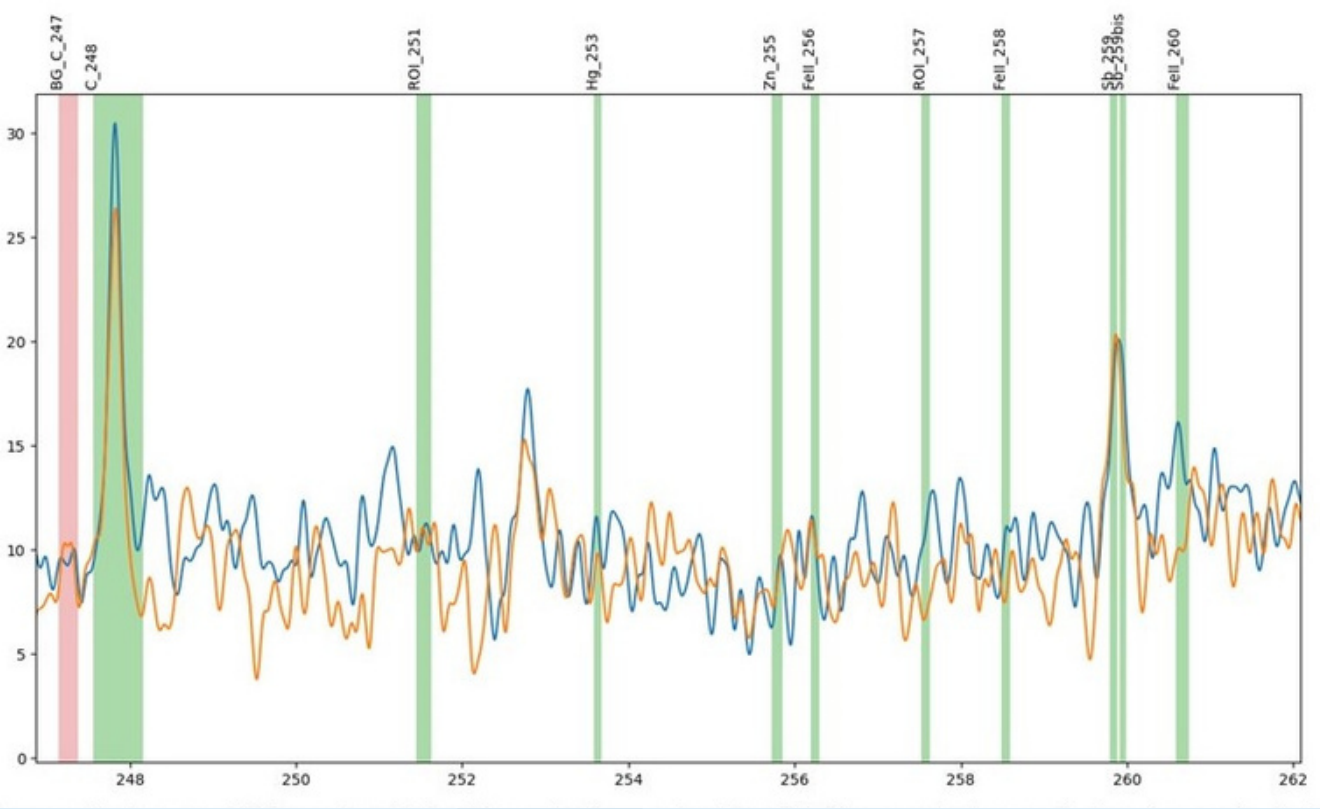
The PICKIT technology - here used with non-ferrous metals

PROJECT NEWS

STEP 2 AUTOMATED MULTI-CLASS SENSOR-BASED SORTING AND SEPARATION OF FLAME RETARDANT PLASTIC (FRP)

Extraction of Flame Retardant Plastics

In the process, 13 tons of DrainaPlus were separated in a first XRF campaign yielding of 1 ton of high-grade bearing Sb plastic containing 12 kg of Sb metal, or about 50% of the Sb requested in the project. Over the coming months, additional XRF and PICKIT sorting campaigns will extract further batches of FRP for the recovery of the project's targeted Sb quantity.



Zoom on the two raw LIBS spectra obtained for a plastic sample with a 5% Sb concentration on single pulse mode. Carbon emission line can be seen at 248 nm and Sb ones at 252.9 and 259.8 nm. A gaussian filter is applied with sigma = 5

PROJECT NEWS

STEP 3 RECYCLING OF BY-PRODUCT ANTIMONY (SB) THROUGH CATALYTIC CONVERSION AND HYDROMETALLURGY

Comet Traitements characterized and performed the catalytic conversion of the first batch of FRP which delivered 300 kg of Sb bearing Char at a grade of 4% Sb for an approximate equivalent of 12 kg of Sb metal contained. Over the coming months, further catalytic cracking will produce enough Sb-Char for Université de Liège's metallurgical activities and production of Flame Retardant masterbatch by Campine.

Université de Liège is studying an oxidative hydrometallurgical route to produce the Antimony Trioxide for Campine. University of Liège is working on the Sb-Char supplied by the pyrolysis step of Comet Traitements to validate this route.

In parallel, Campine suggested and is studying a direct Sb injection route for the Sb-Char which could be used "as-is" for its reducing chemical properties. A direct benefit is that the carbon fraction contained in the Sb-Char could be used instead of being discarded and the Sb fraction would be reintroduced in the industrial cycle without having to incur the use of water, reagents and energy in the hydrometallurgical process.

From FRP plastics to Sb-Char and oil pyrolysis after catalytic cracking

INDUSTRY ASSOCIATIONS

A listing of all industry organizations through which the project beneficiaries are undertaking collaborations was provided in the midterm report as is presented here below.

Reverse Metallurgy

Wallonia internationally recognized Platform for industrial, technological and scientific excellence in the field of metals recycling.

PLASTIWIN

Network of companies in the plastics industry in Wallonia

ncp WALLONIE

National Contact Point for involvement in European Research and Innovation projects

PÔLE MECATECH
LE PÔLE DE COMPÉTITIVITÉ WALLON EN GÉNIE MÉCANIQUE

Walloon competitiveness cluster in mechanical engineering

SAPA Superior Auto Parts Always
the One-Shot company

Producing millions of plastics part per year available to perform industrial trials on new compounds

.AGORIA

Belgian Federation for the technology industry

comet traitements

MAIP COMPOUNDING
The good chemistry

Company dealing with specialties compounding recycled ABS materials

CRF

Campine

i2a
International Antimony Association

proplast
PLASTICS INNOVATION POLE

Research organization and services for plastic materials

SERIPLAST
POLYPROPYLENE COMPOUNDS

CENTEXBEL

Organisation supporting the innovation in textile and plastics

IIP
ISTITUTO ITALIANO DEI PLASTICI

Italian institute of plastic

IPPR

Institute of promotion of recycled plastic

CONFINDUSTRIA

Association representing manufacturing companies

ECO POLIETILENE
Consorzio per la raccolta di beni in polietilene

SISTEMA ECOLIGHT
INSIEME PER L'AMBIENTE

Consorzium ECOPOLIETILENE

NEWS & EVENTS

Recent news and events

FCA and PSA complete merger to become Stellantis - 16 January 2021

Fiat Chrysler Automobiles and PSA Group completed their $52 billion transaction and formally merged into Stellantis in January of this year creating the world's fourth largest manufacturer by volume. The name Stellantis refers to the Latin word "stello," meaning "to brighten with stars." Based on the most recent sales figures, Stellantis should have an annual production volume of 8.7 million units, which places the firm behind only the Volkswagen Group, Toyota and the Renault-Nissan Alliance. The merger provides the group with the financial capacity to fund the shift to electric driving.

LIFE PLasPLUS partner CRF, Centro Ricerche Fiat S.C.p.A, is based in Turin, Italy and is now part of the Stellantis group.

LIFE PlasPLUS attends the 20th International Automobile Recycling Congress IARC 2021 23 to 25 June 2021

The 20th anniversary of this Automobile Recycling Industry conference was held in Geneva as an onsite and virtual event. 2021 is a critical year for the vehicle recycling industry in Europe and worldwide, with new legislation being implemented with wide-reaching consequences for the entire value-chain. Delegates are debating with the European Commission on the impact of the EU ELV Directive revision on the mobility sector, recycling industry, and producer responsibility organizations. All sectors of this major industry under rapid transformation were represented, as they demonstrated their technological advances and breakthroughs, in the race to meet accelerating market and environmental objectives.

LIFE PLasPLUS was represented by **Hervé Demoulin**, Project Manager at Comet Traitements, the Project's Coordinating Beneficiary.

NEWS & EVENTS

LIFE PlasPLUS presents at INFOhappening Textile coating, finishing, dyeing & printing by Centexbel 29 June 2021

The yearly event organized in Belgium focusses on the latest developments, devices and technologies for textile coating, finishing and dyeing. A broad list of topics covered include : Smart textiles (Luminoptex and encapsulation), Specialties (plasma-induced surface modification and opportunities for melt processing), Recycling (novel recycling strategies and TiO2 recovery), Composites (recycling and biobased fibre reinforced materials), New equipment and Biobased coatings & inks.

LIFE PLasPLUS was represented by **Hans Vercammen**, Division Director Specialty Chemicals at Campine who participated as a guest speaker in the Recycling session with a presentation titled : “Recycling ATO from industrial waste and beyond".

LIFE PlasPLUS second video

The filming for the LIFE PlasPLUS second video was initiated in November 2021. The video is realized in collaboration with Plastiwin, a regional sectoral cluster focused on the plastic industry. The film crew spent a day at Comet Traitment’s recycling facilities in Obourg, Belgium.

Additional filming in Belgium is planned on Campine and Université de Liège industrial and laboratory facilities with added interviews from various stakeholders. The video explains the concept behind the project and how it will contribute to prevent landfilling, incineration, and downgrading of end of life thermoplastics, by -for the first time in Europe- using the novel process that will be developed within the project. The video will be uploaded on the website and disseminated through social media once finalized.

NEWS & EVENTS

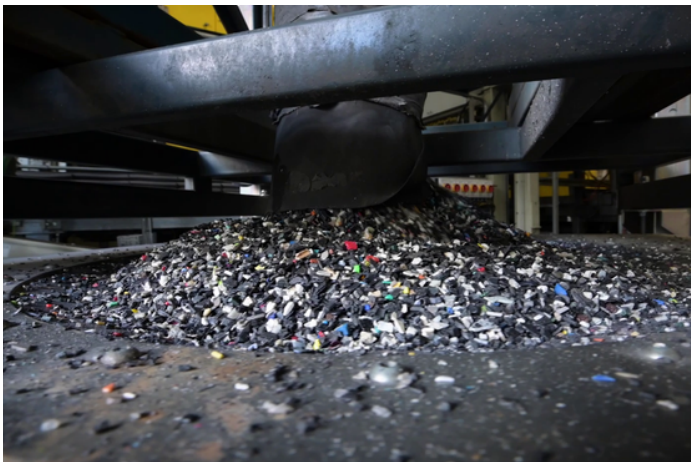
LIFE PlasPLUS

SAVE THE DATE : 1ST FEBRUARY 2022
Dedicated dissemination event

The first LIFE PlasPLUS Dedicated Dissemination Event is in preparation. It will be hosted by Comet Traitements, the Project's Coordinating Beneficiary, in Obourg, on TUESDAY 1ST FEBRUARY, 2022.

This event will also include a stakeholder workshop with the objective to gather parties with clear exploitation potential within the plastic value chain (i.e., plastic, automotive, and recycling industries).

REGISTRATION




A site visit of the plastic recycling facilities will be organized for the occasion.

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LIFE PlasPLUS

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