New Collaborations

Our collaboration with 3C Software led by Paul Naliwajka and President Matthew Smith continues to flourish. In 2006, the first results from our “process-driven” models for process design and operations management were presented (PAPTC 2006, Martin Laflamme-Mayer and Matty Janssen - PIMA 2006, Martin Laflamme-Mayer).

PEPITE S.A.
An agreement has been signed between PEpite S.A. and our NSERC Chair to work jointly on the F.I.R.S.T. - Enterprises International Programme “Formation et impulsion à la recherche scientifique et technologique pour les entreprises”. Data mining tools will be applied to solve critical problems in the pulp and paper industry, as such process variability and energy optimization. The first project aims to provide operators with predictive tools to reduce the occurrence of paper breaks on the paper machine.

James Palumbo of the National Council for Air and Stream Improvement (NCASI) has agreed to be a member of the defence jury for Lucy Cotter’s M.Sc project entitled “Multivariate analysis and steady-state modeling of nutrient mechanisms in activated sludge treatment of pulp and paper wastewater”. James is an expert in nutrient mechanism modeling for pulp & paper wastewater treatment, and his association with the project is highly valued.

Westworks Consulting
In the context of her product design methodology definition, Virginie Chambost had several meetings with key players in the Ontario chemical sector. Thanks to their expertise, Bernard West, President of Westworks Consulting, and Gregory Penner, President and CEO of NeoVentures Biotechnology Inc, provided interesting perspectives on current challenges in the chemical and the bio-product sectors.

APPi
As the 2007 APPi Professor, Paul Stuart will give a series of lectures in June at Monash University in Melbourne Australia. The series of about 16 one-hour lectures over a one week period will be provided to the Master of Engineering Science Students. Paul will also be the main speaker at a joint Appita-APPi sponsored two-day industry seminar. The attendees will include chemical, papermaking, and environmental technologists.

On June 21-22, Martin Laflamme-Mayer and Caroline Gaudreault attended FOR@C Summer School 5th Edition. Among the themes presented by invited researchers and experts were network design, production management, environmental design, and forest management. Paul Stuart presented “Life Cycle Assessment as a Tool for Analyzing Product Environmental Performance in the Pulp and Paper Industry”.

The Information Technology Committee took place this year in Sherbrooke (QC) on October 19-20, 2006. On the first Day, the main subjects were maintenance planning, Linux and automation as well as KPIs for purchasing. The second day, discussions were about the potential benefits from ITC Integration and their impacts in a business/Power Mill. A visit of Domtar Windsor Mill was organized, Martin Laflamme-Mayer was one of the participants.

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“lnnovation is the first and maybe the only competitive advantage in the new economy”

Gary Hamel

Shahram Navae-Ardesh, PhD attended FOR@C Summer School 5th Edition. Among the themes presented by invited researchers and experts were network design, production management, environmental design, and forest management. Paul Stuart presented “Life Cycle Assessment as a Tool for Analyzing Product Environmental Performance in the Pulp and Paper Industry”.

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NSERC Environmental Design Engineering Chair

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Robert Wood, J.-Paul Lussier, F.-Yves Dionne, David R. Jones, Gaston Michaud, Paul Stuart

Ph.D.

Honors & Awards

The Pulp & Paper Technical Assoc. of Canada (PAPTAC) Conference, Montreal, QC. Graduate Student Seminar II, Montreal, QC.


NAMPI-PIECE

North American Mobility Program - Distance Learning Modules in Product and Process Design

This new grant that was recently won will develop, through student exchanges between the participating organizations, web-based modules to improve engineering student’s design competency and promote innovation. Once completed, the set of web-based modules will provide a new paradigm in engineering education and form the basis for a distance-learning Masters program in Product and Process Design, ideally to be delivered in three languages via a consortium of universities from Mexico, the United States, and Canada. The participating Universities are:

In Canada:
- École Polytechnique de Montréal & Mc Master University
- McGill University

In Mexico:
- Universidad de Guanajuato & Universidad Autónoma de San Luis Potosí

In the United States:
- University of Texas A&M & Institute of Paper Science and Technology (IPST) - Georgia Institute of Technology.
White Papers on Transformed Technologies
Organized in Quebec City by the Canadian Forest Innovation Council (CCIF), 18-19 April 2006.
The workshop objectives were to prioritize products and technologies offering the best potential for the transformation of the sector through value maximization. The attendees looked for identifying and ranking barriers to realize the benefits of transformed technologies proposed in four papers: Building and Living with wood, Pulp & Paper products and processes, Bio-chemicals and Bio-energy. The main objective of this meeting was to identify strategies to address the barriers.

Biotechnology and industrial sustainability “le Carrefour de la biotechnologie” Organized in Montreal jointly by the Institut de la recherche en biotechnologie (IRB) and Natural Resources of Canada (NRCan), 23-25 March 2006.
Six sessions explored economic, environmental and social drivers and trends that are leading to a new model for sustainable industrial production. These sessions focused on the role of energy in industrial sustainability and the role of energy derived from biological materials and processes. One objective of this meeting was to underline the demand for bio-based chemicals and bio-based materials. The conclusion highlighted the importance of mobilizing international, national and local assets and exploring policy measures.

2006 World Congress on Industrial Biotechnology, Organized in Toronto by Bio-Industry Organisation
11-14 July 2006.
The conference program featured sessions on a diverse set of topics such as biotechnology in manufacturing and synthesis, industrial biotech for pharmaceuticals and fine chemicals, bioprocessing of agricultural feedstocks for bioenergy and renewable chemicals and processes, biotechnology on climate change, developments along the nanotech-biotech interface, issues surrounding the application of biotechnology to industrial sustainability and second generation of biorefinery focusing on forest biorefiners.

Paper presented at PIMA’s 2006 International Leadership Conference. His presentation was entitled “Transforming Data into Business Valuable Information.”

Abstract: Bringing real-time data together in a timely manner, understanding the data, identifying key relationships and sharing the information is critical to improve decision-making, support business goals and create added value. This session describes the use of tools, methods and systems which transform data into business valuable information that can deliver significant benefit and help an organization in turn respond to challenges.

AFSIL, December 2006. Caroline Gaudreault presented LCA and its application in the forest product area at the Annual Conference of the Forest Association of Saguenay-Lac-St-Jean. This congress was aimed at industrials and intended to underline the environmental benefits of woods for construction and to show the importance of innovation for the success of the industry.

The second Banretel Forum was held on October 18th 2006 in conjunction with the 2006 CSChE Conference in Delta Hotel and Convention Centre, in Sherbrooke. Janet Walden, vice-president research partnerships Program with the Natural Sciences and Engineering Research Council (NSERC) was one of the distinguished speakers. The Forum theme was “Design-Directed Research”. The goal was to focus on the best practices on successful design-directed research projects, and spin-off companies evolving through design-directed research activities. This was followed by break-out sessions where the characteristics of design-directed research were discussed.

Alumni Section
Ilich Lama, Ph.D. (PhD. 2006) was hired in September 2006 by the Centre de recherche industrielle du Québec (CRQ) as an NSERC post-doctoral fellow working for the OPERA Project (Optimization of TMP Refining). He is in charge of the modeling, optimization and predictive control stages of the project. His current work involves multivariate analysis, PLS (Projection to Latent Structures) modeling, neural nets and flow sheet simulations (CADSIM). 2006 has been an outstanding year for Ilich.

Ilich Lama & Professor Michel Perrier 2006 Youth Award For Excellence Carrefour des communautés du Québec
• January 2006: he obtains his Canadian Citizenship
• April 2006: he defends his PhD
• June 2006: birth of his son Alessandro
• September 2006: he is hired at the CRIQ
• November 2006: he receives the 2006 Youth Award for Excellence from Carrefour des communautés du Québec and a 1,500$-stipend.

Erica Salazar, (MSc. 2004) is currently working as an Environmental Integration Champion at Olympic Dam, South Australia. Olympic Dam is a copper and uranium mine that has recently been acquired by BHP Billiton and is expected to be expanded in the following years to four times its production capacity. Her main responsibilities at the moment are the implementation of the Closure Planning Standard and support to the Environmental Impact Study (EIS) team.

Sébastien Lafourcade (Ph.D. 2006), is now responsible for the development of PEPITe Canadian activities. PEPITe is a Belgian company specialized in data mining for industrial processes that offers its customers innovative Manufacturing Intelligence solutions that can be used to quickly improve the process or the way it is operating, using stored process data. Sébastien benefits from the partnership between Abitibi Consolidated and École Polytechnique de Montréal. He is managing and executing projects, develops business opportunities, particularly for techniques related to data mining in the Pulp & Paper industry.

Fatiha Akour (MSc. 2006) is employed as a process engineer by SONATRACH, a petrochemical and natural gas company. She is currently detached in an agglomeration of three companies: Sonatrach, BP and Statoil (SH/BP/Statoil). Her main responsibilities consist of managing projects from the design stage through to construction. This includes process simulation work, preparing scope of work documents, evaluation of tenders and project supervision.

At the moment, she is based in Japan (Yokohama) and is adapting well to life there, even though the climate and working conditions are pleasant.

Danielle Major (MSc. 2006) married Olivier Gerestein in Ottawa 26 August 2006, just after receiving her Masters degree. They have moved to France, where Olivier is originally from. While looking for work in her area of interest, Danielle is volunteering at a food bank in Toulouse where they are living, and Olivier is working for Airbus. Knowing the talent and diverse skills Danielle possesses, we are convinced that she will soon find an exciting and challenging opportunity.

Antoine Berton, who was part of our Chair team as a Post-Doctoral fellow has been hired by Soutex. Founded in 2000, Soutex (www.soutex.ca) is a consulting company specialized in ore processing and has 15 employees, most of them engineers. Antoine is currently at Raglan Mine located in the Nunavik territory.

Ulrika Wising, started a new job in January of this year. She is now working for a Belgian company called Belsim S.A. that is located outside of Brussels. Belsim develops and sells data validation and data reconciliation software as well as consulting services. Thanks to her skills in data analysis, Ulrika is working in a business development. Thanks to the number of different topics that the chair is involved in, Ulrika was familiar with data validation and development of software. This makes her well suited for this role.

Miscellaneous Presentations
Amneus, February 24th 2006, Sherbrooke, QC. The theme of the Amneus (Association of Masters in Environnement) annual conference was “Business Sustainable Management: Social and Environmental Responsibility”.

Caroline Gaudreault was representing the Chair. Wastewater Treatment System Modeling May 15-17 2006 in Portland, Maine, USA.
Jean-Martin Brault and Lucy Cotter participated in the NCASI North Region Chapter Meeting in Portland, Maine. They attended a workshop on modeling of wastewater treatment systems in the Pulp & Paper industry and particularly on aerated stabilization basins.

THE CHAIR TEAM IN 2006: New Arrivals

Virginie Chambost  
Forest Biorefinery Product Design Methodology.

Lucy Cotter,  

Jean-Christophe Bonhivers  
Methodology Development to Simultaneously Reduce Energy and Water Use in Kraft Mills.

Milan Korbel  
On-Line Process and Cost Data Reconciliation in pulp and paper mills.

Rogerio Pires  
Pulp & Paper Symbiosis with the Agricultural sector for Implementation of the Forest Biorefinery.

Alumni’s Album

Newborns 2006:  
Alessandro Lama and Lucas Frei

Alessandro and his parents:  
Flich & Gisella

Kenneth Frei and Lucas  
(born on December 02nd, 2006)

The Chair in the News

In preparation for PAPTAC 2007 and in the light of the general interest developed for the forest biorefinery, F&P Canada organized an interview with Virginie Chambost, Paul Stuart and Robert Eamer. Aimed at portraying the stakes of the forest biorefinery and to evaluate Canada’s potential to answer the new market opportunities, Strengthened with a thorough knowledge of the Canadian Pulp & Paper industry, Robert and Paul presented the concepts and accomplishments of an industry transformation, as well as the development work required to maximize the chance of success in a strongly competitive world.

In order to establish the projects of biorefinery in the long term, and to gain an advantageous competitive position, the interviewed panel presented the strategic passway for industry and introduced a methodological approach under development which brings together process design and product design. Major hurdles including the investment, the technical risks (innovations and installation in an existing factory) and commercial risks (redetermination of the current product range and diversification in new markets) could be overcome due to the definition of a new business model combining process design and product design.


Invited Speakers at École Polytechnique

Dr. Peter A. Vanrolleghem, Professor at University of Laval, presented at Ecole Polytechnique on February 22, 2006. His presentation entitled “Potential & limitations of white & black-box modeling concepts for process optimization of SBR wastewater treatment” consisted of two parts, one dealing with a white-box modeling approach with state-of-the-art wastewater treatment plant models and the other part dealing with multivariate modeling approaches using on-line sensor data. Limitations of both approaches were discussed and fueled an interesting discussion on the potential of hybrid modeling approaches.

Dr. Vincent Gomes, from University of Sydney, Australia, presented on June 2006 about “Advanced Modeling and Expert System Application in Emulsion Copolymerization”. Emulsion polymerization is a process of significant industrial importance because of high conversion (100%), high degree of selectivity, environmental benefits and its effectiveness in producing a range of products from adhesives, paints, tyres to wet-suits. An expert system developed for monitoring and fault diagnosis was presented.

Our Students at Pulp & Paper Mills...

Lucy Cotter is actually working on her project at Papier Masson Ltd., and will stay at the mill until May 2007. “I’m very much enjoying the opportunity to carry out laboratory work and see the operation of the wastewater plant close-up. The experience is adding a great deal to my understanding of the plant and to the context of my project.”

Jean-Christophe Bonhivers. The Chair is working closely with NR-Can on a project at the Domtar Espanola mill. Jean-Christophe is developing a general model of the kraft mill process from which the water and steam network will be simulated. The objective is to reduce the fossil fuel consumption of the mill and to characterize the kraft mills throughout Canada, to link the energy consumed with the process configuration in order to future modification plan.

Jean-Martin Brault is performing lab analyses on the wastewater of the Abitibi Consolidated integrated newsprint mill at Clémont in order to monitor the evolution of the activated sludge system. ATP tests (adenosine tri-phosphate) and microscopic observations that are being performed will help quantify the health of bacteria responsible for the wastewater treatment.

and abroad...

Martin Lafamme-Mayor is currently at Imperial College, in London, in the context of a research collaboration with the Centre for Process Systems Engineering. He is working with Professors Nilay Shah and Prof. Stratos Pistikopoulos on the development of an integrated multi-scale approach for the supply chain optimization of a pulp mill.

Geneviève Roy is currently working as a process engineer within the Melbourne water/wastewater engineering group at Becca, one of Asia Pacific’s largest engineering consultancies. Australia has been undergoing a sustained drought for the last decade making water a priority on every political agenda and creating the need for pioneering design and innovative solutions. Geneviève has been working on a variety of projects involving conceptual design, innovative technology assessment and process review/evaluation.

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