Technology #1
Fermentation of used cooking oils (UCOs)

Description

Waste cooking oil is a rich carbon source for bacteria, which is utilized in their metabolism to synthesize the fully biodegradable, non-toxic and biocompatible P3HB (a Polyhydroxyalkanoate - PHA). It has applications in cosmetics, biomedicine, packaging, agriculture and in 3D printing.

Bacteria are able to produce up to 0,70 kg of PHA out of 1 kg of UCO.

One of the advantages of implementing a technology for UCOs valorization is that it is not required to start the selective collection of the oil from scratch.

Innovation keys for the environment

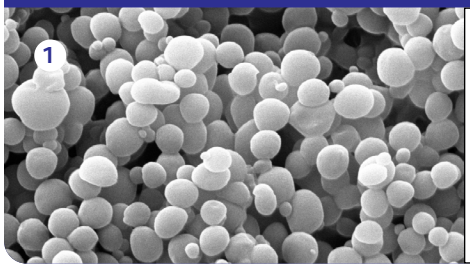
- Production of a high-added-value product (much higher than biofuels) in a growing market sector.(1)
- Reduction of the use of fossil-based polymers and virgin plastics
- Contributing to increasing the use of used cooking oil, which is harmful to the environment when disposed of inappropriately.

Biowaste feedstocks

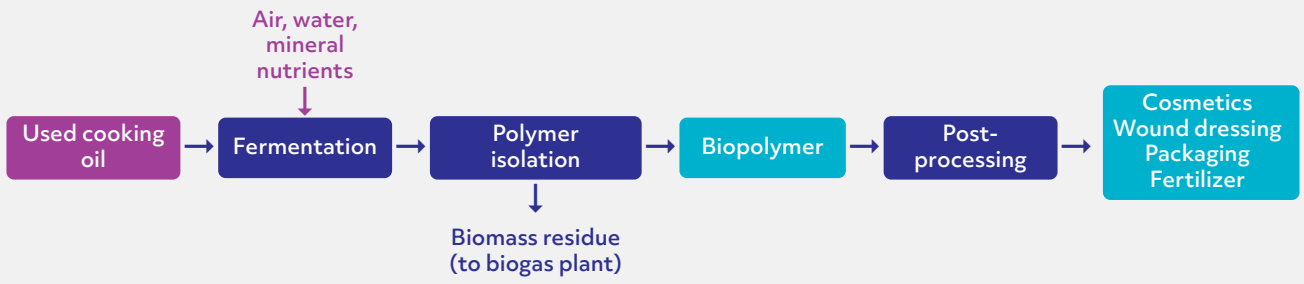
Used cooking oil and other oily industrial waste streams (i.e., sludge palm oil)

Bioproducts

Bioproduct(s)	Market sector	Market price
PH3B (1)	Cosmetics (2)	35 000 Eur/t
	Biomedicine	50 000 Eur/t - 100 000 Eur/t
	Bioplastic	4 780 Eur/t



Process flowchart



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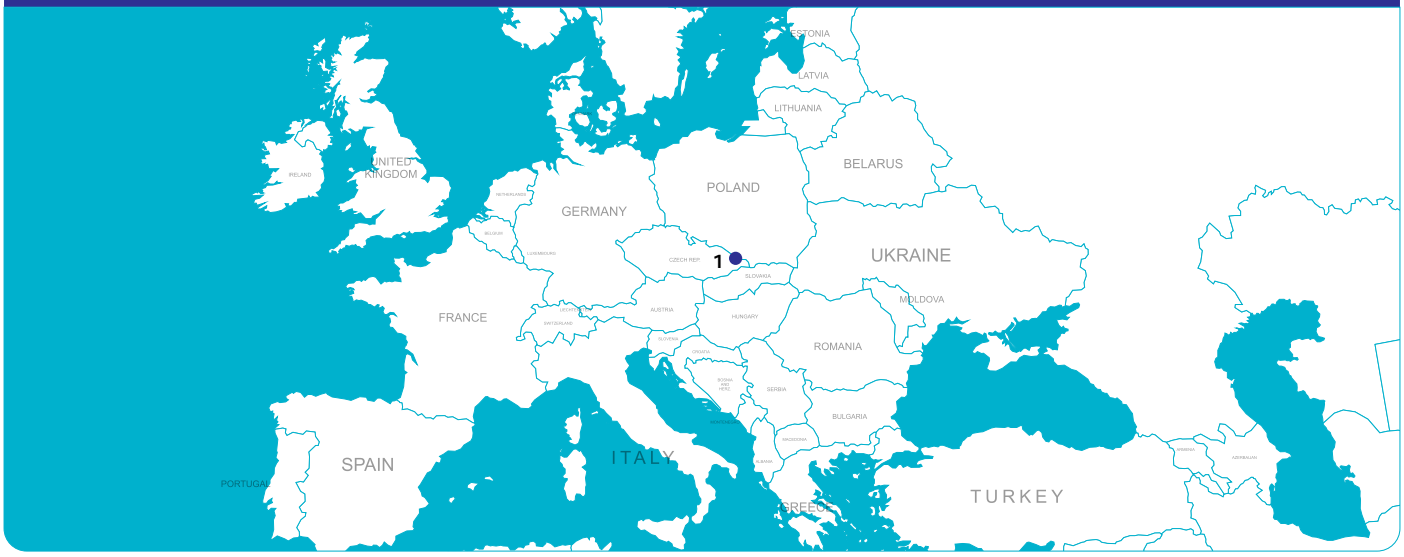
Existing production plants

	Production plant location	Feedstock	Bioproduct	TRL	Production capacity (ton/ year bioproducts)	CAPEX	OPEX
1	Commercial plant in Ostrava, Czech Rep.	UCOs	PH3B	9	(45000 L/y producing 35 t PHA/y, expected to increase to 227500 L/y producing 175 t PHA/y).]	CAPEX > 1M€ (7,3 mil Euro for prod. capacity 175 t PHA/y)	11,2 Euro/kg for product. capacity 175 t PHA/y



Acknowledgements

WaysTup!
waystup.eu

Biossupack
biosuppack.eu

Further information

(1) Nowadays, about 90 % of used cooking oils (UCOs) collected is destined to biodiesel production.

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