

EcoBuild – a competence centre for eco-efficient and innovative wood-based materials

Editorial from a Guest Professor

There are words creeping into our every day conversations, our research thinking and our grant writing. Words like green products, carbon sequestration, carbon footprint, carbon credits, life cycle assessment, capturing emissions and waste products, closed systems, green house gasses, global warming, land fills, toxicity and sustainability. We understand some of these words and they have started to change the way we think and live.

My most recent research interests have been in the area of sustainable development in the forest products sector. The simplest definition of this concept is to not use more today than what you can replace tomorrow. Sustainable development can be achieved using a long-range proactive dynamic strategic plan that focuses not only on short term profits and competitiveness without damage to the environment but maintains an equal emphasis on future maintenance and growth of the society. Sustainable development must fit certain criteria within a framework of economic, environmental and social systems before it can last indefinitely

Wood has historically been the major source of materials and chemicals but has been largely replaced by plastics, metals, synthetics and glass. Wood will be "rediscovered" and emerge again in a sustainable world. It is said that the 21st century will be the cellulose century.

The question is: Who will lead the research and work with industry to bring new eco-friendly sustainable concepts to market? EcoBuild is more than a concept of eco-friendly construction. It is a collection of exciting, educated people with fresh ideas working together to develop new biomaterials, new building concepts, new coatings, new adhesives for futuristic composites, and new wood modifications for improve durability and stability without toxicity.

I retired from the USDA, Forest Products Laboratory in Madison, WI last year where I worked for over 40 years and from the University of Wisconsin where I taught and directed graduate students for over 30 years. I should be out fishing, not a Guest Professor at EcoBuild. So, why am I here? Enthusiasm and fresh ideas are infectious! They are symptoms of a disease that can drive a person out of retirement. The fishing pole can wait.

Roger Rowell

Centre Management



Magnus Wålinder
Centre Manager



Mats Westin
Deputy Centre Manager

Yet another Doctor's degree won

Katarina Johansson defended her doctoral thesis "Thermally Cured Coil-Coatings Utilizing Novel Resins and Fatty Acid Methyl Esters as Reactive Diluents" at KTH Royal Institute of Technology on September 19th. Faculty opponent Prof. Rolf A. T. M. van Benthem from Eindhoven University of Technology, the Netherlands, ensured a thorough examination of the work. The aim of Katarina's doctoral project was to replace organic solvents with renewable fatty acid methyl esters (FAMEs) in thermally cured coil-coatings on steel. FAMEs can be used as reactive diluents, i.e. they have diluting properties and react with the binder to be incorporated in the final film. The formulations have been tested at SSAB Tunnpått on an industrial scale and resulted in coil-coatings exhibiting comparable or even better properties than the current formulations. The use of FAMEs can replace as much as 40 % of the organic solvents. Congratulations to Katarina from EcoBuild!

The EcoBuild corridor well populated

Physically, the competence centre has its centre of gravity at SP Träteck in Stockholm, where a special EcoBuild corridor has been set aside. The Centre Management has its office there, but also several co-workers (Finn Englund, Emma Östmark, Marielle Henriksson and Kristofer Segerholm). The offices for visiting scientists are also well used. Between June and December we have the honour of hosting Prof. Asghar Omidvar from Gorgan University of Agricultural Sciences and Natural Resources in Gorgan, Iran. Prof. Roger Rowell from Forest Products Laboratory, Madison, WI, has been a frequent visitor, who now spends all of October with us. We take the opportunity to utilize his broad knowledge, and he gives at KTH right now (20-21 October) a short course in wood science, adapted especially for industry. No less than 38 people signed up for the course!

The Annual General Meeting 2009

The General Meeting with seminars will be held in Stockholm February 2. All involved are asked to set aside this day!

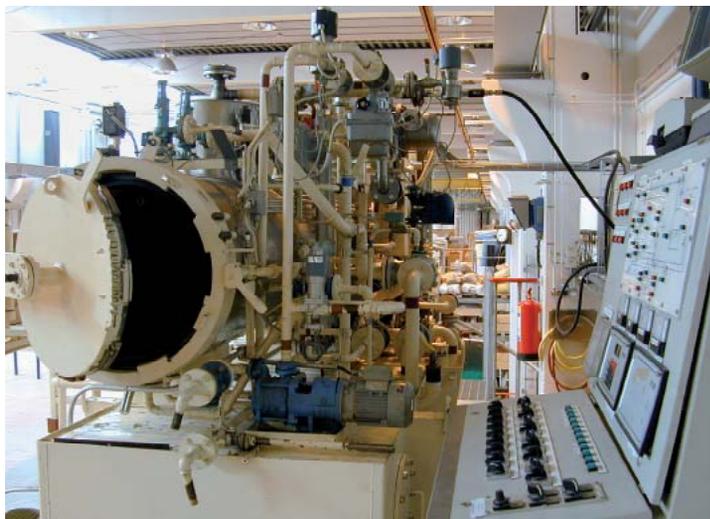
ECWM4

4th European Conference on Wood Modification will be held in Stockholm 27-29 April 2009. It is arranged by SP/EcoBuild, in cooperation with KTH. This conference should be given high priority by all that are active within EcoBuild or otherwise interested in the work. It covers a range of fields, such as chemical, thermal, oleothermal, and mechano-thermal modification, as well as other potential technologies. Concerning wood modification applications, there will also be sessions dealing with glueing, coating and composites technology, testing methods, and environmental and market aspects. Read more on www.ecwm4.com! Prepare your participation and register! And not least: Submit contributions via the link on the home page! **Abstracts are due 31 October!**

SP's new material science laboratory soon operational

SP and EcoBuild get improved possibilities for the applied material research. Now, in the end of October, there is full activity with the moving in to the 240 sqm building, which contains two larger halls and two smaller, separate laboratories. A mezzanine floor also has a large storage capacity for timber, as well as room for other activities. The installed equipment includes pressure cylinders for impregnation and chemical modification processes of timber, mills and other equipment for treatment of chips and fibres, and pilot plants for the production of board materials and wood-plastic composite products.

The building is located in close proximity to some of the test fields where many experimental products will be exposed in long term tests. Shows and demonstrations will be arranged when the operation has been duly trimmed in another few months.



EcoBuild was exhibited at the fair



EcoBuild was well exhibited at the trade fair Trä&Teknik in Göteborg 27-30 August. A total of some 18 000 visitors poured through the halls during the four days. Many of them made a stop at the EcoBuild exhibition stand. Samples and products of acetylated, furfurylated, and heat treated wood stimulated to questions about the processes and possible use applications. A complex organisation like a competence centre can be perceived as difficult to grasp, but it feels like we managed well to reach out to a wider audience, says Pia Brelid Larsson, who was chiefly responsible for presenting the stand.

Among the seminars in the special meeting forum Wood Fusion, a panel met to discuss innovation and new wood-based materials in the construction sector. Finn Englund (SP/EcoBuild) was optimistic about the future development, where life cycle concepts, targeted performance-based design and new system solutions become more and more important. But the building industry and the specifiers must increase their commitments in the technical development. Some pictures and short films from the fair can be seen on the web sites www.traochnik.se and www.woodfusion.se.

Upcoming conferences

- 30–31 March 2009: 4th Wood Fibre Polymer Composites International Symposium, Bordeaux, France
- 27–29 April 2009: 4th European Conference on Wood Modification, ECWM4, Stockholm (www.ecwm4.com)
- 11-13 May 2009: International Conference on Wood & Biofiber Plastic Composites & Cellulose Nanocomposites Symposium, Monona Terrace Community & Convention Center, Madison, Wisconsin, USA (<http://www.forestprod.org/confcomposites09.html>).
- 4-6 June 2009: 7th International Conference "Wood Science and Engineering in the Third Millennium" – ICWSE 2009, Brasov, Romania
- 14-17 June 2009: 12th EuChemS International Conference on Chemistry and the Environment, Stockholm Sweden (<http://www.chemsoc.se/sidor/KK/icce2009.htm>).
- 21-23 June 2009: Forest Products Society 63rd International Convention, Doubletree Hotel Boise-Riverside, Boise, Idaho, USA (<http://www.forestprod.org/confic09.html>)
- 22–23 September 2009: Third International Coating Wood and Wood Composites Conference: "Durable and Sustainable – Today and Beyond", Charlotte, NC (<http://www.coatingstech.org/Programs/index.cfm?event=ACSeriesDetail2>)
- 28-30 September, 2009: International Conference on Wood Adhesives 2009, Harveys Resort Hotel & Casino, South Lake Tahoe, Nevada, USA (<http://www.forestprod.org/confadhesives09.html>)

Area 3: Biocomposites

The presentation of active researchers in EcoBuild continues with the third area, Biocomposites. For each person, a few key words are used to give a small glimpse of their respective profiles.

Sub-projects:

Dp10 WPC for furniture

Dp11 Outdoor biocomposites

Dp12 Wood-based boards with protein glues

Area coordinator: Magnus Wålinder, SP Trätec
 Keywprds: Adhesion to wood, Wood composites, WPC, Contact angle measurements, Surface characterisation



Pia Larsson Brelid
 Ph. D., SP Trätec
 Wood modification, Wood protection, Mechanical/chemical/biological properties, Process development



Mats Westin
 Ph. D., SP Trätec and Centre management
 Durability, Wood modification, Adhesive chemistry, Wood material science



Lars Nordstierna
 Ph. D., SP Trätec/Chalmers
 NMR-spectroscopy
 Controlled release of actives



Per Persson
 Ph. D., Perstorp Speciality Chemicals AB
 R&D: engineer, coatings binders, organic synthesis



Kristoffer Segerholm
 SP Trätec and KTH Building materials
 Composites, Micromorphology, Moisture properties



Roger Rowell
 Professor, Forest Products Laboratory, Madison
 Wood chemistry, Wood modification, Polymer chemistry, Composites



Jonas Bresman,
 JELD-WEN Sverige AB
 Products development
 exterior doors and frames



Rune Ziethén
 SP Trätec
 Board materials, Glueing, Mechanical properties, Durability



Daniel Holmberg,
 SP Trätec
 Test methodology, Mechanical properties, Durability



Bengt Hagström,
 Swerea IVF
 Plastic processing, Injection moulding, Extrusion, compounding, Rheology, Polymer physics, Fibre technology



Jonas Aspling,
 Swerea IVF
 Plastic processing, Product design, Injection moulding, Extrusion, Compounding, Mechanical testing, Thermal analysis, Failure analysis



Kenneth Lövdahl,
 IKEA of Sweden
 Plastic products, Manufacturing processes



Mark Lawther,
Professor Biovelop
Polysaccharides (non-starch),
proteins, Enzymes,
Lignin-cellulose cross-links,
Fibre modifications,
bio-based binders



Stig Schollander
IKEA of Sweden
Technical development,
Board materials, Composites



Lars-Elof Bryne
KTH
Wood composites,
Wettability, Glueing



Marielle Henriksson,
Ph.D SP Träteck/KTH
Polymeric materials,
Cellulose nanocomposites,
Adhesion, Glueing
(Marielle arrived in May from
KTH Fibre and Polymer tech-
nology, where she won her
Doctor's degree earlier this
year with the thesis
"Cellulose Nanofibril Net-
works and composites". She
is now mainly engaged in the
Bicomposite area.)



Claes Eliasson
SCCS
Wood composites,
Durability



Olof Frisk
OFK Plast
Wood composites,
Extrusion

Key facts about EcoBuild

EcoBuild is a competence centre for cooperation between universities, institutes and industry. The centre is located in the Stockholm campus site of KTH and SP Technical Research Institute of Sweden. The 35 industrial partners cover the whole range from small and medium-sized enterprises to large international corporations, and several of them are based abroad.

The centre is estimated to have a turnover of ca. 100 MSEK during the period 2007-2012. VINNOVA, the Knowledge Foundation and the Swedish Foundation for Strategic Research contributes with 40 MSEK. The industry co-finances with 60 MSEK, half of which is as cash contributions and the rest with their own work.

At the moment ca. 107 persons are connected on to the activities of EcoBuild. Around 80 researchers are directly involved in the projects. 42 of these are senior researchers, out of which 34 have a PhD degree. Ca. 56 pursue their research mainly at institutes or universities and ca. 25 at the partner industries. The cooperation is reinforced by several cases of double affiliation. 5 PhD students work directly as EcoBuild students, and another 3 external students work within connected projects.

Industrial partners and financers

AB Bitus, A-Cell Acetyl Cellulosics AB, Akzo Nobel Industrial Coatings AB, Akzo Nobel Nippon Paint AB, Arch Timber Protection, BioVelop A/S, Byggelit AB, Casco Adhesives AB, DanAcell Danmark A/S, Dr. Wolman GmbH - BASF Group, Guteform AB, IKEA of Sweden AB, Karlson Husindustrier AB, Kebony ASA (tidigare WPT), KIRAM AB, Lamhults Möbel AB, Norrskogs Forskningsstiftelse/NWP, Ofk Plast AB, Osmose Denmark A/S, Perstorp Specialty Chemicals AB, Primo Sverige AB, Røgle Tröskeln AB, Scandinavian FineWood AB, SF Marina Wallhamn AB, Slottsbro AB, SSAB Tunnpå AB, Sveaskog, Swedish Cable Channel System AB (SCCS), Svenska Lantmännen, Corporate R&D, Södra Skogsägarna, TanumsFönster AB, Vest-Wood Sverige AB (Swedoor), Viance (tidigare CSI), VIDA Packaging AB.

Centre Board

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Main financers of the Centre



Knowledge Foundation <<



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