CASE STUDIES

A guided tour along the recycling paths
TOUR PLAN

- Comparison of Systematic Approaches
- Assessment of Recyclability

- Recycling paths
  - PE/PP
  - PET
  - Paper and board

- VIP-passangers
  - Yoghurt cups
  - PP-bottle
  - PE bottle with sleeve
  - Flower pot (black)
  - PET tray

21.05.2014
## Comparison of Systematic Approaches Assessment of Recyclability

<table>
<thead>
<tr>
<th>Type</th>
<th>RecyClass</th>
<th>Recoup</th>
<th>ARGE cyclos/HTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>guidelines + decision-tree + categorised (A to F) label additional bonification of percentage of recyclate in packaging item (+ to +++), guidelines for optimal recycling design, no classification of single packaging items</td>
<td>assessment of single items and evaluation of recycling percentage in regard of recovery system (collection to recyclate)</td>
<td></td>
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<tr>
<td>Main subject</td>
<td>plastic packaging in general; specs. for: PET-bottles, HDPE-bottles, PP-bottles, PTT from PE/PP, PET thermoforms (underway), flexible films</td>
<td>plastic packaging</td>
<td>separate collected packaging waste (plastic, glass, paper, metal, composites) but not limited to this</td>
</tr>
<tr>
<td>Main focus</td>
<td>mechanical recycling process</td>
<td>universal, widely open to different systems</td>
<td>recycling path oriented (collection, sorting, recycling process) single item assessment</td>
</tr>
</tbody>
</table>
RECYCLING PATH PLASTICS

Classification
Wind sifting
NIR separation

Comminution
Density separation
Melting

RECYCLAT
RECYCLING PATH PE/PP

Sorting
- Bag opener
- Klassification
- Wind sifter
- Magnetic seperator
- NIR - tetra
- NIR - plastics
- NIR - paper and board
- Eddy current seperator
- NIR-recyclables / PET
- Tetra
- Non-ferrous metals
- Mixed plastics
- PET
- PS
- PP
- PE
- Paper and board
- Residue
- Ferrous metals
- Mixed plastics
- Fines
- < 20 mm
- > 20 mm
- > 220 mm
- < 1 g/cm³
- > 1 g/cm³
- Recyclat
- Shredder
- Cleaning
- Density seperation
- Melting
- Rejects

Recycling

Specific process step without relevance
Significant process step
Significant process step in individual cases

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RECYCLING PATH PAPER AND BOARD

Classification
Mechanical sorting
Manual sorting
Pulping
Fiber preparation

Recyclat
Paper and board packaging waste

Sorting

Bag opener
Klassification
Wind sifter
Magnetic separator
NIR - tetra
NIR - mixed plastics
NIR - paper and board

NIR-recyclables / PET
Wind sifter

< 20 mm
20-220 mm
> 220 mm

Fines
Residue
Ferrous metals
Mixed plastics
Residues

Tetra
Non-ferrous metals
Mixed plastics
PET
PS
PP
PE

Pulper
Fiber preparation
Recyclat
Rejects

Specific process step without relevance
Significant process step
Significant process step in individual cases

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VIP PASSENGERS – PP YOGHURT CUP with chalk

Evaluation RecyClass: Evaluated as category F because of density caused by chalk and colour.
VIP PASSENGERS – PP YOGHURT CUP with three components

Evaluation RecyClass: Not suitable for that analysis because of the paper covered packaging surface.
VIP PASSENGERS – PP YOGHURT CUP with multilayer lid

Evaluation RecyClass: From category B to category E because of the coloured body and the multilayer lid.
VIP PASSENGERS – PP bottle

Evaluation RecyClass: From category A to category C because of the label and colour.
VIP PASSENGERS – PE bottle with sleeve

Evaluation RecyClass: From categorie B to category E because of the sleeve.
VIP PASSENGERS – PP flower pot

Evaluation RecyClass: From categorie A to category D because of the dark colour.
VIP PASSENGERS – PET tray

Evaluation RecyClass: Evaluated as category F because there is no PRE recycling path way for the PET tray.
Thank you for your attention!

ARGE cyclos / HTP