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TRANSFORM-CE
European Regional Development Fund

Welcome

Webinar #1

Transform Single-use Plastic Waste into valuable products

Progamme November 4 21

14:00 Opening and introduction to TRANSFORM-CE

14:05 Transforming single-use plastic waste into filament for additive manufacturing (Rhiannon Hunt)

14:15 Creating new products from single-use plastic waste using intrusion-extrusion moulding (Bram Peters)

14:25 The business case for adopting circular economy solutions (Evert-Jan Velzing)

14:45 Be a part of TRANSFORM-CE; opportunities for businesses (Evert-Jan Velzing)

15:00 Q&A

Webinar will be recorded and you can view or share the webinar and presentation via the link you receive in the newsletter of TRANSFORM-CE.

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TRANSFORMing single use plastic and creating a CE-business model

Objective
Transform single use plastic from municipal waste into feedstock to create new products using circular economy principles and Additive Manufacturing (AM) and Intrusion Extrusion Moulding (IEM) technologies, and support business uptake.

2019-2023
9 partners across 4 countries
Total budget €6.93 M

How do we do this

- 3 innovative technology centres:
  - IEM Green plastic factory in Almere (NL)
  - AM R&D centre in Manchester (UK)
  - AM Prototyping centre in Mons (Belgium)
- Support to SMEs for business uptake
- Creation of a Circular Economy Plastic Roadmap
- Creation of a network of informed stakeholders involved in upscaling and replicating the project's circular economy models.

Speakers

- **Rhiannon Hunt:** Circular Economy Project Manager at Manchester Metropolitan University, UK.

- **Bram Peters:** Owner of the Green Plastic Factory Almere and Save Plastics, the Netherlands.

- **Malou van der Vegt:** Researcher and Lecturer in the Circular Economy at the Utrecht University of Applied Sciences, the Netherlands.

- **Evert-Jan Velzing:** Scientist and Lecturer at the Utrecht University of Applied Sciences, the Netherlands.

- **David Greenfield** will be the facilitator of the webinar. He is managing director and founder of SOcial, ENvironmental & EConomic Solutions (SOENECS) Ltd.

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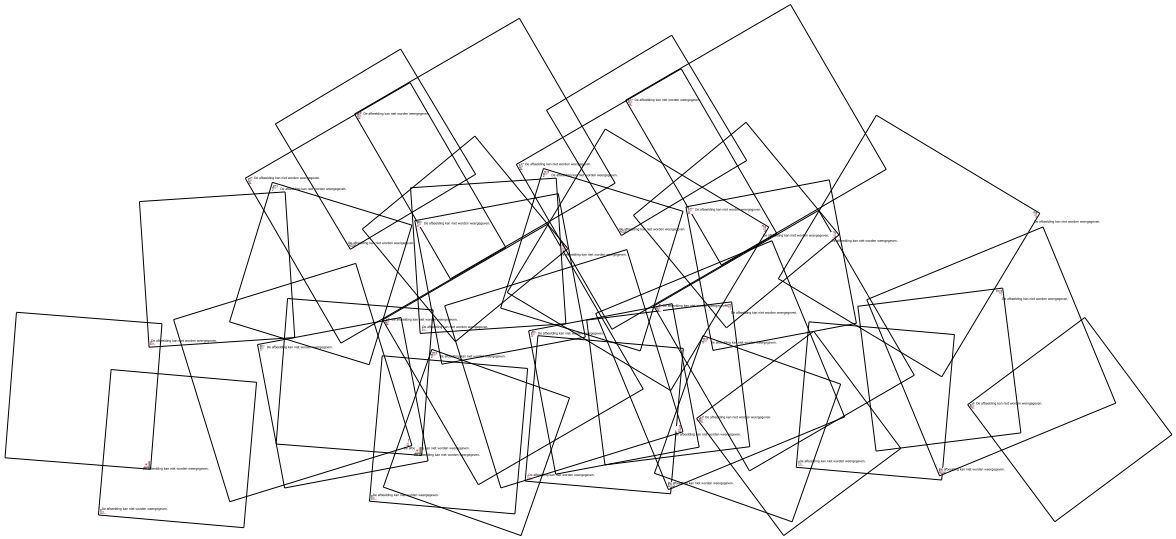
Rhiannon Hunt

Circular Economy Project Manager
Manchester Metropolitan University

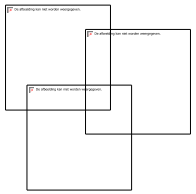
Transforming single-use plastic waste into filament for additive manufacturing

Transforming single-use plastic waste into filament for additive manufacturing

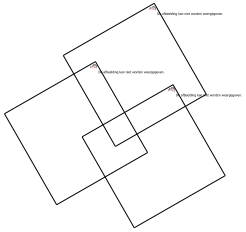


High-grade, post-consumer single use plastic is collected.

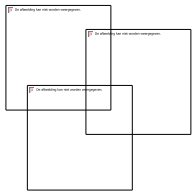
Transforming single-use plastic waste into filament for additive manufacturing



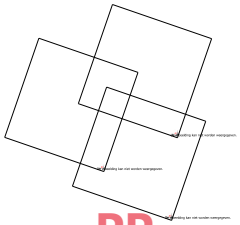
PET



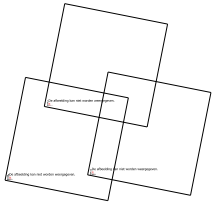
PLA



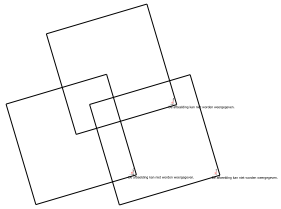
ABS



PP



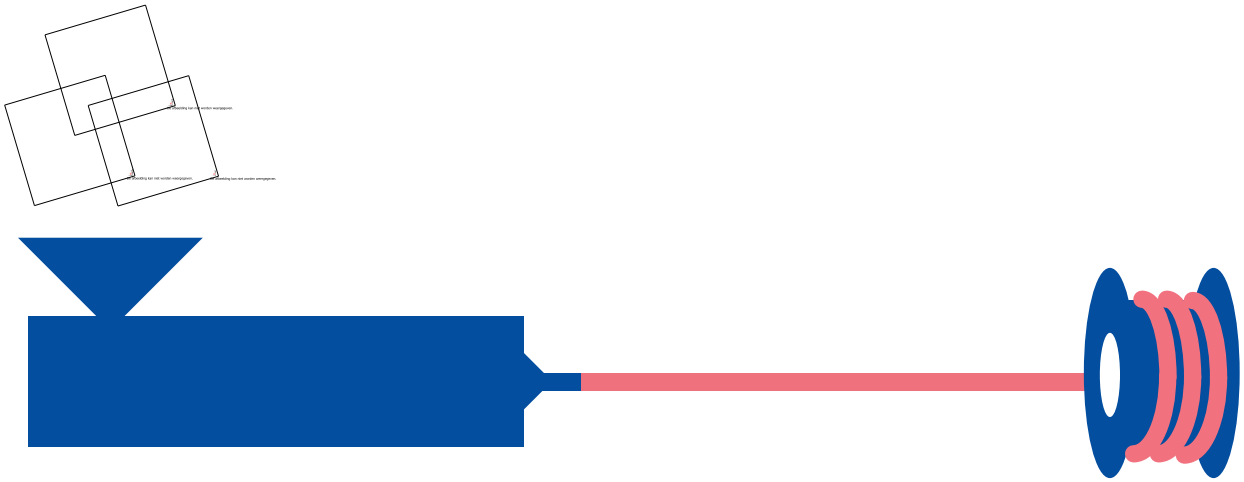
HDPE



LDPE

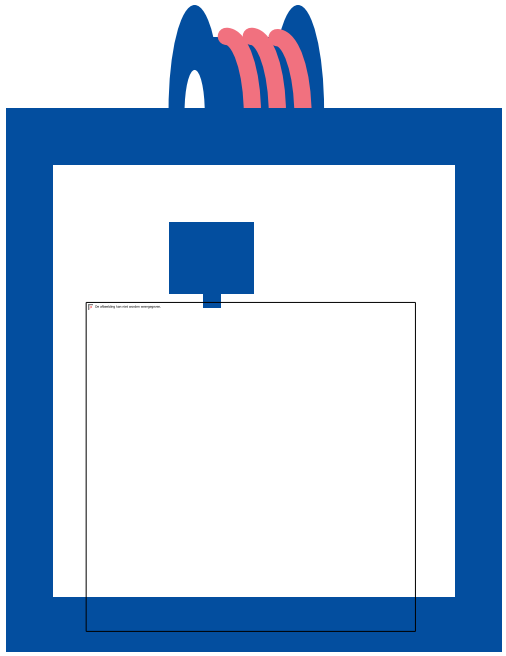
This is then sorted, cleaned, dried and pelletised.

Transforming single-use plastic waste into filament for additive manufacturing



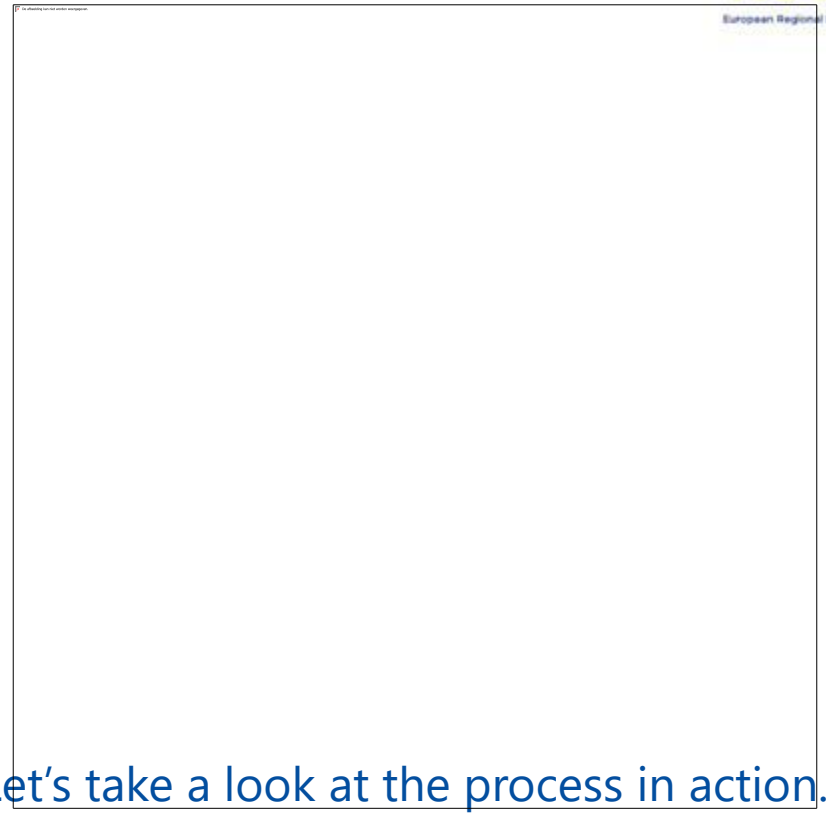
The pellets are heated and extruded into filament, which is wound onto a spool.

Transforming single-use plastic waste into filament for additive manufacturing



The filament can then be 3D printed into a range of valuable products.

Transforming single-use plastic waste into filament for additive manufacturing



Let’s take a look at the process in action...

Transforming single-use plastic waste into filament for additive manufacturing

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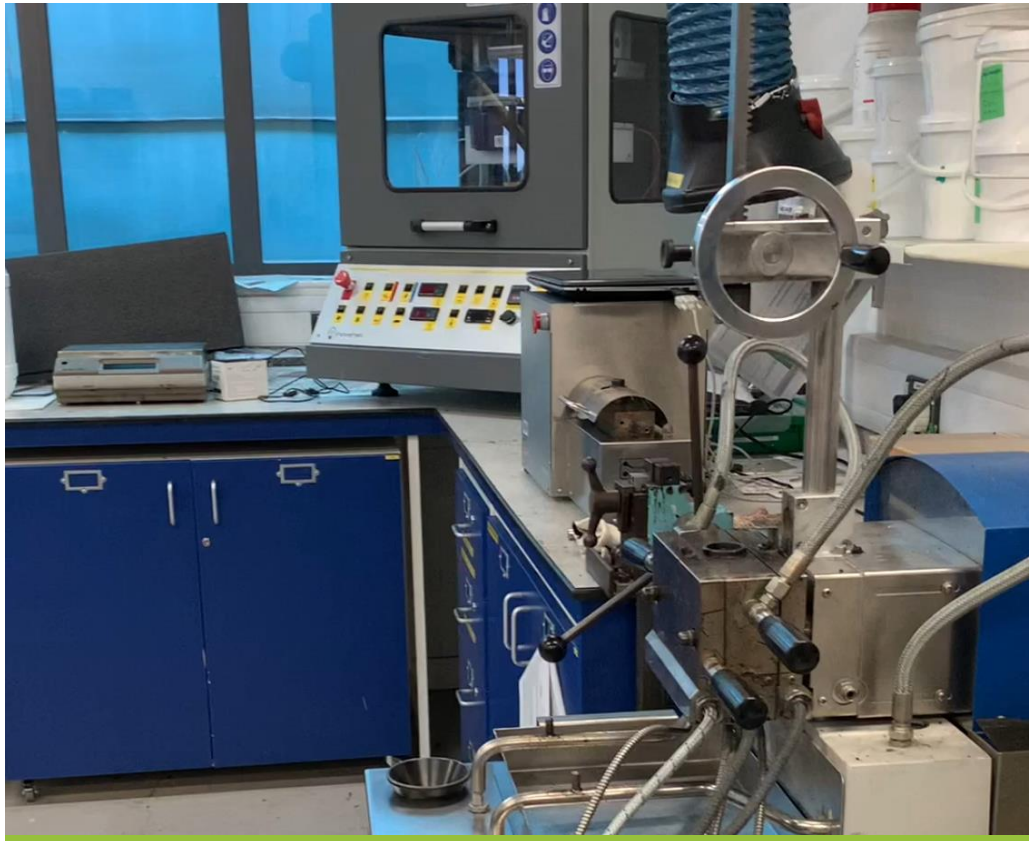

Evelyn Sigley | Technical Officer | R&D Centre

Transforming single-use plastic waste into filament for additive manufacturing

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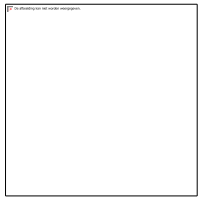
Material characterisation & analysis

New filament colours



Experimentation with additives

Throughout the project we will be expanding the range of filaments available to fulfil different applications.

Transforming single-use plastic waste into filament for additive manufacturing

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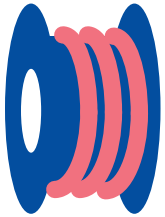
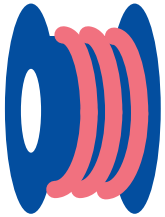
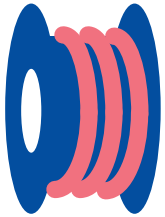


rPET (Natural)



rPLA (Natural or white)



rABS (Black)

To order a free sample spool of filament, contact **circulareconomy@mmu.ac.uk**

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save plastics

Creating new products from single-use plastic waste using intrusion-extrusion moulding

once upon a time

a story by

Bram Peters
CEO Save Plastics

Interreg North-West Europe TRANSFORM-CE

and

Stefan Schoegje
Unit manager Green Plastic Factory

Bram Peters
CEO Save Plastics

starring

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IEM pilot plant

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inside

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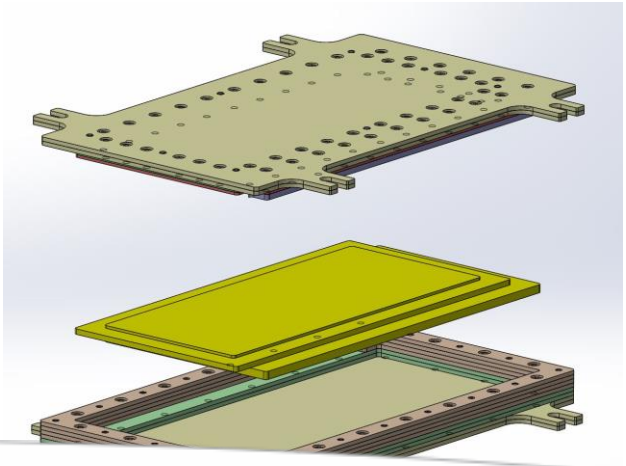
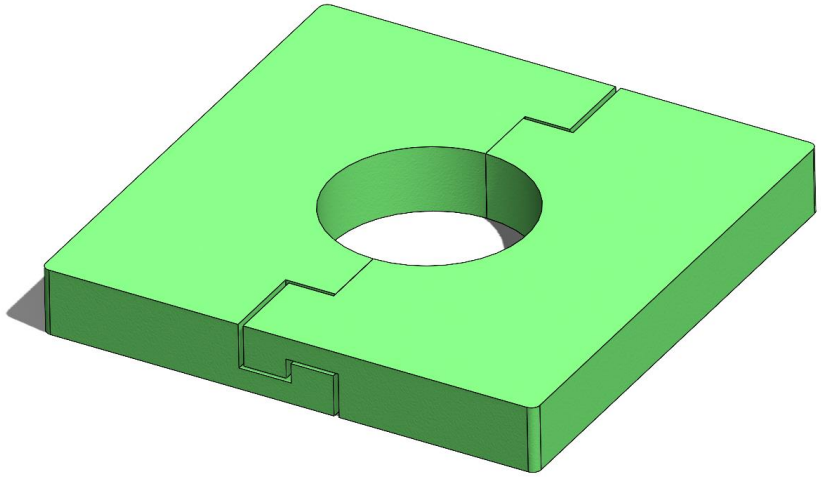
chapter 1

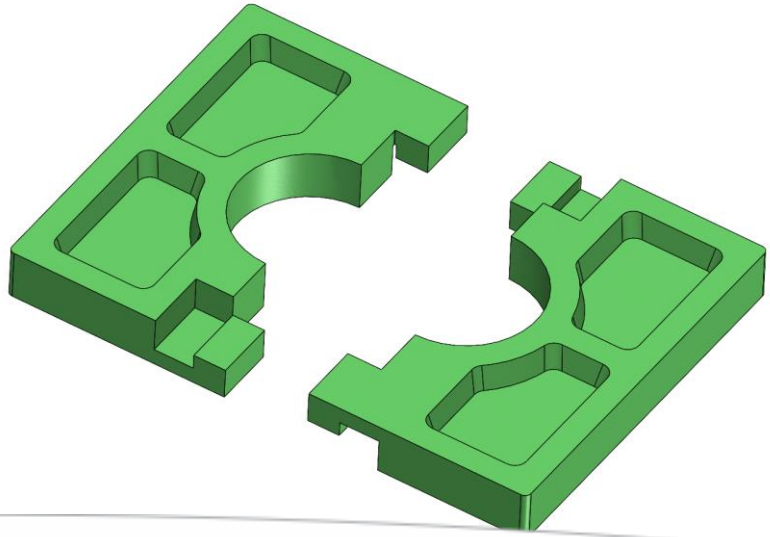


danger! fire

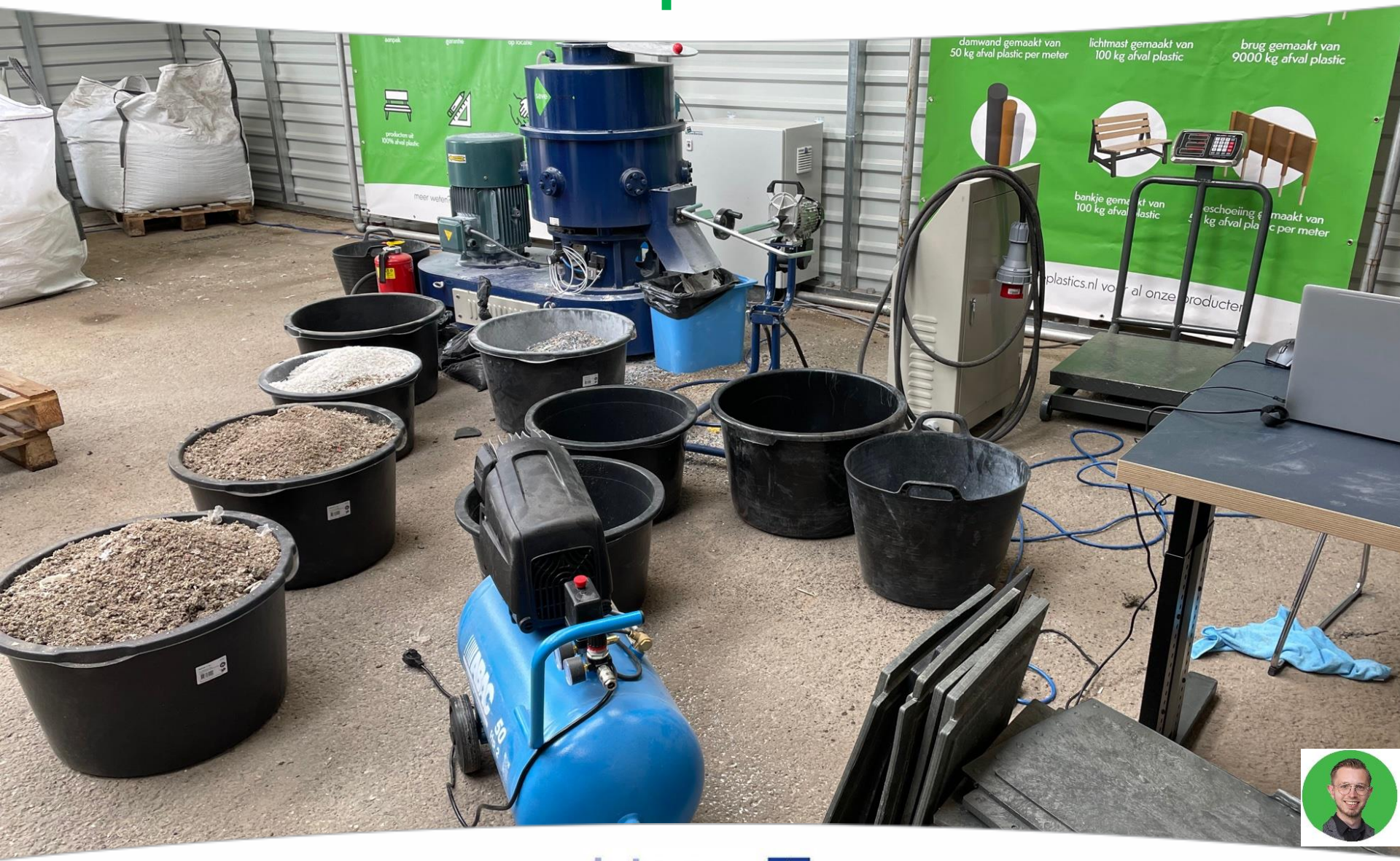
Mg(OH)2

chapter 2





micro plastics?



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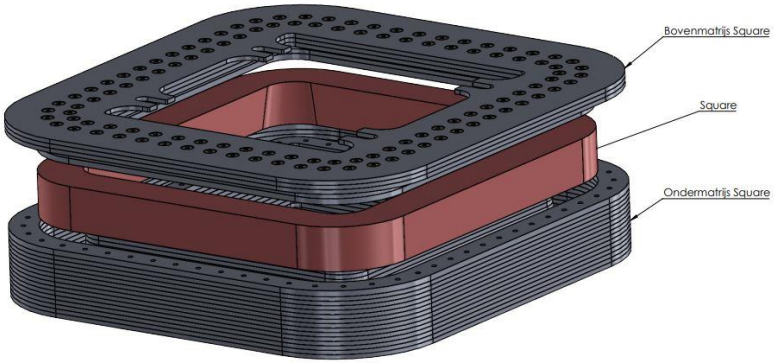
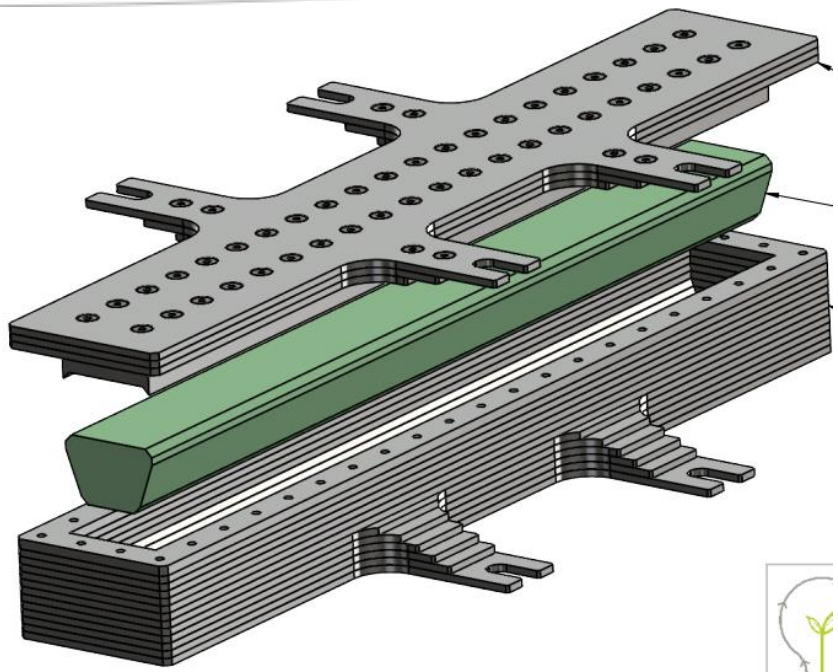
chapter 3

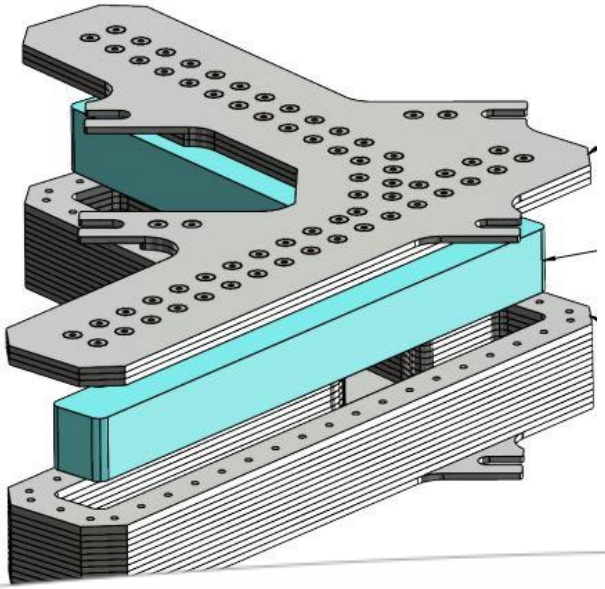
Smart bench

IMPROVED

difficult?





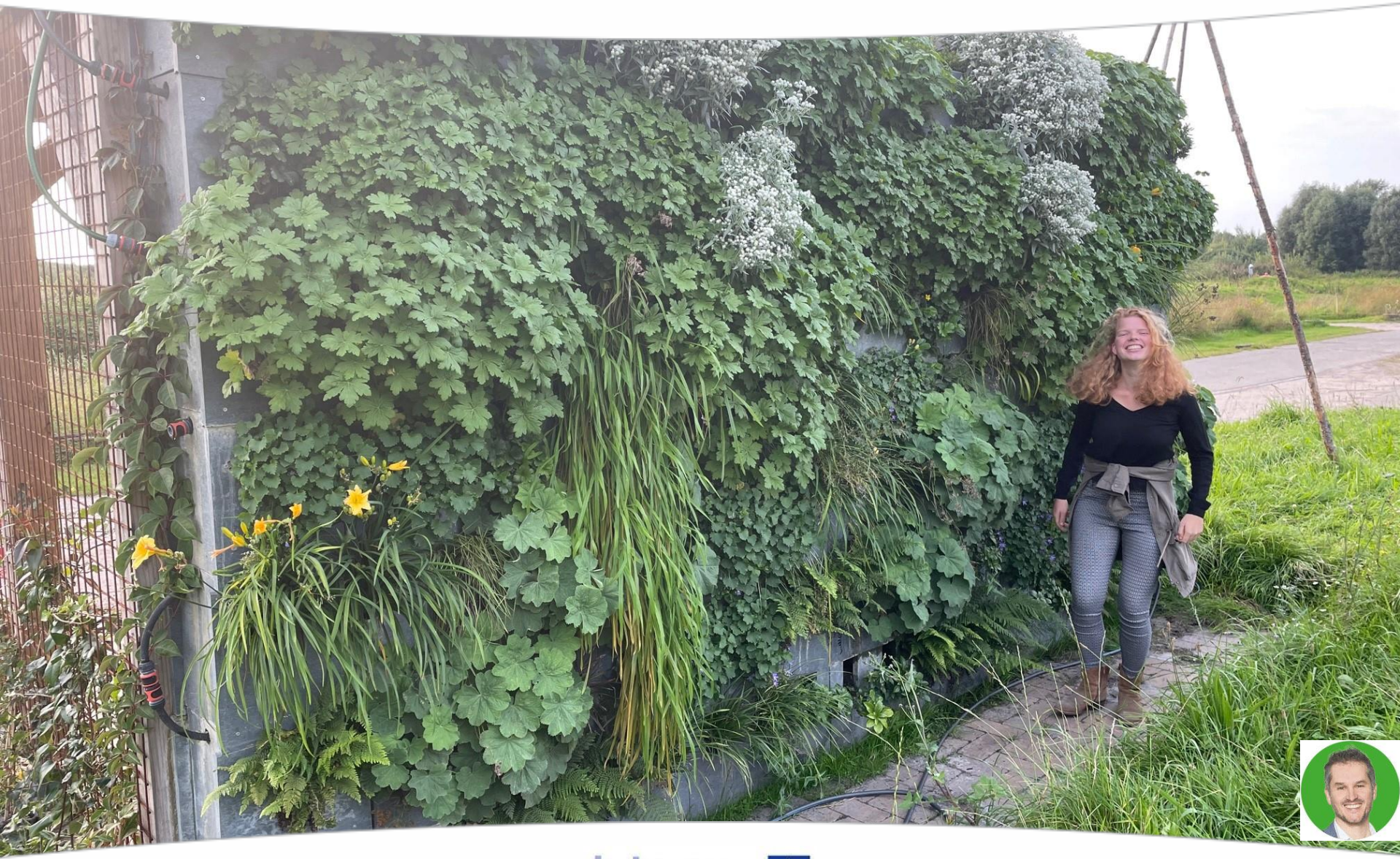


summary

- The pilot plant can process up to 150 tonnes of SUP plastic per year
- Current value in Holland - € 200/tonn (incineration costs) or - € 0,20/kg
- Value fasade panel: € 2.880/tonn or € 2,88/kg
- Value mast tile: € 5.710/tonn or € 5,71/kg
- Value park bench: € 10.000/tonn or € 10,00/kg
- Avarage added value € 6.196/tonn or € 6,19/kg

other value

- -1.130 CO2/tonn
- less import of materials such as tropical hardwood
- Saving materials for the future



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the end

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Q&A

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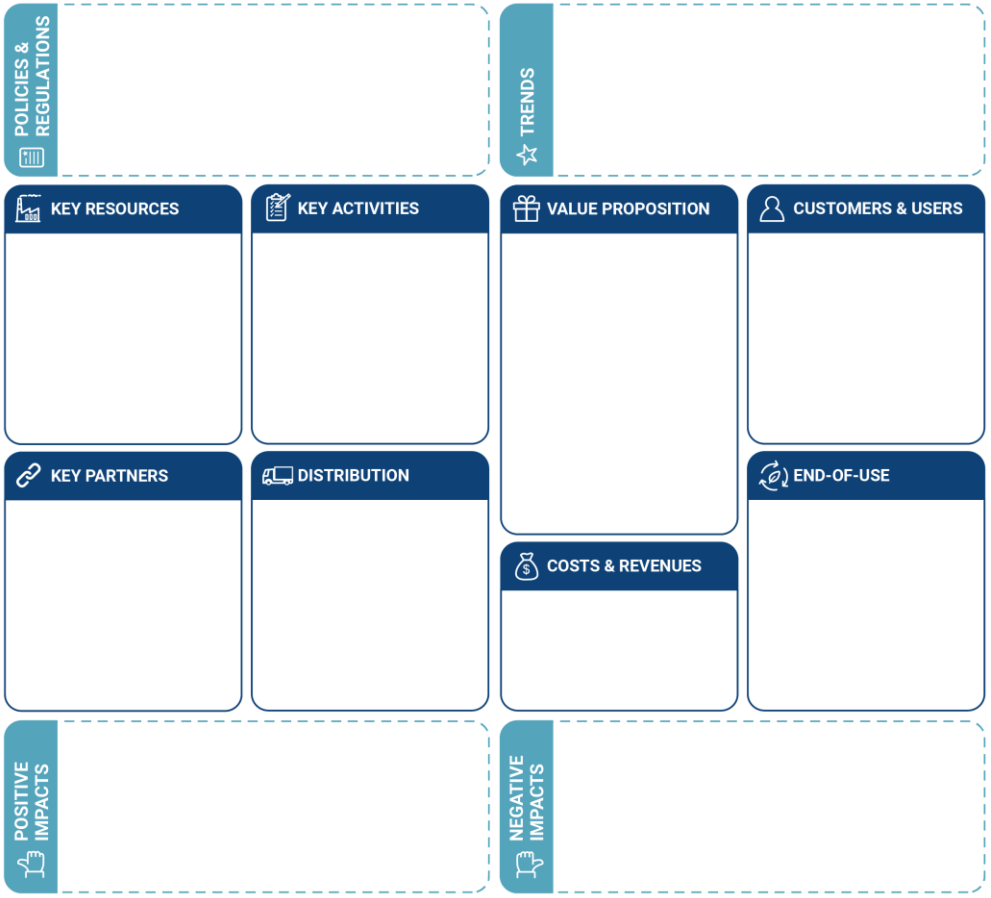
Malou van der Vegt

HU University of Applied Sciences Utrecht

Examples of circular economy business models

Case study process

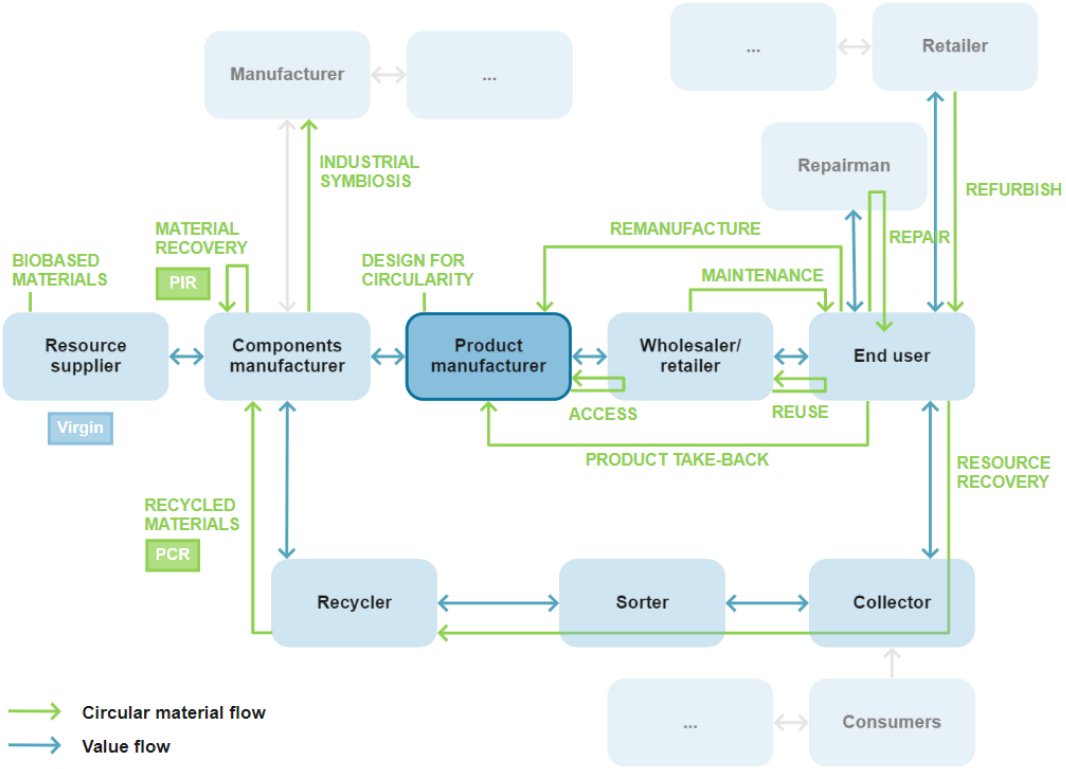
1 Circularity of the business model



Case study process

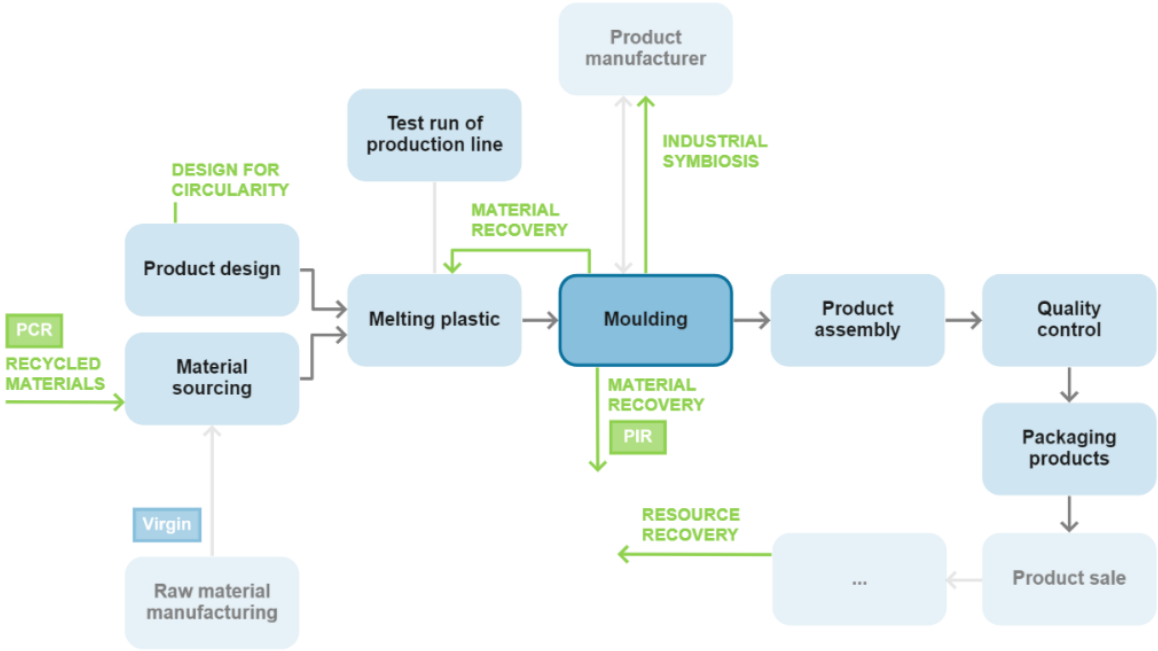
1 Circularity of the business model

2 Circularity in the chain



Case study process

1. Circularity of the business model
2. Circularity in the chain
3. Circularity of operational process

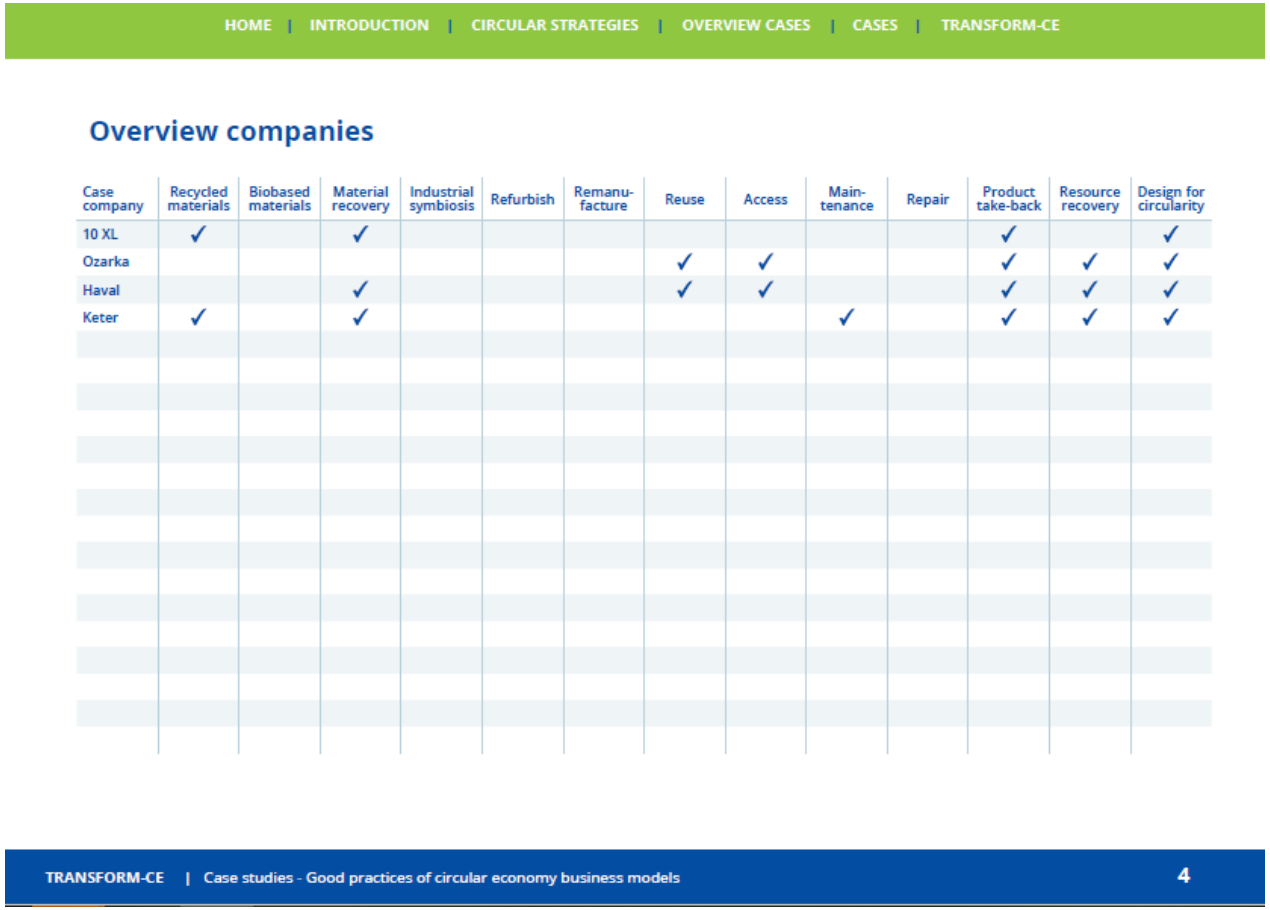


Good practices CE business models

1. Keter
2. 10XL
3. Circulogic
4. Vinventions
5. Haval
6. Ozarka
7. …
8. …

…

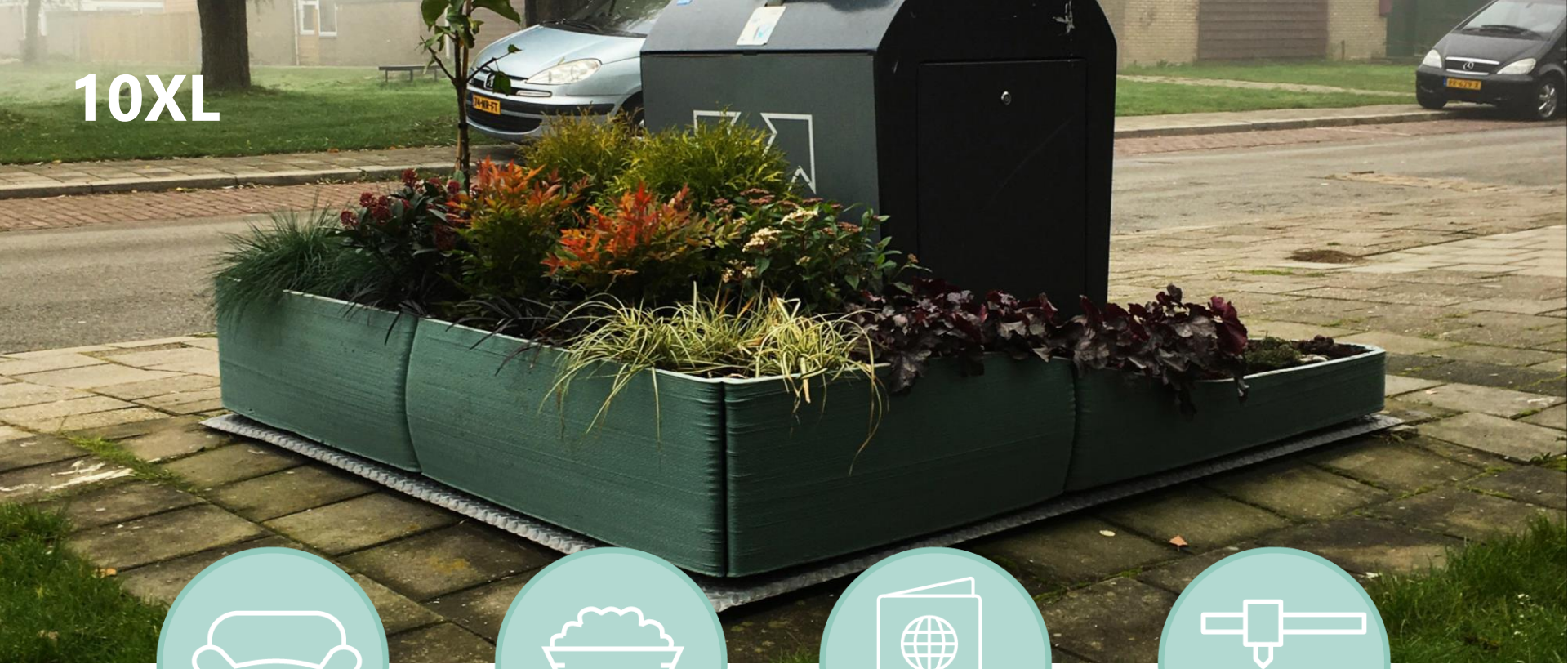
20. …



HOME | INTRODUCTION | CIRCULAR STRATEGIES | OVERVIEW CASES | CASES | TRANSFORM-CE

Overview companies

Case company	Recycled materials	Biobased materials	Material recovery	Industrial symbiosis	Refurbish	Remanu-facture	Reuse	Access	Main-tenance	Repair	Product take-back	Resource recovery	Design for circularity
10 XL	✓		✓								✓		✓
Ozarka							✓	✓			✓	✓	✓
Haval			✓				✓	✓			✓	✓	✓
Keter	✓		✓						✓		✓	✓	✓



Large products (up to 12m)

Finding the right material stream

Material passports

3D-printing settings

Keter

40%

Over 40% recycled materials

Communicate about use

Take recycled materials into account from start

Use imperfections (include or hide)

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Download case study reports:

www.nweurope.eu/transform-ce

Reaching out to Businesses

WPT3 Business Uptake

Evert-Jan Velzing
HU University of Applied Sciences Utrecht

4 November 2021

TRANSFORM-CE Business support

I. Good Practice Case Studies

II. In-depth business support Case Studies
- Customer Journey
- Support
- Examples
- Research

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Customer Journey

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6
Interested • Plastic manufactures (AM/IEM) • Selling plastic products • Procuring plastic products • Prototyping with plastics	**Go/send to partner** • MMU (UK) • MateriaNova (B) • IfaS (G) • HU (NL) • Save Plastics (NL)	**Eligiblity** • Uptake of SUP • NW-Europe • Entitled to receive support • Fill out ***eligibility form*** *with regional partner*	**Consent on** • Type of support from project • Sharing information for case study (***consent form***)	**Support and Case Study** • Business model development • Prototypes, product requirements, circularity tests, fillament and samples • Sharing information for case study	**Case Study report** • Made by regional partner • Checked and validated by company • Share case study results

TRANSFORM-CE
Customer Journey

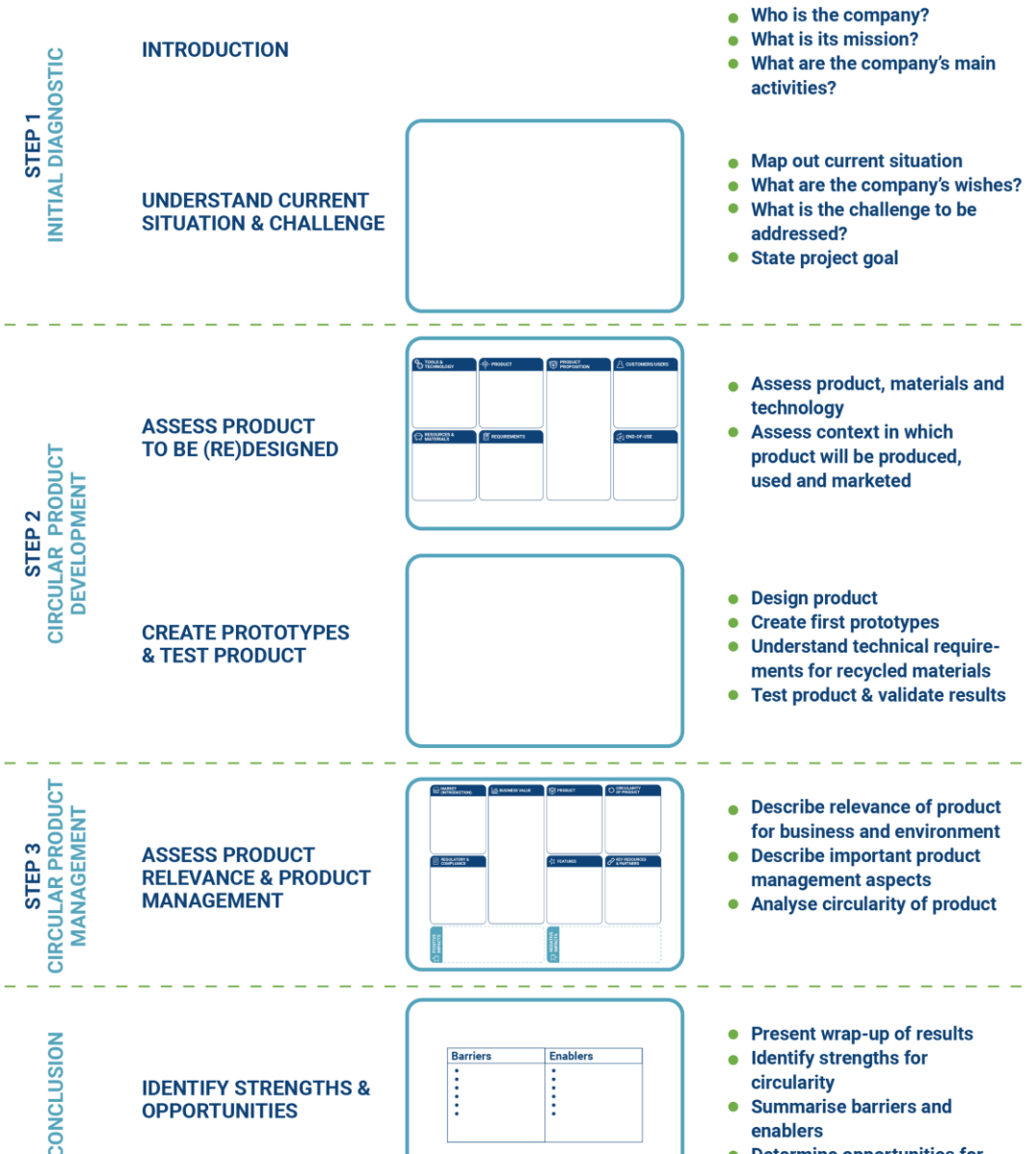
Please help!
with finding companies
In B, G, UK, NL

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6
Interested • Plastic manufactures (AM/IEM) • Selling plastic products • Procuring plastic products • Prototyping with plastics	**Go/send to partner** • MMU (UK) • MateriaNova (B) • IfaS (G) • HU (NL) • Save Plastics (NL)	**Eligiblity** • Uptake of SUP • NW-Europe • Entitled to receive support • Fill out ***eligibility form*** *with regional partner*	**Consent on** • Type of support from project • Sharing information for case study (***consent form***)	**Support and Case Study** • Business model development • Prototypes, product requirements, circularity tests, fillament and samples • Sharing information for case study	**Case Study report** • Made by regional partner • Checked and validated by company • Share case study results

Support/Case studies include

STEP 5

- Step 5.1 Initial Diagnostic (baseline)
- Step 5.2 Circular Product Development
- Step 5.3 Assess Product Relevance & Product Management
- Identify Strengths & Weaknesses



Examples

- Smart Bin Prototyping
- Artificial flower pot/vase
- Lamppost pavement tile testing
- Facade panel testing
  - Fire resistance
  - Firmness
  - …
- 3D-print architecture life cycle evaluation

Examples

Smart Bin Prototyping

Artificial Flower Vases

Fire resistance, firmness testing

Support/Research can include

STEP 5

- Circular product assessment
- Recyled filament
- Recycled IEM samples
- Product and material testing
- Life Cycle Evaluation
- Circular business model workshop
- Guidelines for the acceptance of products
- Webinars on:
  - Soft market testing
  - SUP as a raw material
  - AM and IEM production techniques

Results

STEP 6

OVERVIEW | WHO WE ARE | EVENTS | NEWS | CONTACT FORM | BUSINESS CASE STUDIES

Follow us on

Business Case Studies

Business Case Study #6: Vinventions

Posted on September 29, 2021 3:42 PM

As part of the TRANSFORM-CE project, several case studies are done to benchmark existing circular economy business models. This document covers the results of the case study conducted at Vinventions, based in Belgium. Read More

Business Case Study #5: Circulogic

Posted on September 9, 2021 3:22 PM

As part of the TRANSFORM-CE project, several case studies are done to benchmark existing circular economy business models. This document covers the results of the case study into garage2green and EcoWOW, circular products and services developed by Circulogic, based in the UK. Read More

Business Case Study #4: Keter

Posted on July 13, 2021 10:12 AM

Please contact us for more information

STEP 1 & STEP 2

- Manchester Metropolitan University - United Kingdom
  - Rhiannon Hunt (rhiannon.hunt@mmu.ac.uk)
- Materia Nova – Belgium
  - Oliver Talon (olivier.talon@materianova.be)
- IfaS Umwelt Campus – Germany
  - Michael Schmidt (michael.schmidt@umwelt-campus.de)
- HU University of Applied Sciences Utrecht
  - Evert-Jan Velzing (evert-jan.velzing@hu.nl)
  - Malou van der Vegt (malou.vandervegt@hu.nl)

Q&A

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Contact information

• **Rhiannon Hunt:** Circular Economy Project Manager at Manchester Metropolitan University, UK.
To order a free sample spool of filament, contact **circulareconomy@mmu.ac.uk**

• **Bram Peters:** Owner of the Green Plastic Factory Almere and Save Plastics, the Netherlands.
More information**?** Contact **Bram@saveplastics.nl Stefan@saveplastcs.nl** or visit **https://www.saveplastics.nl/en/**

• **Malou van der Vegt:** Researcher and Lecturer in the Circular Economy at the Utrecht of Applied Sciences, the Netherlands. Download case study reports **www.nweurope.eu/transform-ce**

• **Evert-Jan Velzing:** Scientist and Lecturer at the Utrecht University of Applied Sciences, the Netherlands.
Contact**: evert-jan.velzing@hu.nl**

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Thank you for your attention

Next webinar: Friday March 18 2022
(Global Recycling Day)

www.nweurope.eu/transform-ce

Webinar November 4 2021