



**COST ACTION E48
The Limits of Paper Recycling**

**Minutes of the
2nd Meeting of WG 2**

**COST Office
149 Avenue Louise
1049 Brussels, Belgium**

**Monday, 28 November 2005, 16:15 – 18:00 hrs
Tuesday, 29 November 2005, 11:45 – 13:00 hrs**

Attendees

The following members attended the 2nd WG2 meeting

Stanka Nedeva, Bulgaria	Tom Lundin, Finland
Juha Saari, Finland	Davide Beneventi, France
Francois Julien-Saint-Amand, France	Lubova Belkova, Latvia
Loud van Kessel, Netherlands	Annita Westenbroek, Netherlands
Bartek Stawicki, Poland	Dariusz Asendrych, Poland
Dan Gavrilescu, Romania	

1. Common Working Group Meeting (28.11.05, 16:15 – 18:00)

François Julien Saint Amand, the coordinator of this working group opens the second session of the working group meeting and recalls that, due the tight schedule, limited time will be available for the presentations and that discussions about WG2 activities will be postponed to the next day. The five following presentations were given:

Juha Saari: Report on COST Action E46

François Julien Saint Amand: Overview of the European project ScreenClean

Davide Beneventi: Pulp decontamination by flotation: focus on the influence of surfactant structure on bubble size and foaming in bubble columns

Loud Van Kessel: Compositions of rejects in Dutch paper recycling mills

François Julien Saint Amand: Solid reject analysis and stickies balances in a deinking mill and a paper recycling mill

François Julien Saint Amand thanked the speakers for their presentations and indicated that all the material presented will be available on the Action web site, as well as the final report of the ScreenClean project, which only includes the public results gained in this project.

Arie Hooimeijer expressed the feeling that, the quantity of technical information delivered in the presentations was probably too important to leave time for discussions and interactions in this working group session and recalled that overlapping with other COST Actions should be avoided while focus should be kept on the objective of this action, i.e. the (not only technical) limits of paper recycling.

2. Working Group 2 Meeting (29.11.05, 11:15 – 13:00)

François Julien Saint Amand proposed to start with short discussion about the presentations and to devote then the discussions to the future working group activities, keeping in mind that these should clearly focus on the objectives of the Action as recalled the day before.

□ *Technical presentations*

The following comments were given:

- Darek Asendrych: the technical presentations given at the COST Action E46 meetings are not yet available on the web. Juha Saari will forward this request to E46, since for the moment the Management Committee of the Action decided to hand out only hard copies of the presentations to the participants.
- Annita Westenbroek: presentations could be shortened and too much technical details avoided to get a better overview of the work towards the action objectives
- François Julien Saint Amand: the changes in the programme from parallel WG meetings to successive WG meetings are regarded as very positive but led to squeeze the five WG2 presentations planned before in a relatively short time. All the presentations were in line with the priority research areas agreed on at the last meeting (see annex) even the more fundamental one about flotation, which addressed one of the major scientific bottlenecks, i.e. the separation selectivity of fine particles.
- Loud Van Kessel: presentations about recycling yield should be interesting to discuss at the next meetings.

□ *Future activities*

The followings aspects were pointed out during the discussions about how to focus more the activities of the working group on the objectives of COST Action E48:

- Compared to previous COST Actions, E48 clearly includes a stronger socio-economic dimension, though WG2 is the most technically oriented Working Group.
- State of the art of current technical and economical recycling limits, i.e. the starting point of the activities we should focus on, is not easy to define as technical-economical mill data available at Companies or Associations like INGEDE are not public.
- The limits of recycling considered globally, i.e. how to increase the recycling rate by filling the gap of the low recycling rate paper grades, are probably more economical than technical (e.g. recycling rate in LWC grades is still low while 100% DIP containing LWC is currently produced in some mills, virgin fibres are still used in non-recoverable tissue papers while 100% DIP containing tissue is state of the art).
- The question about how many times a fibre can be recycled is still very much debated !

In order to concentrate future discussions and presentations in this working group on topics directly related to the Limits of Paper Recycling, it has been suggested to make an inquiry about views and research activities of the participants in this field. It has been agreed to send out a questionnaire to be prepared by the WG coordinator.

Further discussions led to identify to major issues related to the technical limits of recycling:

- “Fibre yield”: 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.
- “Fibre cycle”: how to avoid “aggressive” processes detrimental to fibre properties and recover fibre potential by upgrading treatments (gentle refining, enzymes, etc.) in order to evaluate fibre “life time” in the global paper recycling process.

Finally it was pointed out that replacing mineral fillers and pigments by organic bio-products would solve a number of environmental problems (recovery of deinking sludge energy instead of ash disposal, negative impact of mineral fillers and pigments on paper strength and weight) if technical and economical solutions can be found. Juha Saari was ready to report at the next meeting about the work carried out at VTT in the field.

3 Date and venue of next meeting

The next WG2 meeting will be held in conjunction with the other Action meetings, which are scheduled for May 11th and 12th, 2006 in Milan, Italy. Details will be given in due time.

4 Closure

François Julien Saint Amand closes the meeting and thanks all the participants for their cooperation.

List of activities

Preparation of a questionnaire (to be sent out in January 2006)	F. Julien Saint Amand
Completing the questionnaire (February 2006)	All
Information / report on Web site in E46 and on organic fillers research at VTT	J. Saari

ANNEXE

Recall of priority areas defined at the 1st WG2 meeting

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

- **Improving recyclability**
 - Inks, adhesives and glues: limited to guidelines for improved recyclability (development of products beyond our scope)
- **Upgrading and optimizing the use of recycled pulps**
 - Regeneration of fibre potential: flexibility, bonding, swelling
 - Alternative mechanical treatment
 - Chemical treatments
 - Enzyme treatments
- **Optimisation of recovered paper treatment line**
 - Cost efficiency, energy saving, gentle treatments to protect fibres
 - 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)
 - Sensor technologies and control systems to improve the performance of the recycling plants
 - 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

- **Undesirable/desirable materials as a function of product quality**
 - 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*
 - Specialized treatment plants for the recovery of specific products
- **Reducing effects of undesirable materials (organic, inorganic, microbial) on environment, process and product quality**
 - Wastes: rejects/sludge, organic versus mineral fillers.
Note: cooperation with / input from E26
 - 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

- *Towards energy neutral recycling*
 - How will look like a future mill?
- *Development of techniques for the treatment of residues from recycled pulp stock preparation*

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

It was also recalled that 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”.