Call for Participation

« FUSA »
Fractionation judiciously Used for Separation Approaches

CTP's R&D Project

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R&D at CTP …

With the mission of supporting the technological development of the pulp & paper industry, the CTP develops projects with the objectives of cleaner, faster, more economical and more ecological industrial processes. Today, the sustainable existence of companies not only depends on the combination of economy, efficiency and market satisfaction, but also on the way they behave: performance must include social and environmental dimensions.

The FUSA project aims at removing both macro and micro contaminants from recovered OCC material while being economically viable. It will be based on technological concept operated with unique pilot facilities to make the proof of concept in industrial conditions.

Scientists involved are:

- **Saurabh Kumar**: CTP's project leader and engineer in the scientific team « New Value for Recovered Paper & Board». He has an Engineering degree in pulp & paper from the Indian Institute of Technology, Roorkee and a Master degree from Grenoble INP, France. He completed a PhD programme in 2012 focusing on deinking pulp fractionation and particle characterization. Employed at CTP since 2006, he has worked on various research projects on deinking-recycling line as well as virgin fibre, with the focus area on fractionation.

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- **Benjamin Fabry**: After graduating from the Ecole Française de Papeterie et des industries Graphiques (EFPG, and now INP-PAGORA) in 1995, he was employed by ADEME and CTP to obtain his Ph.D. in the field of pulping. He then joined CTP as a project leader where he worked mainly on deinking and mechanical pulping. Since 2005, he has been Manager of the "Recycling – Deinking" Technological and Scientific Unit.

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Motivation

Due to the ever increasing contamination levels in the OCC grade of material, the production efficiency as well as the final pulp characteristics is adversely affected. The contamination can come from plastics, polystyrene material, sand and more importantly stickies (

Table 1). Several techniques can be applied to remove them from the process: the most common being fine screening to remove macro-contaminants that are theoretically able to remove 2/3rd of the incoming adhesives. On the other hand, 1/3rd of the adhesives as well as other potential detrimental substances is not treated and will remain in the final pulp. During previous projects, several technologies were identified to remove micro-stickies or secondary stickies contamination. However, the application to the whole stream was not interesting from techno economic point of view, but what can be the interest is to treat only a part of the stream enriched in such substances?

	Total	Macro-stickies	Micro-stickies	Potential Secondary stickies
Adhesives	0.4	0.27	0.13	
Coating binder	0.9	-	0.9	
Printing ink binder	1.2	-	1.2	
Sizing	0.3	-	0.3	
Pitch from fibres	1.1	-	1.1	
Chemical additives	1.5	-	-	1.5

Table 1: Amount in w% of potential stickies substances in paper for recycling (L Hammann "Stickies: definition, origin and characterization", 12th CTP Advanced Training Course on Deinking, 2-4 June 2015, Grenoble, France)

In the framework of the European project BOOSTEFF, a fractionation strategy was developed and fractions with large differences in morphological characteristics and contamination levels were produced for white grades.

Fractionation applied to OCC grade material is not new: it has been practiced since a very long time to separate short and long fibres, based on pressure screen equipped with slots. Macro-contaminants are concentrated in the long fibres and further removed by fine screening.

The fractionation systems based on pressure screening have to be re-looked with regards to the long fibre screening efficiency. Fractionation with holes seems to be an improved solution for efficiency increase (long and short fibre quality). This allows for better separation of macro-stickies contamination in the long fibres fractions and the enrichment of the micro-contaminants in the short fibre fraction. This would hence allow adapted treatments for pulp quality enhancement.

Objectives

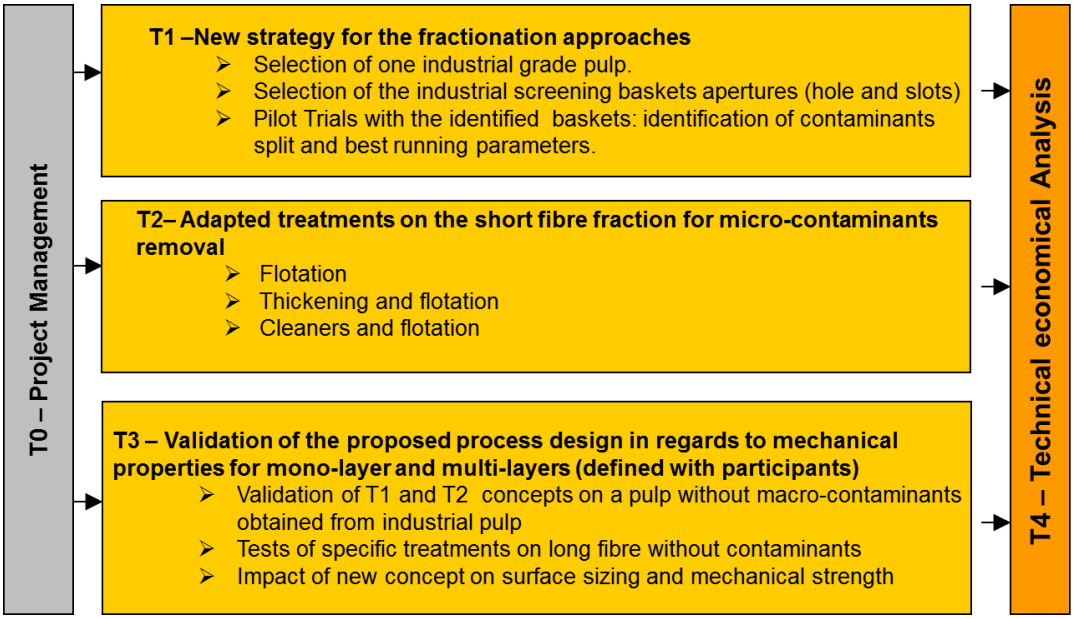
- To optimize the generation of various fractions enriched in various types of contaminants (use of micro-hole pressure screen BASKET, hydrocyclone…)
- To find the best adapted treatment and running conditions to remove each type of contaminants present in the various fractions produced.
- To validate the compatibility of the new proposed process design (pulp quality including residual contamination and mechanical properties but also techno economic analysis and process implementation)

Criteria of success

- Higher elimination of stickies and hence lower defects and deposits on paper machine
- Application of a new separation concept
- Better final pulp characteristics
- Better productivity (lower amount of breaks)

Research programme

Draft Research Programme: To be refined during the Scope Definition Meeting



Project participation

Joining this project allows you to:

- Participate in the **Steering Committee Meetings** in **October** at CTP during which will be discussed results obtained and the next steps.
- Attend to the **Results Transfer Implementation Meeting** in **spring**, which is a Peer to Peer private exchange with the Project Leader focusing on the applied results transfer.
- Accelerate the technology transfer to your own situation

Financial participation:

- This project will be conducted on a cost and result shared basis.
  A portion of the budget will be paid by CTP and a portion will be required from partners.
- The participation fees will be spread over the duration of the project (**3 years**).

Pre-project participation:

- Please indicate your interest by return mail.
- Participation in the project is to be confirmed after the **Scope Definition Meeting**.

March 14th 2019, 14:30-16:00 (local time France) at CTP, Grenoble, France or via telephone & Webex