

\ RESEARCH PROGRAMME 2011



\ InTechFibres
research in fibres

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a partnership with



INTRODUCTION

InTechFibres

Partnership & 2011 Research Programme

Pulp and paper production remained traditional from the time paper manufacture was discovered in China, even if the technologies used progressed considerably. In the late 1990's, however, biotechnologies arrived and today appear to be the answer to the crying need for sustainable resources as society continues to deplete limited resources and industry suffers their rising prices.

Wood and annual plant biotechnology research is advancing on many fronts simultaneously with other technologies, which together are permitting new chapters in wood possibilities to be opened, such as improved fibre production, but also molecules from wood, nano-fibrils, enzymes, grafting, residues, wood co-products, biomass and recovered wood wastes, for potential new products.

Sharing the research effort reinforces the potential for industrial implementation, the industry's capacity for innovation and market diversification.

InTechFibres Partnership

Scientists with complementary skills in subjects related to ligno-cellulosic materials function efficiently together in a three-team partnership composed of:

CTP's Scientific and Technological Unit: Process-Pulps & Functional Fibres

FCBA's New Materials Division

Grenoble INP-Pagora's Departement of Pulping Chemistry

Each of these institutes has developed fields of excellence and expertise, with equipment, in common and complementary areas, and provides research on different levels from basic to applied.

The institutes have organised their work as follows:

CTP has identified 9 Strategic Action Priorities (SAPs) as creators of economic value for the pulp, paper and board industry, and as bases for its sustainable future activity and along which R&D work and technology transfer are to be oriented.

1. Ligno-cellulosic Chemistry
2. BioBased Materials
3. Packaging of the Future
4. Printed Electronics – Smart Paper
5. Health & Safety Applications
6. New Value for Recovered Paper&Board
7. Water - Energy
8. Printed Communication
9. Industrial Performance

FCBA has defined its research and innovation strategy in 8 Domains of Research and Strategic Innovation (DRIS) which cover upstream activities as well as building and furniture.

1. Genetic improvement, biotechnologies and silviculture;
2. Optimisation of the quality and availability of manufacturers' supplies;
3. Wood and wood-based materials processing procedures: drying, machining, gluing;
4. Performance control and material development, components and systems for the construction timber sector;
5. New products, new uses and associated processes in furniture
6. Ligno-cellulosic materials: associated components and processes
7. Eco-technology development to improve the environmental performance of the timber and furniture sectors
8. Synergies and future prospect sectors: market, society and territory

Grenoble INP-Pagora, has developed fundamental and partnership research in 5 areas:

1. Process Chemistry: wood chemistry, paper pulp manufacture, bleaching, recycling process chemistry;
2. Paper Engineering: refining, sheet formation, pressing, drying, effluent treatment, process simulation;
3. Fibrous Structure Physics: structure and modelling fibrous structures, paper properties, sensors, deterioration and stabilising paper properties;
4. Graphic Science and Techniques: offset process, flexographie, non-impact ink transfer, colour management, sensors for the offset process;
5. Packaging and Conversion of Paper and Board : adhesion, coating, composite and complex materials, mechanical properties of structures

InTechFibres enables mutualising fundamental to applied research efforts of 3 partners around essential themes common to ligno-cellulosic materials, their derivatives, their production and their use; themes which are critical for the future of the pulp, paper and board industry.

InTechFibres Research Programme

Objective: Innovate in the production and use of bio-molecules, bio-products and lingo-cellulosic fibres, to reduce production costs and environmental impact in a sustainable manner while designing new processes and products.

This is founded on increasingly better understanding of ligno-cellulosic raw material properties and variability, and of extracting, pulping and bleaching mechanisms. To design new products and to improve the quality of the existing, **InTechFibres** research seeks more highly valued uses for wood resources and fibres, and better characterisation of the fibres and their derivatives. Wood derivatives and fibres are incorporated into raw materials and products for many industrial sectors.

The **InTechFibres** Research Programme is organised in three main themes

- **Greener Pulp for the Future**
Projects will employ the competencies of CTP SAPs 1 & 9 and FCBA DRISs 3 & 6
- **Biorefinery and Fibre Functionalisation**
Projects will employ the competencies of CTP SAP 1 and FCBA DRIS 6
- **New Fibre Technologies**
Projects will employ the competencies of CTP SAPs 1, 5 & 9

CTP PROJECT SELECTION

CTP's Research Programmes are run in collaborative deliberation with the Pulp and Paper Industry.

CTP's Research Strategy embodies 4 themes prevailing in the Industry today and around which more and more inventive and creative projects will continue to be developed:

1. Sustainable raw materials

CTP contributes in developing new raw materials, improving existing raw materials and in managing recycled pulp and paper raw materials. Focus is presently on the development of wood-based raw materials, on recycling and on green chemistry.

2. Eco-production concept

To efficiently manage raw materials, waters, energy and rejects, research is progressing with new production concepts which are more efficient, more economical and more environmentally friendly.

3. Bio-sourced materials, functionalising and new uses

Reinforced by the bio-refinery concept, new bio-sourced, high-added-value materials are being produced. By integrating nanotechnologies and functionalising these lignocellulosic compounds, CTP's Research Programme is generating newly developed fibres for paper and board destined to new markets and/or to packaging and communicative papers.

4. Product Performance

Projects are concentrating on product performances as our processes and products must be continuously adapted and improved to maintain and to advance in quality and in productivity.

What is Innovation at CTP?

Innovation is when a project starts to produce results which are different from present industrial results. The originality and creativity of our projects are qualified from *Continuous-enhancement* to *Idea*.

Project level of innovation		2011 number of projects	2011 % of projects
Continuous Enhancement	☆☆☆	16	68,6
Innovative	★☆☆	14	
Highly innovative	★★☆☆	18	
Idea	★★★☆☆	3	

CTP PROJECTS SELECTED FOR InTechFibres PROGRAMME

INTECHFIBRES	Innovation Fields	Sustainable Ressources	Eco-Concept of Production	Bio-Sourced Materials	Product Performance	Innovation	
	Greener Pulp for the Future						
	EcoBleach					★ ★ ★	
	OptHYP					★ ★ ★	
	Betacook					★ ★ ★	
	Demowood					★ ★ ★	
	Lignocellulosic Chemistry						
	Bioextra					★ ★ ★	
	Hemicell					★ ★ ★	
	MoCell					★ ★ ★	
NanoFun					★ ★ ★		
Lignodeco					★ ★ ★		
Amazon					★ ★ ★		
New Fibre Technologies							
Tissue+					★ ★ ★		
RefControl					★ ★ ★		
EucaRef					★ ★ ★		
Desminc					★ ★ ★		

CTP provides 3 other Research Programmes.

ENVIRONMENT SUSTAINABILITY	Innovation Fields	Sustainable Ressources	Eco-Concept of Production	Bio-Sourced Materials	Product Performance	Innovation	
	Water - Energy						
	Addistep 2					★ ★ ★	
	BioFine					★ ★ ★	
	Scale					★ ★ ★	
	Flocstep					★ ★ ★	
	InPro					★ ★ ★	
	Agri-Elec					★ ★ ★	
	HeatRec					★ ★ ★	
	Gazif					★ ★ ★	
MethaSludge					★ ★ ★		
Industrial Performance							
EcoTech						★ ★ ★	

PRODUCT QUALITY & DEVELOPMENT	Innovation Fields	Sustainable Ressources	Eco-Concept of Production	Bio-Sourced Materials	Product Performance	Innovation	
	Packaging of the Future						
	Nanograft					★ ★ ★	
	Curve					★ ★ ★	
	NanoMat					★ ★ ★	
	Walter					★ ★ ★	
	Industrial Performance						
	RefControl					★ ★ ★	
	Health and Safety Applications						
	Tissue +					★ ★ ★	
	Printed Communication						
	DIP Impact					★ ★ ★	
	Eco-Co					★ ★ ★	
	Sippa					★ ★ ★	
	Speedy					★ ★ ★	
	Printed Electronics - Smart Paper						
	FunInk					★ ★ ★	
	Decarte					★ ★ ★	
	A3ple					★ ★ ★	
SecurID					★ ★ ★		
PowerPap					★ ★ ★		
PEPS					★ ★ ★		

RECYCLED FIBRES	Innovation Fields	Sustainable Ressources	Eco-Concept of Production	Bio-Sourced Materials	Product Performance	Innovation	
	New Value for Recovered Paper&Board						
	Tri+					★ ★ ★	
	SortIT					★ ★ ★	
	MiDi					★ ★ ★	
	Eco-Co					★ ★ ★	
	InnoDIP					★ ★ ★	
	OpCoRec					★ ★ ★	
	Idefix					★ ★ ★	
	Solustic					★ ★ ★	
	BoostEff					★ ★ ★	
	Ozoflot					★ ★ ★	
	Enzyrec					★ ★ ★	
	RecyFun					★ ★ ★	
	Printed Communication						
	DIP Impact					★ ★ ★	
	Water - Energy						
	Air-Free					★ ★ ★	
	Biolmpact					★ ★ ★	
BioBased Materials							
MatRec					★ ★ ★		

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RECYCLED FIBRES

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TO PARTICIPATE IN CTP RESEARCH

For *ideas which will make the difference in 2011*, contract possibilities are...

A **CTP Innovation** Contract will give papermaking groups, suppliers and end-users access to an entire Programme

It offers ...

- Active steering of the projects which most complement your work
- Results which may be transferred to all of your installations
- Access to all the results of the Programme
- Implication in project creation for each year's new Programme
- Participation in the annual Forum during which the year's results are presented by the scientists

A **CTP OpenProject** Contract is limited to active steering of the project

When included in a Programme, these projects are accessible independently to parties who have not signed a CTPi Contract

Original, **Private Projects** adapted to specific situations with individual priorities are possible for single parties or groups.

CTP and its network are a **research reserve** at your service.



The **contact list** provides the names of persons who will welcome your call and assist you in using...

CTP's expertise

to consolidate the present

to create the future