PUReSmart

PolyUrethane Recycling Towards
a Smart Circular Economy

Deliverable

D6.12 Workshop 1

WP6 – Communication, Dissemination and Exploitation

Project Information

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The PUReSmart project results presented reflect only the author's view. The Commission is not responsible for any use that may be made of the information it contains.
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PUReSmart

Document status

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	WP Leader	RECTICEL		
Maud Bossard	Support to Project Management	AYMING		
Bart Haelterman	Coordinator	RECTICEL		

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Publishable Summary

This report describes the activity carried out for the first public project workshop “Chemical recycling and plastics”, as well as its organization procedures, which by organized by RECTICEL with the partner’s help (KUL, COV, AYM).

Executive summary

1 Description of the deliverable objective and content

This report describes the activity carried out for the first public project workshop “Chemical recycling and plastics”, as well as its organization procedures, which by organized by RECTICEL with the partner’s help (KUL, COV, AYM).

2 Brief description of the state of the art

N.A.

3 Deviation from objectives and corrective actions

It was a virtual workshop, as the sanitary COVID-19 crisis made too difficult to organise a physical meeting.

4 Innovation brought and technological progress

N.A.

5 Analysis of the results

137 people registered, and **89** participated in this workshop.

6 Impact of the results

Knowledge spread on the recycling of plastics, and more specific on the chemical recycling route of polyurethanes in the PUReSmart project.

7 Related IPR

N.A.

8 Publishable information

N.A. – as dissemination level of this document is ‘public’

9 Conclusion

The first public project workshop “Chemical recycling and plastics” from the PUReSmart project was successful, seeing the numerous presence of different companies and institutes /universities.

Deliverable report

1 Preparation of the workshop

1.1. Date and location

The virtual workshop has been organized on May 31st 2021 by KUL, COV, REC and AYM. The main topic of this workshop was "Chemical recycling and plastics" and it did target PhD students as well as industries. No confidential information was shared, which allowed a potential large number of participants.

1.2. Schedule

Virtual Workshop - Chemical recycling and plastics
May 31, 2021

RECTICEL The passion for comfort
KU LEUVEN
covestro

9:30 – 10:10
Context
Prof. Kim Ragaert, Ghent University
The state of plastics recycling in Europe

10:10 – 10:50
Sorting technologies
Katharina Ander, Redwave
Sorting Technology in Plastics Recycling

10:50 – 11:10
Break

11:10 – 11:40
Other plastics: PC
Dr Erik Sluyts, Covestro
Chemical recycling technologies for PC

11:40 – 12:10
Other plastics: PET
Inge Baele, Resilux
The power of PET in a circular economy

12:10 – 13:30
Lunch Break

13:30 – 14:10
Europur
Secretary General Michel Baumgartner, Europur
Flexible PU Foam Recycling - An overview of ongoing initiatives

14:10 – 14:40
PUReSmart – the importance for the industry
Jan Willems Recticel and Karin Clauberg, Covestro
PUReSmart – The importance for the industry

14:40 – 15:10
PUReSmart project results
Prof. Dirk De Vos, KU Leuven
Chemical recycling technologies for PU

15:10 – 15:30
Concluding remarks
Dr. Bart Haelterman, Recticel
Conclusion

Participation is free but registration is required before May 28, 2021 at the following link

The workshop can be followed via this Teams link

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This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement N° 814543.

1.3. Workshop promotion

The workshop has been disseminated by the consortium directly to their contacts, through the website and Linkedin page.

2 The workshop

2.1. Content and speakers

Content:

The presentations are available on the project website: https://www.puresmart.eu/workshop-chemical-recycling-and-plastics-2/

Speakers:

Prof. Kim Ragaert, Ghent University

A polymer materials scientist by background, Kim Ragaert is an associate professor in 'Circular Plastics' (www.circularplastics.ugent.be) at Ghent University. She leads a multidisciplinary research team of around 15 researchers, working to develop the necessary scientific tools to enable the improved mechanical recycling of plastics. Specific research topics include the quality modeling of (contaminated) recycled plastics, upcycling of mixed solid plastic waste, polymer degradation and multiple recycling, Design for Recyclability, Design from Recycling, WEEE plastics and recycling of multilayer packaging materials. She leads and participates in several (inter)national recycling projects. Amongst others, she is the coordinator of C-PlaNeT (https://www.c-planet.eu/) , a member of HolyGrail2.0 and an associate editor for the high-level journal Waste Management.

Prof. Ragaert is the chair of the Plastics to Resource pipeline within CAPTURE (http://capture-resources.be), wherein she creates Circular Plastic synergies with colleagues from 4 different institutes, active in thermochemical recycling, food packaging, sorting/decontamination, policy, consumer behavior and LCA. She is the 2020 European Plastics Recycling Ambassador.

Katharina Ander, REDWAVE

With an engineering background and a broad knowledge of the recycling industry, Katharina Ander joined the R&D team of REDWAVE in early 2019. As expert in NIR-based sorting she is responsible for sorting solutions in plastics, paper, MSW recycling and many more.

Katharina Ander received her bachelor's degree in physics at the University of Leipzig, Germany in 2012 and graduated from engineering school at TU Bergakademie Freiberg, Germany in 2016.

Dr Erik Sluyts, Covestro

Dr. Erik Sluyts studied chemistry and performed his PhD at the University of Antwerp, Belgium. In 1997 he started his professional career at Bayer Antwerpen NV – (since 2015 Covestro NV) and after holding several functions in production in the polyurethane business from 1997 to 2012, he then joined the Technology Center Polycarbonates as lab manager. In this role he supports the polycarbonate production plants with process questions and optimizations such as yield improvement, waste reduction and wastewater topics. In recent years his work is focusing more on polycarbonate recycling topics in line with Covestro's vision to be fully circular.

Inge Baele, Resilux

Inge Baele is Application Specialist at Resilux with a focus on sustainability and barriers, which improve the shelf life of products, packed in PET bottles. She is an industrial engineer and started her career in R&D. Inge also had various business development and product management positions in the polyurethane world and started 2 years ago, after a career at Recticel of almost 20 years, with this exciting role at Resilux.

Secretary General Michel Baumgartner, Europur

Michel Baumgartner is the Secretary General of EUROPUR, the European association of flexible polyurethane foam blocks manufacturers, and of EURO-MOULDERS, the European association of manufacturers of moulded polyurethane parts for the automotive industry. He serves both associations since November 2013. He spent most of his career representing trade associations in Brussels, and notably served as EU Affairs Manager of EUROBAT, the European association of automotive and industrial battery manufacturers. Michel holds a degree in political science from Sciences-Po Strasbourg, where he specialized in international relations and European law.

Jan Willems, Recticel

Jan Willems (R&D expert) graduated as Master of Science in organic chemistry, and started in 1994 working for Recticel as R&D engineer. Between 1998 and 2018, he had different R&D management positions linked to project management, technology, innovation and new business development. In 2018, he became an R&D expert, with focus on sustainability: mechanical & chemical recycling, new sustainable business development.

Karin Clauberg, Covestro

Karin Clauberg is responsible of the Lead Innovation Platform Chemical Recycling at COVESTRO.

Prof. Dirk E. De Vos, KU Leuven

Prof. Dirk E. De Vos received his PhD at Leuven in 1994, and was active as a post-doc at Purdue University (Indiana, USA) with Thomas Bein. He is since 2006 full professor in Catalysis at Leuven University and is the head of the Department of Microbial and Molecular Systems. The research of his team is conducted within the Centre for Surface Chemistry and Catalysis

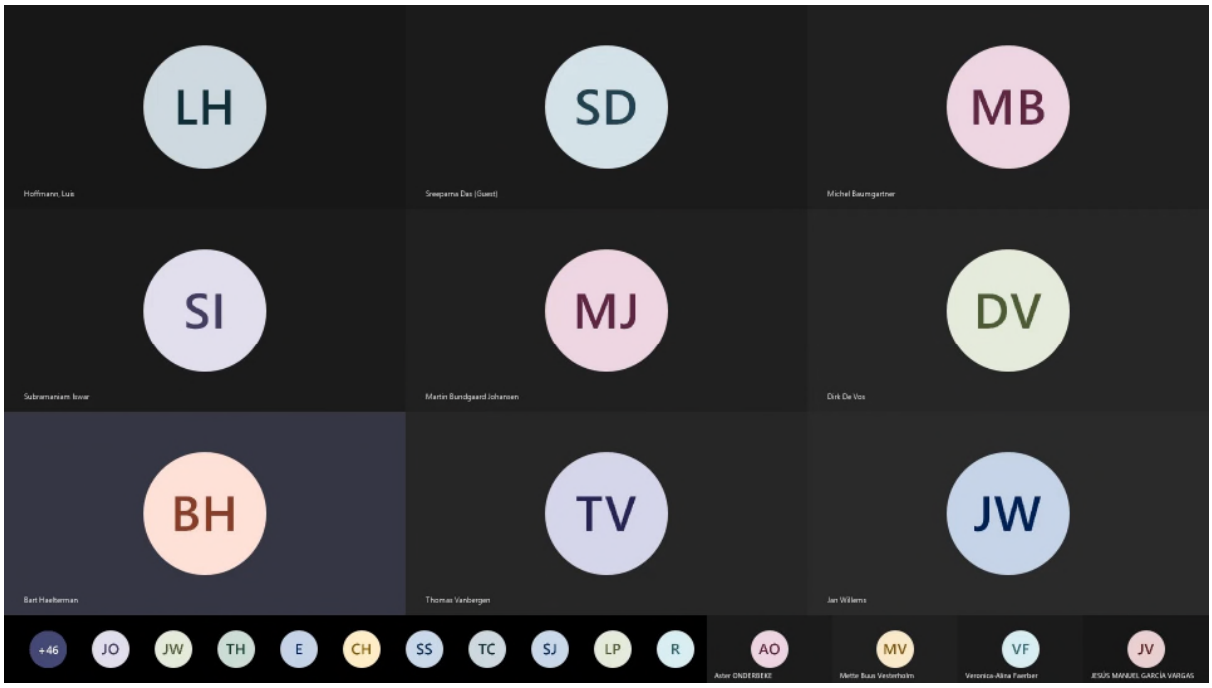
He is the recipient of a series of awards, including the BASF catalysis award. He participated in 8 EU projects or networks (Sustox, Nanohost, Idecat, Macademia, DEFNET, SACS, SINMOF, H-CCAT) and in several previous strategic research projects in Belgium. He has long standing collaborations with a series of industries. De Vos authored 445 papers (ISI), of which 24 papers in Angewandte Chemie, 21 JACS papers, 3 Nature papers etc., totalling 17600 citations. The h-index amounts to 71. De Vos is (co-)inventor on 28 Patent families, of which 11 are granted or are on the way to be granted (often in collaboration with industries like BASF). Several more projects are in the pipeline & under negotiation.

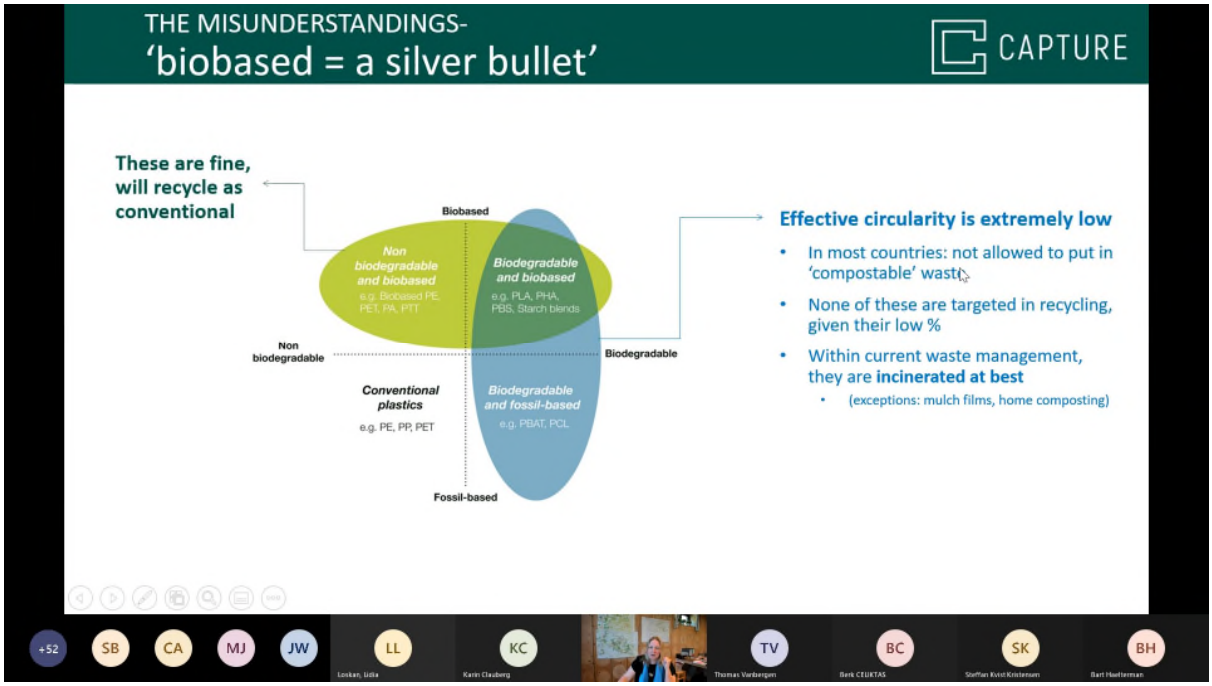
Bart Haelterman, Recticel

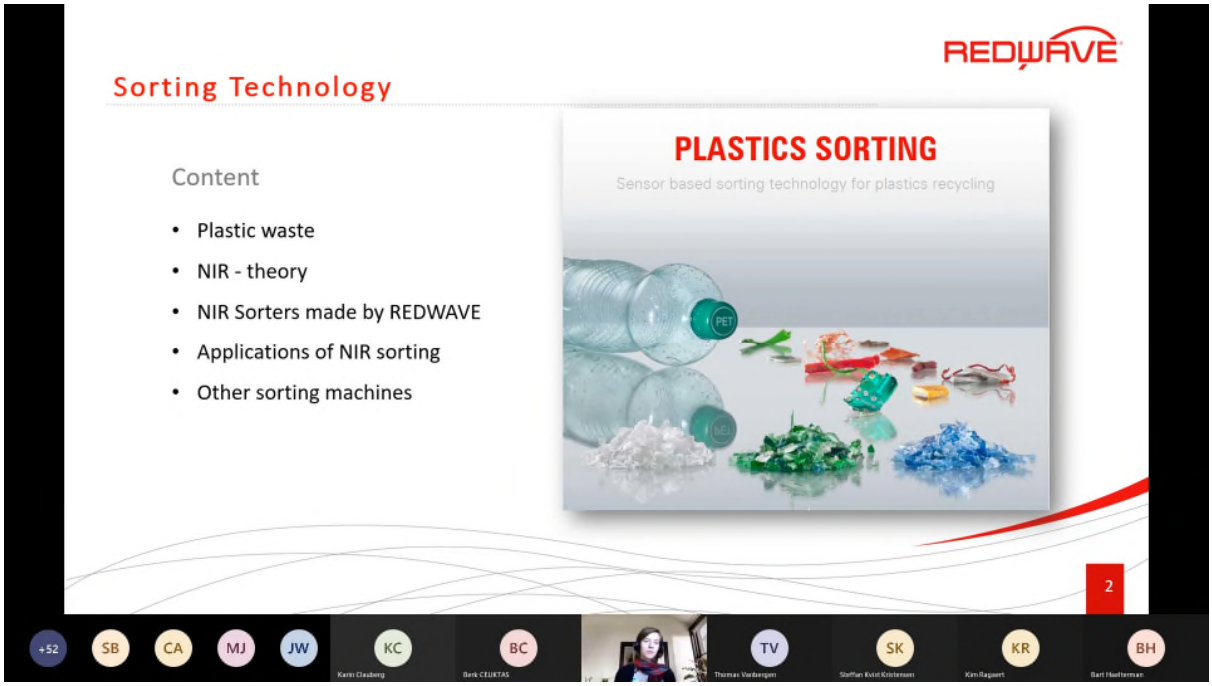
Dr. Bart Haelterman (Innovation Manager and Corporate HS&E Manager) graduated in Chemical Science in 1992 and obtained a PhD in Chemical Science at the University of Leuven in 1996. He worked for INEOS as an R&D responsible from 1996 till 2001 and subsequently was in charge of 3 batch and continuous world scale production units from 2001 till 2006. He joined Recticel in 2006 as R&D manager in automotive chemical and technological R&D and he managed supplier quality procedures for automotive, corporate R&D in the field of compounds for CASE and future low lambda insulation concepts. In 2013, he got the position of R&D portfolio manager responsible for definition of projects in the fields of insulation, bedding, flexible foams and sustainability. Since

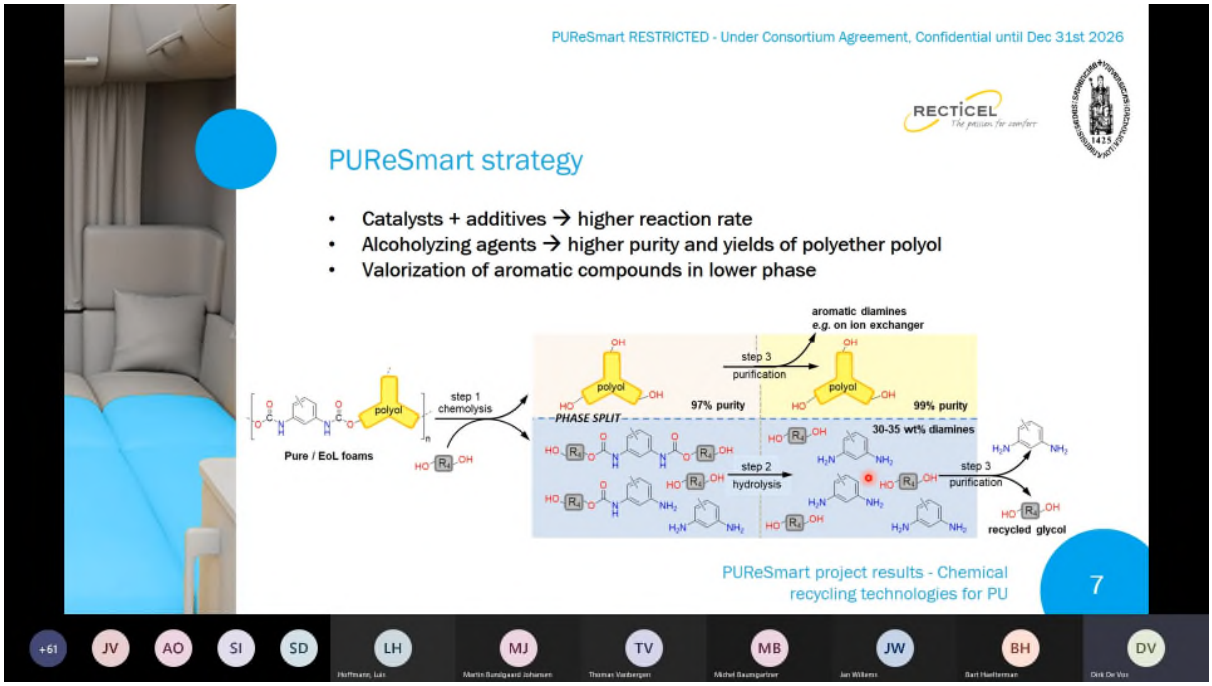
2016, he was appointed as Innovation Manager Corporate Sustainability and additionally Corporate HS&E manager since 2017. He is PRINCE2® Foundation certified project manager, fellow of the Chemistry department of the KU Leuven and active in several industrial and sectorial organisations.

Screenshots during the event:






REDWAVE
Sorting Technology
Content
• Plastic waste
• NIR - theory
• NIR Sorters made by REDWAVE
• Applications of NIR sorting
• Other sorting machines
PLASTICS SORTING
Sensor based sorting technology for plastics recycling
PET
2
+52 SB CA MJ JW KC BC TV SK KR BH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RECTICEL
PUReSmart strategy
• Catalysts + additives → higher reaction rate
• Alcoholyzing agents → higher purity and yields of polyether polyol
• Valorization of aromatic compounds in lower phase
aromatic diamines
e.g. on ion exchanger
step 1
chemolysis
Pure / EoL foams
polyol
step 3
purification
97% purity
99% purity
PHASE SPLIT
30-35 wt% diamines
step 2
hydrolysis
step 3
purification
recycled glycol
PUReSmart project results - Chemical recycling technologies for PU
7
+61 JV AO SI SD LH MJ TV MB JW BH DV

3 Achievements

137 people registered, and 89 participated in this workshop. More than 30 different companies, universities and institutes were present

Presentations were sent to all participants after the event and are made public on: Workshop - Chemical recycling and plastics - PUReSmart

Several compagnies contacted consortium members, and expressed their interest in this chemical recycling technology of polyurethanes.