



# Wageningen Paper and Board

Newsletter for the paper and board industry and its suppliers  
June 2005, number 4

*Application of WinGems*

## Towards process and product improvement

**The paper industry continuously optimises production and product quality. In this perspective, a short study was performed at Coldenhove Papier B.V. to obtain the optimal strategy for colour changes in the production of Decocol, a base paper for decor applications such as furniture construction. Dynamic computer simulation was used to visualise effects of colour changes in the paper production.**

The top and back layer of Decocol have different colours that have to be changed several times a day. Due to a combination of long white-water residence time, mixing of the white water circuits for both layers and batch wise colouring, the colour changes between papergrades are time consuming. This significantly influences the economy of the paper production.



The production was simulated using WinGems, a process simulation program for the paper and pulp industry. Because of the combination of batch and continuous stages in the process a dynamic simulation was set up, showing the properties of the pulpstreams as they change in time. The simulation combines observations of the normal batch preparation and the control loops of the continuous processing, resulting in the amount of colouring agents in the final product as a function of time. With these data several scenarios could be visualised resulting in new routes to process optimisation.

Edwin Keijsers: "This project was performed using the Innovation voucher MKB that was awarded to Coldenhove Papier B.V. During a discussion at the end of the project all people involved from both Coldenhove and Wageningen UR Paper and Board were able to evaluate the new optimisation routes based on new insights in the process".



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## News

### *Cost reduction by optimisation refining*

After finalising the inventory and benchmark about refining at Dutch paper mills, both Stora Enso-Berghuizer Mill and Crown van Gelder decided to further optimise their refining process.

At Berghuizer Mill the main target is to increase the refining capacity. Crown van Gelder wants to realise a reduction of refining energy for specific products.

Jocco Dekker of Wageningen UR Paper and Board is contracted by both mills for advise and support to optimise their refining process.

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## International activities

Wageningen UR Paper and Board actively participates in COST Action E41: Analytical tools with applications for wood and pulping chemistry. This action discusses state of the art measurements for wood, pulping and bleaching chemistry.

A recent workshop in Barcelona highlighted all spectrometric analysis methods for these components. Especially the presentation of Teris van Beek of Wageningen UR on 'the use of Liquid Chromatography combined with Nuclear Magnetic Resonance (LC-NMR) for quantitative measurements of extractives and other water and/or solvent soluble compounds' received a lot of attention.

Presentations of this workshop can be found on [www.kcl.fi/cost](http://www.kcl.fi/cost).

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*Salty Pulp?*

## Pulp from trees grown on saline soils

**Rising sealevels due to climate changes will increase salinization processes in many coastal areas. World-wide these processes are causing desertification and rural exodus. The Dutch company Ocean Desert Enterprises (ODE) proposes to produce biomass on saline wastelands. Saline trees can be a future source for pulp production.**



*Nursery*

“Biosaline agriculture and forestry will only be viable when supported by a market for their products”, says Jeannette Hoek, director of ODE. “We therefore need to work on both ends: production and market”.

ODE had the papermaking properties of fibres grown under saline conditions evaluated at Wageningen UR Paper and Board. Steef Lips of Wageningen UR: “Initial results from the chemical pulping show that some of the selected saline raw materials have fibre and papermaking properties that can compete with commercial hardwood pulps. Technically these materials have the potential to become new fibre resources for paper production in the future. However, many other issues such as economics, logistics, and social factors still need to be explored.”

More information: Steef Lips (Steef.Lips@wur.nl)

Sustainability targets will increase the use of biomass for products and energy. Several parties among which ODE foresee that the pressure on agricultural land and fresh water resources will increase due to a combination of the salinization processes, increasing world population and generally increasing living standards. Supported by the Dutch Ministry of Education, Culture and Science, ODE develops biosaline solutions for dry and salinized areas, combining the traditionally strong Dutch areas of agricultural and water engineering with biosaline techniques.

## Apparatus: DAS-JAR 400, on-line refiner control

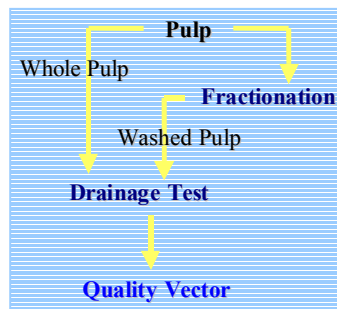
The new DAS-JAR, owned by the KCPK, is recently installed at Wageningen UR Paper & Board. With the DAS-JAR pulp quality can be monitored in terms of properties that are developed during the refining process (*source: Cybermetrics*).



*DAS-JAR*



*Drainage column*



*Measuring principle*

Comparison of pulp before and after treatment gives a measure of:

- Increase in fibrillation (surface area of washed pulps)
- Fines generation (fractional surface area of fines)
- Hydration/swelling (changes in specific volume)
- Compressibility (changes in compressibility indices)

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## Events

### Publication

*'Towards the implementation of enzyme technology into the paper mill'*, H.C.P.M. van der Valk, Cost Action E23 on 'Biotechnology for the pulp and paper industry', Conference proceedings p 55, April 2005.

### Forest-based Sector Research Forum

On the 9<sup>th</sup> and 10<sup>th</sup> of November the **Forest-based Sector Research Forum** in Stockholm will present and discuss the Strategic Research Agenda (SRA) of the *Forest-based Sector Technology Platform (FTP)* and the potential of the new EU Framework Program for Research (FP 7) for the forest based industry. The audience includes representatives of European and national authorities, research funding bodies, forest owners, forest industries, allied industries and suppliers to the sector, and the research community. Wageningen UR participates in formulating the SRA. More information on this forum and side-meetings can be found at [www.fbs-research.com](http://www.fbs-research.com) or from Ed de Jong (ed.dejong@wur.nl).

## Wageningen UR Paper and Board

### Major Research Themes

#### Fibre Raw Materials

Fibre quality and choice related to processing and end product requirements

#### Fibre Processing

Reduced energy consumption during fibre processing and in the total paper production line

#### Papermaking Chemistry

Synthesis of new or more effective chemicals based on natural raw materials

#### End Product Quality

Insight in product requirements based on converting and consumer demands, enhancing end product performance and development of packaging

#### By-stream Upgrading / Processing

Creating commercial value for solid by-streams from pulp and paper production processes

## Colophon

Wageningen Paper and Board is meant to inform all contacts of WUR Paper and Board about research activities, new developments and projects. The newsletter will be issued 3 times a year and is also available on the website, [www.paperandboard.nl](http://www.paperandboard.nl).  
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