

SOLVIONIC

POWERED BY INNOVATION

CLUSTERING EVENT:
**“The use of Deep Eutectic Solvents and Ionic Liquids
for metal recovery”**

Sébastien Fantini, Head of R&I

ION4RAW



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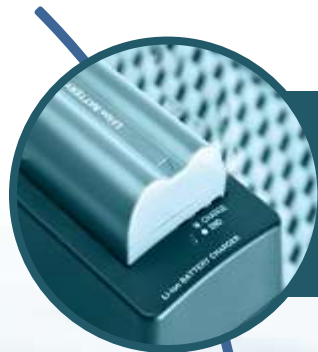
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- Since 2003
- Production of Ionic Liquids
- Safe and high performance electrolytes



Main markets



Electrochemical devices

Li-ion, supercaps, electrochromics, etc.



Surface treatments and coatings

antimigration, lubricants, etc.

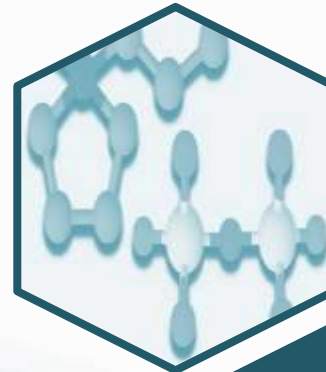


Solvents, separation, extractions

catalysis, extraction, cellulose, etc.

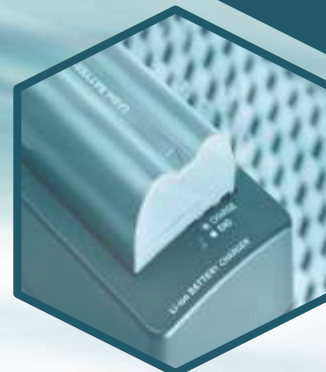


Product portfolio



Ionic
Liquids

Metal
salts



Electrolytes

Ionic Liquid properties

Tuned for electrochemical applications



Very low vapour pressure



Non-VOCs, Nonflammable, High Fp



Large liquid range



Ionic conductivity (up to 16mS/cm neat)
Electrochemical stability (up to 6V neat)



Structural variations, tuneable properties



Better product quality
= Better device performances



Specific know-how



Ionic liquids synthesis process

- Chemical pathways designed for industrialization (easy upscaling, safety, toxicity, REACH compliance)



Ionic liquids purification process

- Continuous improvement of know-how on purification processes leads to highly pure products

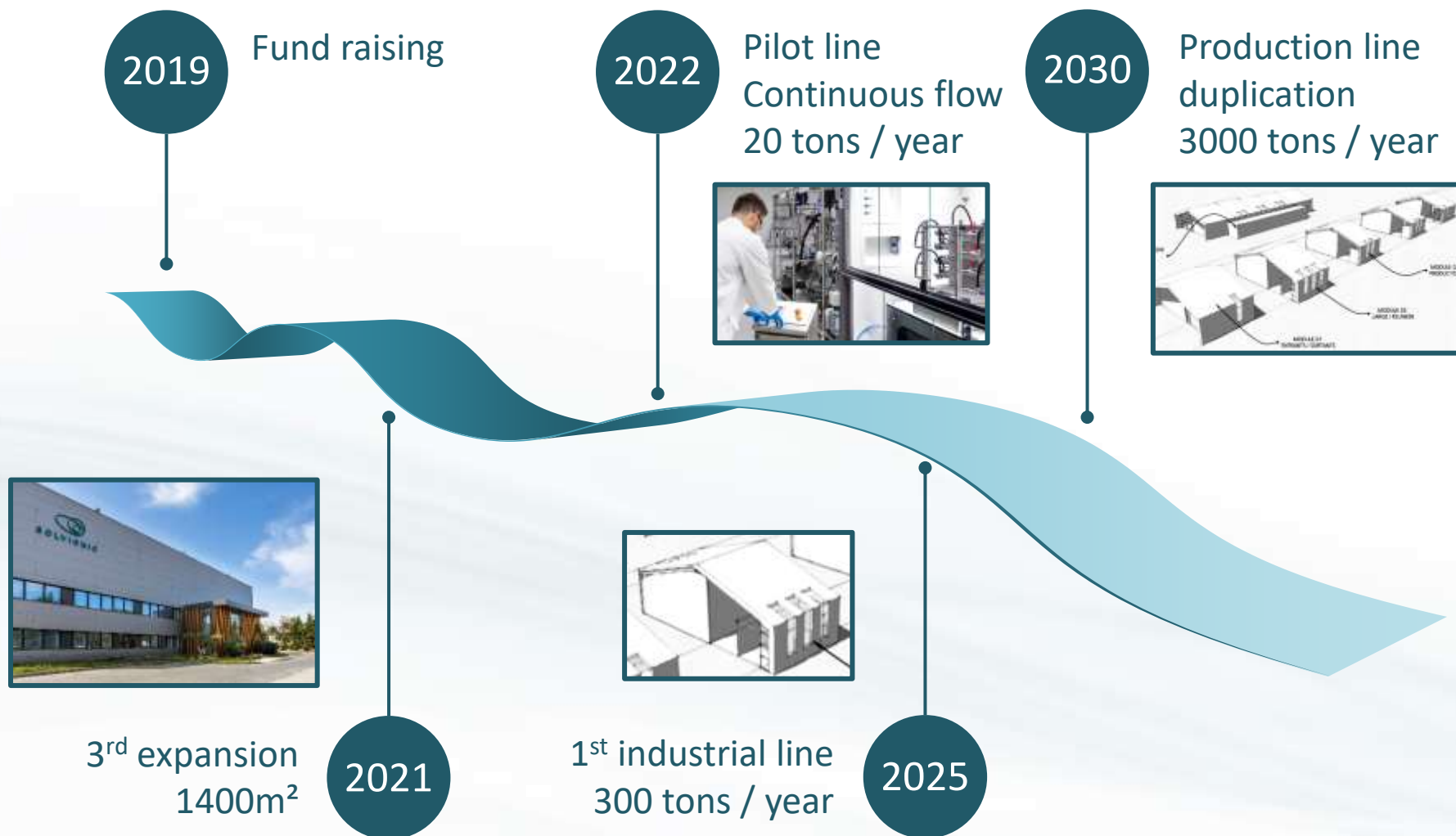


Ionic liquids quality control

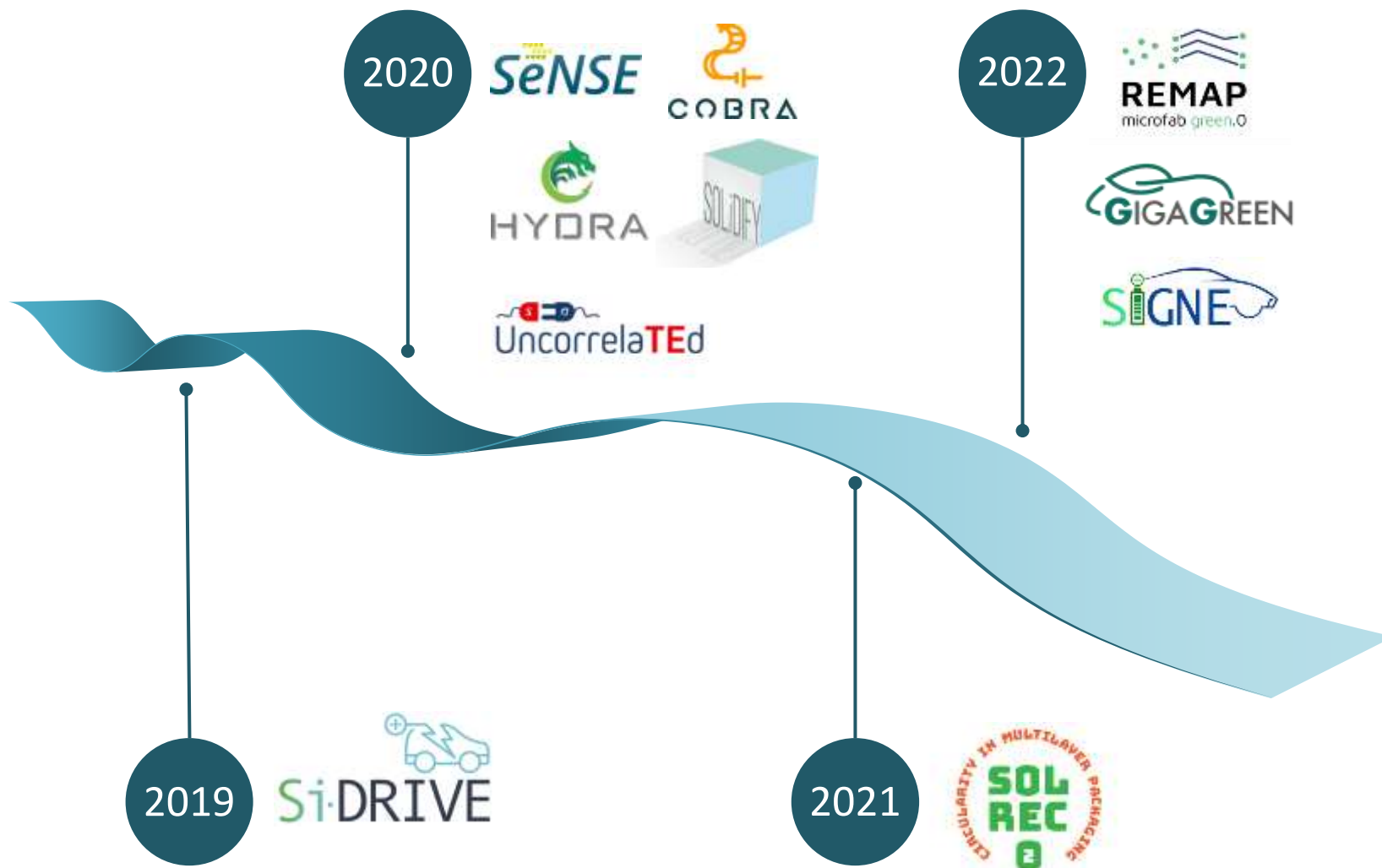
- Continuous improvement of specific analyses methods
 - Analyses reports
- Impurities content: $\text{H}_2\text{O} < 5\text{ppm}$ – halides $< 1\text{ppm}$ – amines $< 10\text{ppm}$



Roadmap to industrialisation



Roadmap to innovation – H2020 / Horizon Europe



SOLREC2 – circularity in multilayer packaging



Innovative digital watermarks and green solvents for the recovery and **recycling** of multi-layer materials



This project has received funding from Horizon 2020 research and innovation program under Grant Agreement N° 101003532

SOLREC2 – circularity in multilayer packaging



Project Partners

- Funded through EU Horizon 2020 programme with a budget of €4.6M
- Solvent based multi-layer packaging recycling and innovative sorting
- Consortium consists of 8 partners from 6 European countries



Start date
1 June 2021

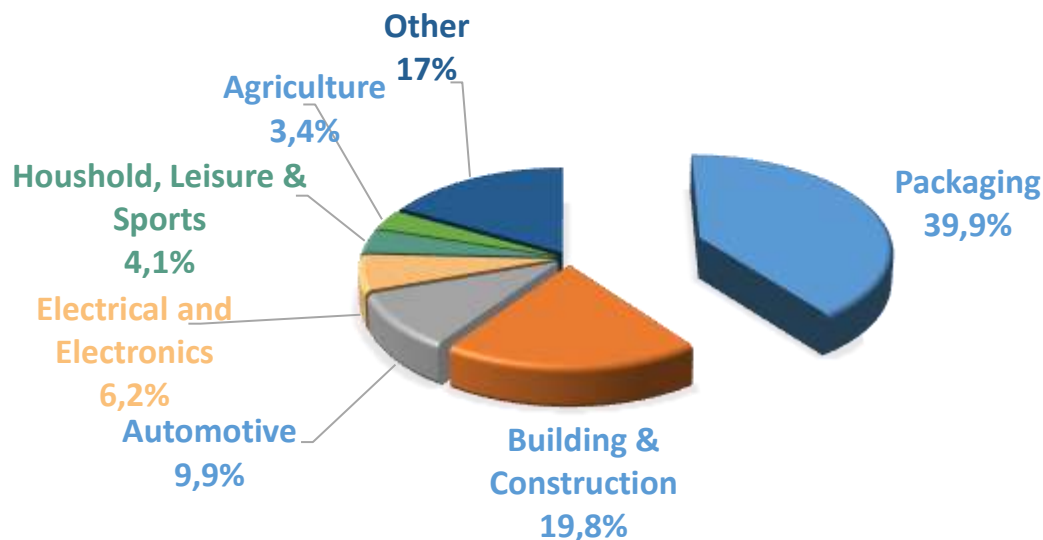
End date
31 May 2024



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SOLREC2 – circularity in multilayer packaging

Plastics demand by segment – 2018 (51.2Mt)



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SOLREC2 – circularity in multilayer packaging



**CIRCULARITY
IN MULTILAYER PACKAGING**

SOLREC2 – circularity in multilayer packaging

Technological breakthrough objectives



Novel sorting

- To improve waste sorting and positive engagement with consumers and stakeholders
- Digital watermarks

ILs and DES toolbox

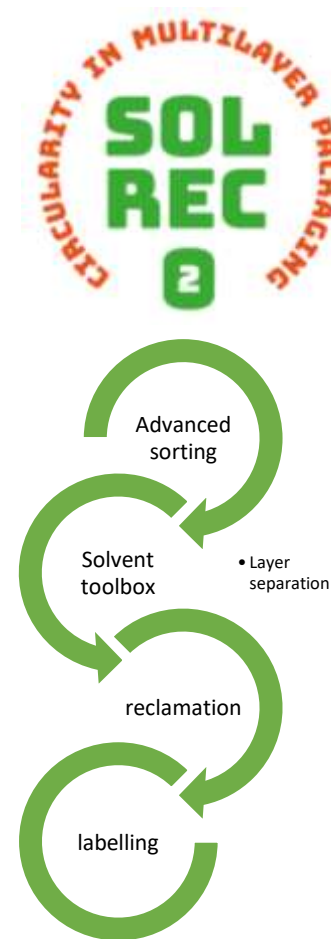
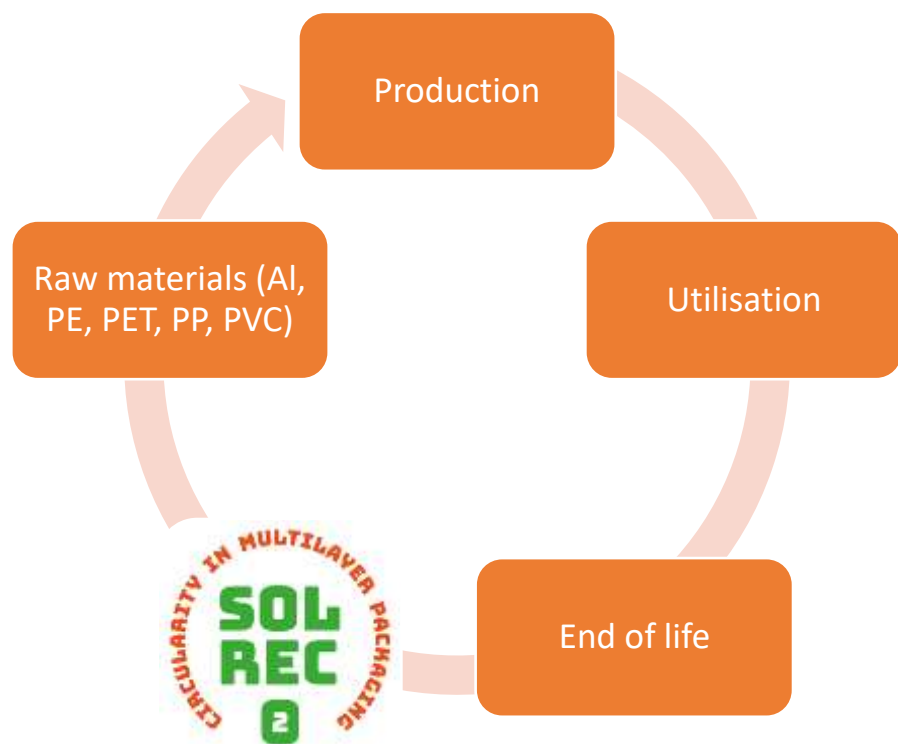
- To delaminate multi-layer material waste containing mixtures of polymer and aluminum



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SOLREC2 – circularity in multilayer packaging

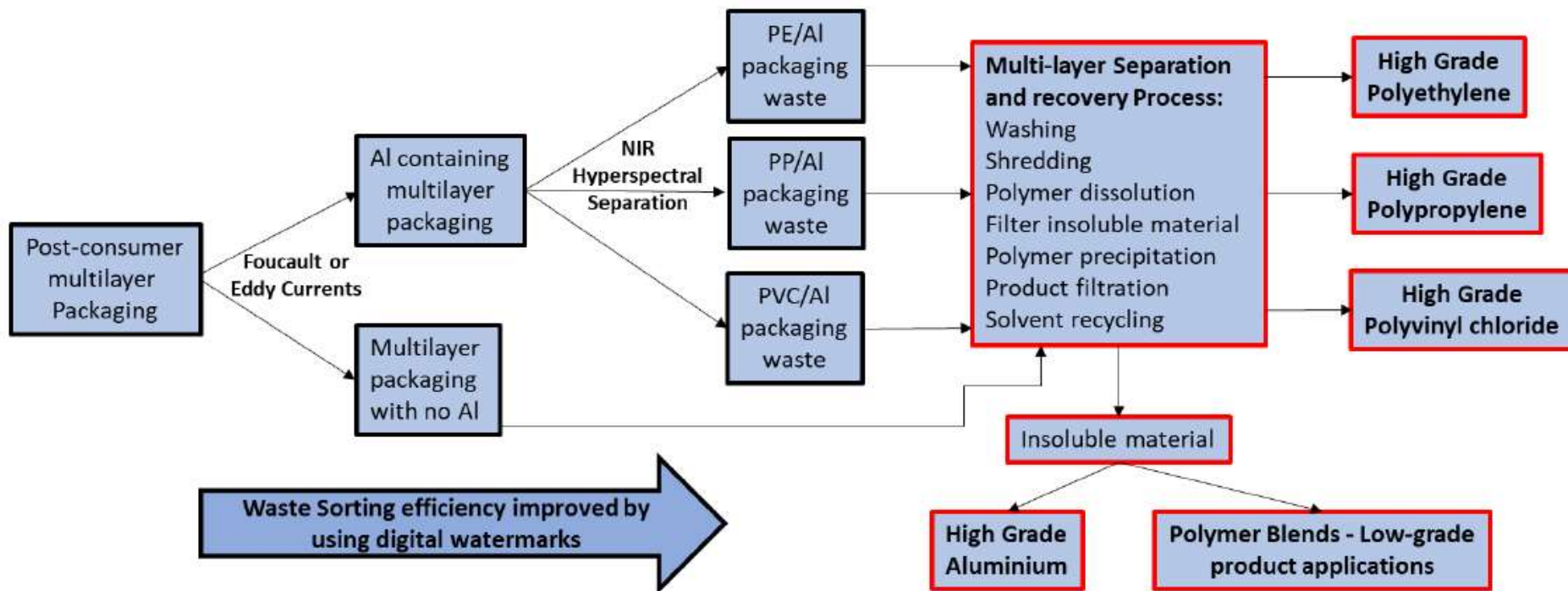
Sol-Rec2 process



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SOLREC2 – circularity in multilayer packaging

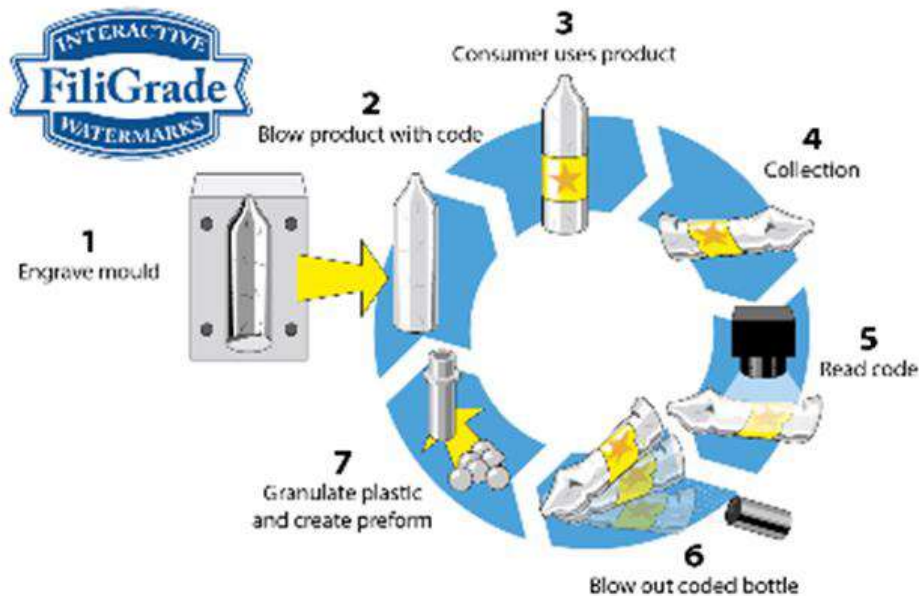
Sol-Rec2 process



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SOLREC2 – circularity in multilayer packaging

Digital watermarks for multi-layer packaging



Innovative digital codes will be embossed into packaging material, enabling improved sorting of end-of-life multi-layer packaging waste whilst providing traceability of the plastic products from point of manufacture to end of life disposal.





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Thank you for your attention



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