

Fibre suspension flow modelling: a key for innovation and competitiveness in the pulp & paper industry

FP1005

Start date: 11/05/2011

End date: 10/05/2015

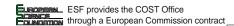
Year: 1

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Scientific context and objectives (1/2)

 Background/Problem statement: CFD is far from being a mature research tool in the pulp and paper industry. The Action aims at showing how CFD can help to solve practical problems and decrease energy consumption of papermaking unit operations

Brief reminder of MoU objectives:

Main: to promote and disseminate validated experimental and numerical techniques in paper-making industry.

<u>Secondary</u>: Knowledge Database for selected test problems, BPG for modeling fibre suspensions.



Scientific context and objectives (2/2)

Research directions:

- Promotion, dissemination and validation of CFD in paper industry will be achieved by joint meetings, written documents from meetings, public Knowledge Base repository.
- The Action will enhance transfer of innovative solutions to industry, but also the flow of information from practitioners to scientists through STSMs, training schools, workshops.
- The Action will offer a forum to solve test cases relevant to industry and to compare simulated results to experiments.

Working groups

WG 1: Experimental Methods

Development and validation of experimental techniques for measurements of dilute or dense fibre suspensions and non-Newtonian media.

WG 2: Rheology Modelling

Predicting pulp behavior with single-phase continuum rheology (generalized-Newtonian viscosity models and fully non-Newtonian rheology models).

• WG 3: Multi-phase flow modelling

Modelling fibre suspension flows with multi-phase Eulerian-Eulerian/Lagrangian models (averaged phase equations, individual trajectory tracking).

Future plans and challenges

- No significant deviations from work plan expected
- Critical phases to be implemented or topics to be addressed during the 2nd year:
 - Push production of preliminary experimental measurements and simulation data for the Knowledge Base
 - Increase participation of industrial practitioners (challenging task!)
 - Stimulate production of collaborative scientific papers through WG meetings
 - Stimulate STSMs

