



FINAL ANNOUNCEMENT: Professional Development Course

Designing the Forest Biorefinery

In conjunction with the Nordic Wood Biorefinery Conference (NWBC) March 2014

Don't Miss It!

This biorefinery design course is being offered on the occasion of the 5th Nordic Wood Biorefinery Conference (NWBC <http://www.innventia.com/nwbc2014>). The course targets **forestry company biorefinery decision-making**, and will address a wide range of key issues for biorefinery strategy and design. The theme of Day 1 is **Advanced Biorefinery Fundamentals**, the Day 2 theme is **Setting Biorefinery Strategy**, and the Day 3 theme is **Biorefinery Techno-Economics and Case Studies**. Expert faculty from across Europe, North America and around-the-globe will share their experience, including numerous industry case studies.

Registration and practical information

- Register via the website for the NWBC Conference: <http://www.innventia.com/nwbc2014>.
- Course fee: 12 000 SEK excl. VAT. (See the registration form for VAT refund information)
- The course will be held at [Innventia](#) in Stockholm city. A limited number of hotel rooms at the special price 1197 SEK per night are available at [Elite Hotel Arcadia](#) - close to Innventia. Contact elisabet.jepson@innventia.com for booking code.

Course Leaders

The Course Leader will be Paul Stuart, NSERC Chair in Design Engineering at École Polytechnique of the University of Montreal, and Principal at EnVertis Consultants – who has led similar courses recently in Vancouver Canada (with PAPTAC) and Green Bay Wisconsin (with TAPPI). Peter Axegård, Vice-President and Director of the Biorefinery Business area at Innventia will assist as course leader.



World-Class Faculty

Attached to this second announcement is the draft detailed course syllabus – including expert faculty from around the world.

The course will be offered at the Innventia research centre, located in the north-east part of central Stockholm close to KTH, Sweden's Royal Institute of Technology. The course will start at noon on Saturday 22 March, and continue for 2½ days through Monday 24 March. At the end of the course, you can plan to join the welcoming reception of NWBC at Innventia.

A Unique Syllabus

This is a critical time for the biorefinery development in the forestry sector – companies are at different points in setting their strategies, and a wide range of promising biorefinery product-process options are being considered. What is the best solution, and how can technologies be systematically evaluated for competitive advantage? There is no silver bullet biorefinery solution, and many questions must be addressed by companies considering successful biorefinery implementation. This course will seek to address some of these, including for example:

- Which biorefinery products will provide sustainably good margins over the long term? Which emerging biorefinery processes are the most promising for making these products?
- What is an appropriate manner to implement lignin precipitation, and build a product portfolio of added-value products over time?
- What are process efficiencies and operating costs today, and what might they be in 5 years from now after the process technologies have matured?
- How do we best use existing mill infrastructure when implementing the biorefinery?
- Can we implement the biorefinery, and at the same time lower the unit costs of our wood, pulp and paper products? What is the profitability of a pulp mill integrated with a biorefinery process, compared to one that is not integrated?

The course format is designed to encourage exchange between instructors and participants. The emphasis on the course is not to present a series of potential biorefinery technologies, however exchanges on the **strengths and weaknesses of specific technology strategies** will be encouraged. The biorefinery course seeks to bring together **forest industry leaders and management, leading technology providers and industry consultants** to share their experience in developing biorefinery strategies, in order to better understand emerging biorefinery technologies and their design/implementation within business strategies.



Who Should Attend?

This course is intended primarily for (a) corporate personnel in forestry companies who wish to become more knowledgeable about biorefinery implementation strategy and design methods, as well as (b) mill managers and technical staff who seek to identify and select the best biorefinery strategy at the mill level. The course also seeks to provide knowledge for biorefinery technology providers and consultants to assist them in understanding how biorefinery evaluations can take place, and better understand the range of emerging biorefinery technologies and their design/implementation in a forest company business plan.



Course Outline

Day 1: Advanced Biorefinery Fundamentals

Saturday 22 March 2014

- 11h00 – 11h15 Welcome and Introductions
Paul Stuart - Ecole Polytechnique and EnVertis Consulting (Montreal QC)
Peter Axegård – Innventia (Stockholm, Sweden)
- 11h15 – 13h00 Systematic Evaluation of the Forest Biorefinery
Paul Stuart - Ecole Polytechnique and EnVertis Consulting (Montreal QC)
- 13h00 – 13h15 Networking Break and Light Snack**
- 13h15 – 14h00 EU initiatives- Horizon 2012 and Biobased Industries PPP
Peter Axegård – Innventia (Stockholm, Sweden)
- 14h00 – 14h45 Forest-Based Biorefining in Chile
Alex Berg – Universidad de Concepción (Biobío Chile)
- 14h45 – 15h30 Renewal of the Forest Sector Value Chain in South Australia
John Kettle – VTT (Helsinki Finland)
- 15h30 – 15h45 Networking Break**
- 15h45 – 16h30 Chemical and Physical Characterization of Wood for the Biorefinery
Adriaan van Heiningen – University of Maine (Orono ME)
- 16h30 – 17h15 Thermochemical Processing of Wood
Patrik Löwnerts – Chemrec (Stockholm Sweden)
- 17h15 – 18h00 Recap and Discussion
Panel Including Speakers of the Day



Day 2: Setting Biorefinery Strategy Sunday 23 March 2014

07h30 – 08h00	Coffee and Croissants
08h00 – 08h15	Agenda for the Day <i>Peter Axegård – Innventia (Stockholm, Sweden)</i>
08h15 – 09h45	Evaluating Product Strategies for the Forest Biorefinery <i>Virginie Chambost - EnVertis Consulting (Montreal QC)</i>
09h40 – 10h00	Networking Break
10h00 – 11h30	Biorefinery Development and Implementation <i>Tom Browne - FPInnovations (Pointe-Claire QC)</i>
11h30 – 12h15	Biorefinery Alternatives Under Development <i>Peter Axegård – Innventia (Stockholm, Sweden)</i>
12h15 – 13h00	Lunch
13h00 – 14h00	Evaluating Biorefinery Strategies Considering Risk and Sustainability <i>Paul Stuart - EnVertis Consulting (Montreal QC)</i>
14h00 – 14h45	Key Success Factor for the Sustainable Biorefinery: Added-Value Biorefinery Portfolios Via Unique Supply Chains <i>Paul Stuart - EnVertis Consulting (Montreal QC)</i>
14h45 – 15h00	Networking Break
15h00 – 16h00	Process Modeling and System Analysis of Pulp Mill Biorefineries <i>Åsa Samuelsson/Karin Lindgren – Innventia (Stockholm Sweden)</i>
16h00 – 17h30	Biorefinery Developments-Influence of Future Policy Instruments <i>Thore Berntsson – Chalmers University of Technology (Göteborg Sweden)</i>
17h30 – 18h00	Recap and Discussion <i>Panel Including Speakers of the Day</i>



Day 3: Biorefinery Techno-Economics and Case Studies

Monday 24 March 2014

07h30 – 08h00	Coffee and Croissants
08h00 – 08h15	Agenda for the Day <i>Paul Stuart - Ecole Polytechnique and EnVertis Consulting (Montreal QC)</i>
08h15 – 09h00	Wood Pulping and Biorefinery Processes <i>Adriaan van Heiningen – University of Maine (Orono ME)</i>
09h00 – 09h45	Biobutanol from Lignocellulosics for Chemicals and Liquid Biofuels Production <i>Adriaan van Heiningen – University of Maine (Orono ME)</i>
09h45 – 10h00	Networking Break
10h00 – 11h30	The LignoBoost Process <i>Per Tomani – Innventia (Stockholm Sweden)</i>
11h30 – 12h15	The LignoForce Process <i>Lamfeddal Kouisni – FPInnovations (Pointe-Claire QC)</i>
12h15 – 13h00	Lunch
13h00 – 13h45	Biochemical Conversion Technology <i>Shijie Liu – SUNY ESF (Syracuse NY)</i>
13h45 – 14h30	Options for Producing Hemicelluloses in a Kraft Pulp Mill <i>Sverker Danielsson – Innventia (Stockholm Sweden)</i>
14h30 – 15h15	Value Prior to Pulping (VPP) - A Techno-Economic Analysis <i>Gopal Goyal – International Paper (Loveland OH)</i>
15h15 – 15h30	Networking Break
15h30 – 16h15	Hydroxy Acid Separation from Black Liquor <i>Eemeli Hytönen – VTT (Helsinki Finland)</i>
16h15 – 17h00	Project Independence: Case Study of the Strategy and Development of a Biorefinery Project <i>Doug Freeman – NewPage (Escanaba MI)</i>
17h00 – 17h30	Recap and Discussion <i>Panel Including Speakers of the Day</i>