PART III

KER IV: Open access facility for the recycling of polymers, bromine and antimony trioxide fractions from secondary plastics from current and future WEE products

This Project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement N. 821087

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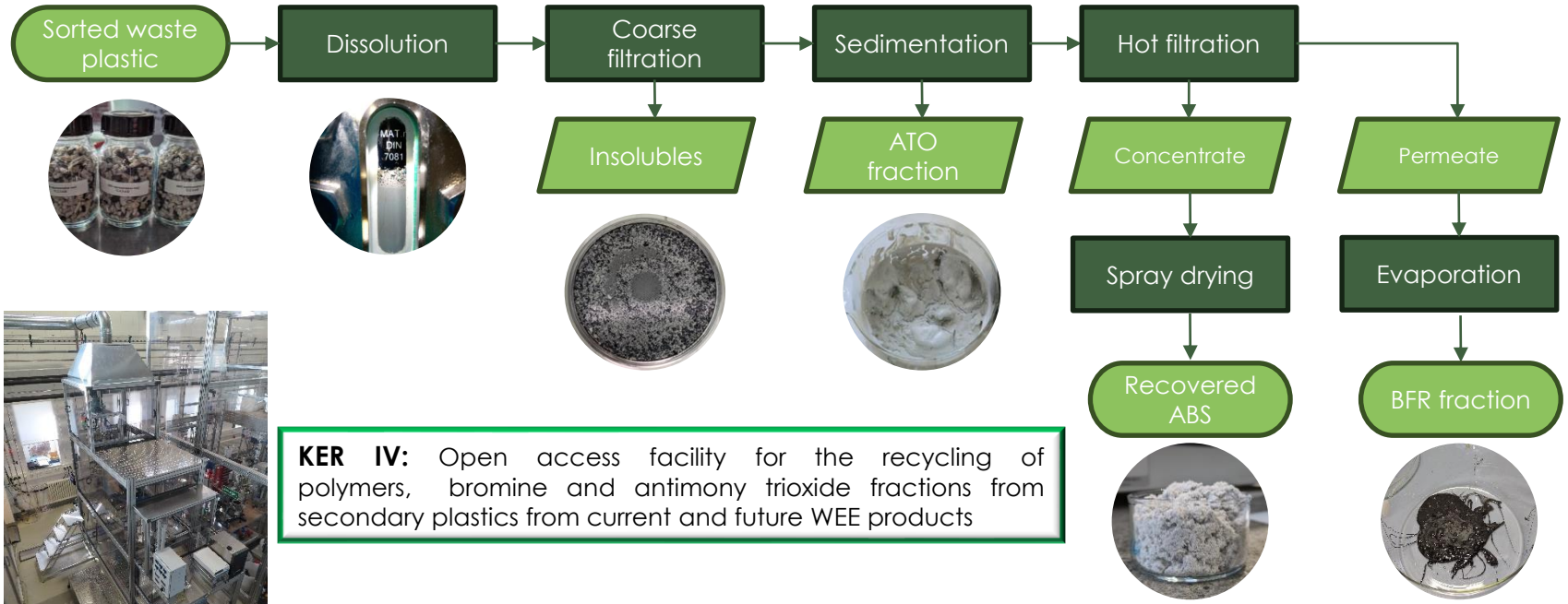
KER IV: OPEN ACCESS FACILITY

Lab pilot scale testing on real waste at TRL5, kg scale



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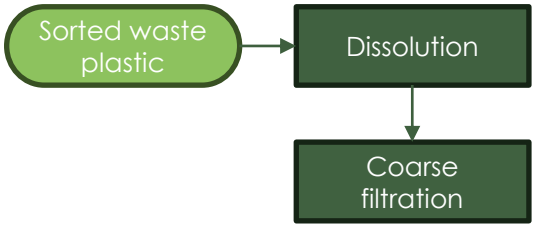
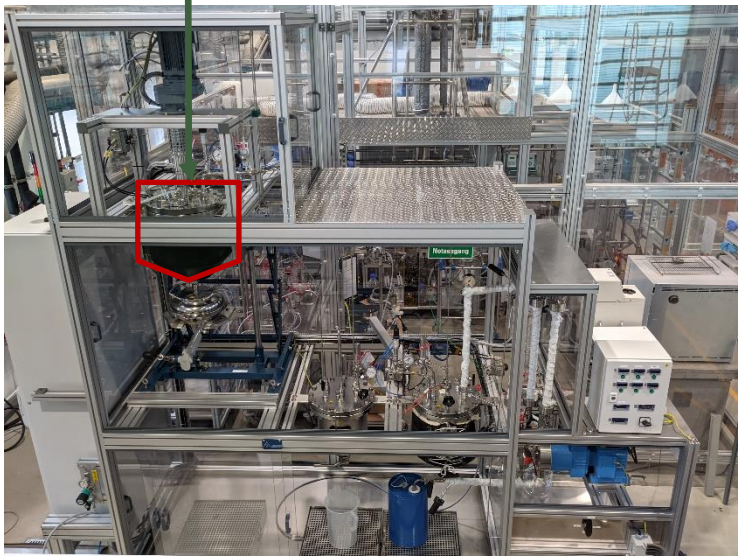
KER IV: OPEN ACCESS FACILITY

Dissolution & coarse filtration





- Sorted waste plastic and solvent are added to the dissolution vessel and heated

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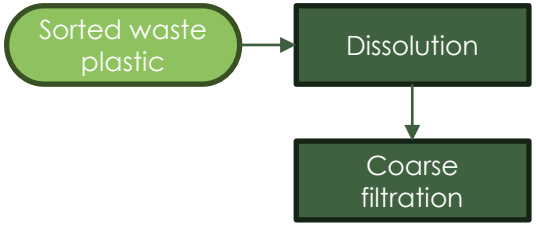
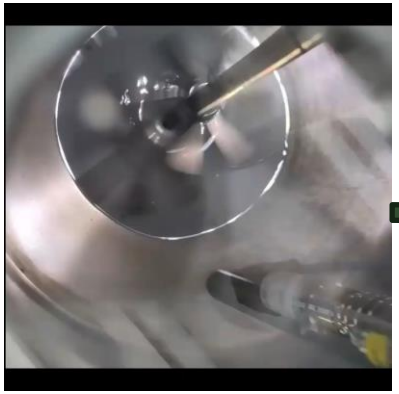
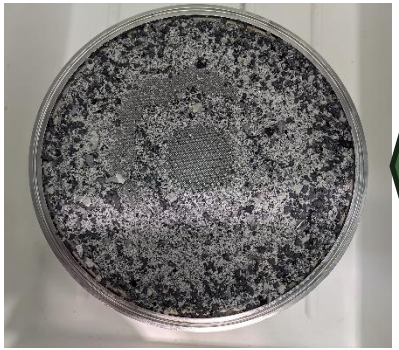
KER IV: OPEN ACCESS FACILITY

Dissolution & coarse filtration



- Sorted waste plastic and solvent are added to the dissolution vessel and heated
- Undissolved material is filtered off





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KER IV: OPEN ACCESS FACILITY

Sedimentation

Coarse filtration → Sedimentation

- Antimony trioxide with higher density settles in sedimentation vessel
- With dip-pipe the upper phase (supernatant) is moved to membrane filtration

Lid of sedimentation tank with adjustable dip-pipe

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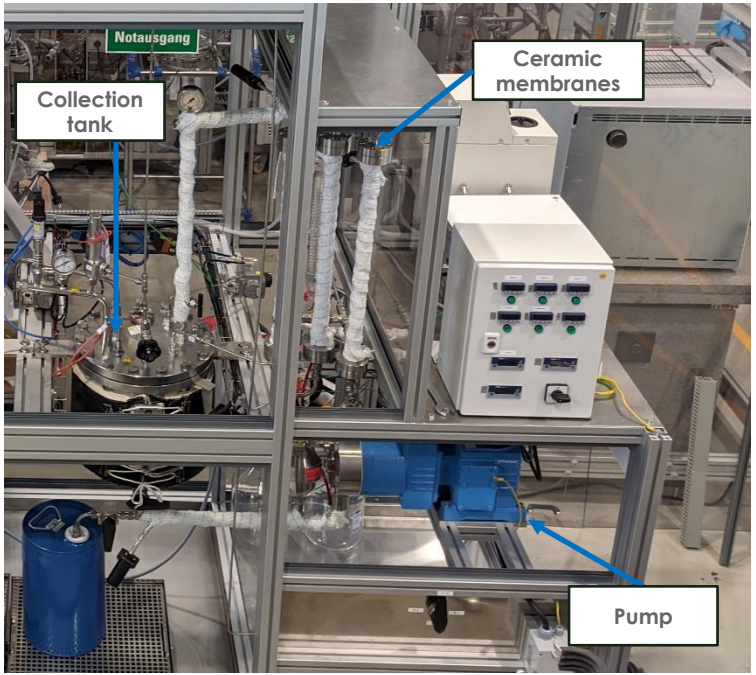
KER IV: OPEN ACCESS FACILITY

Membrane filtration

Sedimentation → Hot filtration

- Mixture of dissolved polymer and bromine flame retardant (BFR) are circulated over membrane
- Small size molecules such as BFR go through the membrane and are removed with the permeate
- Purified polymer remains in concentrate



Membrane filtration unit

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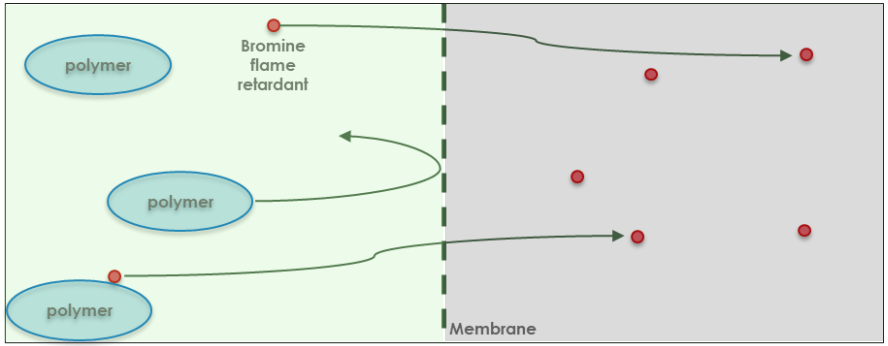
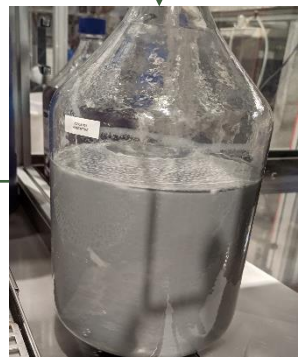
PLAST2bCLEANED

Membrane filtration

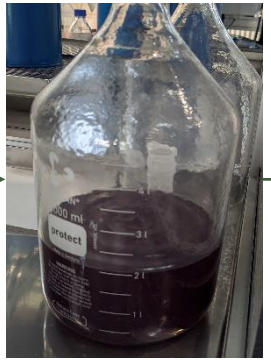


Spray drying



Concentrate

Permeate flow



Permeate containing high amount of BFR

BFR fraction

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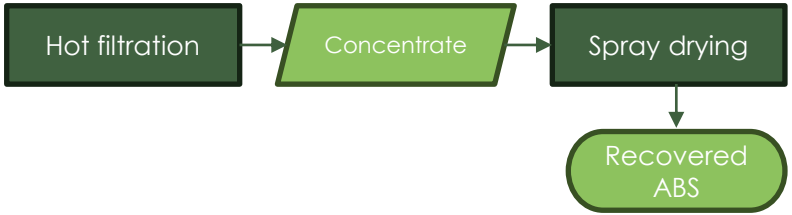
KER IV: OPEN ACCESS FACILITY

Spray Drying



- Purified polymer in solution is dried by spray drying
- Then spray dried rABS can be reused

Spray drying facility

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KER IV: OPEN ACCESS FACILITY

Reuse of ABS

Spray dried rABS

Tensile strength test bars

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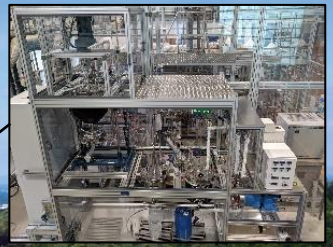
Open access facility: The TRL-5 facility is open to be operated for anyone interested



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THANK FOR YOUR ATTENTION

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