



**Questionnaire to identify research activities about the limits of paper recycling governed by pulp treatment technologies**

**WG2**

<b>Respondent's data</b>	<b>Name</b>	
	<b>Affiliation</b>	
	<b>Country</b>	

<b>Major issue "Fibre yield"</b>			
How to increase the yield in the recycling process, i.e. to keep as much as possible useful pulp components while rejecting selectively the detrimental contraries and unwanted pulp components depending on paper grades			
<b>Project n° - Short title</b>	<b>Project leader</b>	<b>Duration (start-end)</b>	<b>Research area(s) *</b>
<b>Project title</b>			
<b>Objectives</b>			
<b>Short description</b>			
<b>Project n° (short title)</b>	<b>Project leader</b>	<b>Duration (start-end)</b>	<b>Research area(s) *</b>
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\* See WG2 priority areas in the annexe

<b>General comments and personal view</b>

<b>Major issue “Fibre cycle”</b>			
How to avoid “aggressive” processes detrimental to fibre properties and recover fibre potential by upgrading treatments (gentle refining, enzymes, etc.) in order to improve the fibre “life time” in the global paper recycling process.			
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<b>General comments and personal view</b>

**Other issues**  
 - Projects not directly related to the 2 previous “major issues” but related to the priority areas recalled in the annexe  
 - Any other breakthrough project which might have an impact on the limits of paper recycling such as the development of non-mineral pigments, etc.

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\* See WG2 priority areas in the annexe

**General comments and personal view**

Please send your response to [Francois.Julien-Saint-Amand@webCTP.com](mailto:Francois.Julien-Saint-Amand@webCTP.com)

**Deadline June 30<sup>th</sup>, 2006**

**Example with a CTP project**

<b>Major issue “Fibre yield”</b>			
How to increase the yield in the recycling process, i.e. to keep as much as possible useful pulp components while rejecting selectively the detrimental contraries and unwanted pulp components depending on paper grades			
<b>1 - MINILOSS</b>	<b>Bernard PERRIN</b>	<b>3 years (2004-2006)</b>	<b>2.1.1</b>
<b>Project title</b>	Reduction of pulp losses in deinking and recycling mills by secondary reject treatment		
<b>Objectives</b>	To reduce solid losses while maintaining pulp quality		
<b>Short description</b>	Complete reject analyses (fibres, ash, fines, stickies and contaminants) were performed in one OCC recycling mill and in two deinking mills to determine the main reject sources and propose solutions. Macro-stickies and micro-stickies balances were also established to evaluate the impact of reject reduction on pulp quality. The last year of the project will be devoted to the evaluation of secondary reject treatments (ultrasound, enzymes, etc.) aiming at improving the separation selectivity of different process steps.		
<b>Project n° (short title)</b>	<b>Project leader</b>	<b>Duration (start-end)</b>	<b>Research area(s) *</b>
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<b>General comments and personal view</b>

## ANNEXE

### Priority areas based on the MoU and detailed at the 1<sup>st</sup> WG2 meeting

#### 1. Assessment of existing and future recovered paper treatment technologies and their potential contribution to safeguard or even improve recycled pulp quality

##### 1.1. Improving recyclability

- Inks, adhesives and glues: limited to guidelines for improved recyclability (development of products beyond our scope)

##### 1.2. Upgrading and optimizing the use of recycled pulps

- Regeneration of fibre potential: flexibility, bonding, swelling
  - Alternative mechanical treatment
  - Chemical treatments
  - Enzyme treatments

##### 1.3. Optimisation of recovered paper treatment line

1.3.1. Cost efficiency, energy saving, gentle treatments to protect fibres

1.3.2. Relationship between recovered papers, treatment line and end product

- Which recycling line for which end product ?
- Which recovered paper for which end product? (with WG1)

1.3.3. Sensor technologies and control systems to improve performance of recycling plants

1.3.4. Simulation. *Note: input from COST E36*

#### 2. Assessment of the selectivity of cleaning processes used for the treatment of recycled pulps and the type and amount of rejects generated by these techniques

##### 2.1. Undesirable/desirable materials as a function of product quality

2.1.1. Selectivity, efficiency and solid losses of the separation process including macro and micro-particle separation, i.e.:

- Separation of macro-contaminant and macro-stickies from the fibres
- Separation of inks and micro-stickies from fillers and fines (good/bad)  
*Note: including fluid mechanics activities, e.g. CFD simulation, rheology of pulps and stickies, for optimisation studies*

2.1.2. Specialized treatment plants for the recovery of specific products

##### 2.2. Reducing effects of undesirable materials (organic, inorganic, microbial) on environment, process and product quality

2.2.1. Wastes: rejects/sludge, organic versus mineral fillers.

*Note: cooperation with / input from E26*

2.2.2. Disturbing components in process waters and effect on process and product quality, e.g.:

- Bleachability of "fine elements"
- DCS interactions with wet-end chemistry
- Microbiological activity (odor, spots, food contact etc.)

*Note: cooperation with / input from E46*

#### 3. Development of techniques for the treatment of residues from recycled pulp stock preparation

##### 3.1. Towards energy neutral recycling

- How will look like a future mill?

##### 3.2. Development of techniques for the treatment of residues from recycled pulp stock preparation

*Note: cooperation with / input from E26 (start where COST E26 ends)*

Recall: WG2 should work in close cooperation with COST E26 "Effective Solutions to Reduce the Impact of Waste arising from Papermaking Process" as well as with COST E46 "Improvements in the Understanding and Use of De-Inking Technology".