PROMINENT TECHNOLOGICAL COMPETENCE:
FIBRE PROCESSES
PAPERMAKING PROCESSES - COMPETENCE

- Development of new energy efficient unit processes and concepts for papermaking
  - Our aim is to develop end-product properties and manage production using different raw material and process concepts.

- Competence is based on the control and development of various technologies:
  - Papermaking sub-processes
  - Fibre suspension flow
  - Wet web rheology
  - Impact of raw materials on the end product
  - Control of secondary flows in the pulp and paper industry
  - Mechanical fibre processing
KNOW-HOW

- Strong rheological expertise, which is based on fibre suspension flow research, can also be applied in other industrial fields.
- Paper structure and runnability research laboratories with analysis methods is available for research and development projects related to web forming, dewatering, process chemistry, and the runnability of paper machines.
- Strong know-how in separation technique and fractioning expertise can be utilised in new applications in Biorefine field and in the cleaning of secondary flows.
OUR COMPETENCE IS BASED ON

- **Over 30 inventions transferred to industry**
  - Results utilised in commercialised applications: new generation of headboxes, impingement drying concept and novel measurement techniques

- **Main customers industries:** Global pulp and paper, chemical and paper machine manufacturing companies

- **Unique research infrastructures** developed together with industry:
  - Raw material handling
  - Fluid dynamics
  - Papermaking
  - Filtration and separation
  - Paper structure and runnability

- **55 research persons:** 12 post-graduate degrees (5 doctoral degrees), 8 on-going doctoral studies.

- **Research partners:** KCL, STFI, KTH, TKK, JyU, ÅA, University of Maine, University of British Columbia
NEW POTENTIAL HIGH GROWTH OFFERINGS

For pulp, paper and board producers

- Development of unit processes for paper making
- Fibre suspension flows – from lab scale up to mill scale unit processes
- Wet web rheology
- Raw material interactions and impacts to final products
- Side stream handling and control in pulp and paper industry
- Development of research tools and special measurements

For chemical suppliers

For paper machine and automation suppliers
SUPPORTING INFRASTRUCTURE

- Unique set of experimental facilities from laboratory to pilot scale
- Development of new technologies from fibre scale phenomena into realistic process conditions
FROM RAW-MATERIAL TO PRODUCT PROPERTIES

- Fibre properties
- Material characteristics
- Flow field
- Flocculation
- Dewatering
- Pressing
- Print quality
- Product properties
- Structure
- Drying & Runnability

Disruptive shear stress vs. consistency

Flow field

Drying & Runnability

Print quality

Product properties

Structure
BUSINESS INSIGHT

- Around 50% (3 Meur) direct customer revenues annually mainly from the top forest industry companies on global market
- Over 30 inventions transferred to industry (1995 – 2007)
- Research results utilized in commercialised applications: new headbox generations, impingement drying concept and novel measurement techniques
- Customers such as Metso Paper, Larox, UPM, Stora Enso, Kemira, Ciba
Metso Paper:
OPTIDRY2: DIRECT AIR IMPINGEMENT DRYING OF PAPER

- OptiDry Vertical is Metso Paper’s new impingement drying concept
- In new machine it is possible to shorten the dryer section length app. half the length of conventional dryer
- The first OptiDry unit started on Nordland Papier PM 1 in Germany, 1999
- Advantages of the method:
  - Drying efficiency 3 - 4 greater than a cylinder dryer
  - More rapid control of the drying section
  - Suitable for all paper and board grades
Metso Paper:
PREMIUM HEADBOX FOR GAP FORMER APPLICATIONS

Benefits

➤ Elevates paper quality standards to a totally new level
➤ Very high production capacity and speed potential
➤ Gives outstanding structural uniformity to paper, which means uniform basis weight and fibre orientation profiles
➤ Fully homogenized flow free of disturbances thanks to optimized hydraulics
➤ Very high operating efficiency thanks to a supremely robust process also under varying production conditions
➤ Versatile profiling tools and a very wide operating window
➤ Reliable and easy to operate and maintain
LAROX’S CERAMEC® DISC FILTERS – a Novel ultrasonic cleaning technique

- Frequent cleaning with short intervals leads to high average capacity
- Less or no need of acid cleaning
- Maintenance easy
- Possible to install into existing filters
- Fully automatic operation
CONTACT INFORMATION

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VTT creates business from technology