

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

### Guest editorial



We hear a lot today about sustainability, but what does it mean? The simplest definition of sustainability is not to use more today than you can replace tomorrow. I spent two years working on a book "Sustainable development in the forest products industry" and I

am still unsure exactly how we become sustainable. Does it mean turning off the lights when you leave a room or taking a shorter shower? Yes, it helps but it is just the tail on the elephant. We have to deal with the elephant!

Albert Einstein said "Today's problems cannot be solved if we still think the way we thought when we created them". So, the first part of becoming sustainable is to think a different way and act a different way. Sustainability is a goal, not a process, but we must develop a pathway to get there.

There are social, environmental and economic aspects to consider. All three equally important and all must blend together. Unless we are forced by legislation, there will be no social or environmental changes unless they have a positive economic incentive for industry. More and more, industry is required to reduce emissions to meet environmental criteria and society must expect to pay more for this environment benefit.

The largest components of becoming sustainable are to reduce waste production and the use of raw materials, energy, and water. We must greatly reduce our dependence on non-renewable resources. In 2005, the total global energy consumption was 5 x 10<sup>20</sup> Joules – 85% coming from fossil fuels. From 1980 to 2004, global energy consumption increased 2% per year. Only 4% of our energy is derived from burning biomass. Seventy percent of the earth's surface is covered with water. The oceans account for

97.5% and of the 2.5% remaining, 1.73% is in glaciers leaving only 0.77% available as "fresh" water. In summary, of all the water in the world, only 0.0008% is available as renewable clean water.

So, we must greatly reduce our use of raw materials, energy and water which will also reduce our waste. More renewable materials, new sources for energy and new technology to clean water are all parts of a sustainable future.

We are EcoBuild. Where do we fit in this picture? There is a renewed interest in wood as a raw material. Not only for traditional products such as pulp, paper, lumber and composites but new innovative, environmentally sound, higher performing, more stable and durable wood-based materials. Smarter, better, faster, using less energy and water and with less waste. A winning combination for industry, society, and the environment.

So, for now, yes, turn your lights off more often, take shorter showers and ask your neighbors to do the same. Walk and use your bicycle more. Do not collect more energy demanding possessions than you need. Reuse, repair, recycle, reduce. Demand better performance from products that last longer but expect to pay more. Then move on to a zero energy home with gray water recycling, more public transportation, throw nothing away (there is no away), compost everything you can. Reduce, recycle, reuse, renovate, reconsider, respect and make change happen!

Be proactive in creating a new future. (The best way to predict the future is to invent it - Alan Kay)

Unless we change direction, we are likely to end up where we are going - Chinese proverb

*Roger Rowell, Madison, WI, guest professor at EcoBuild*

### Staff changes

Malin Dalborg leaves us for a new position with the gypsum board producer Gyproc.

We thank Malin for her efforts during her time here and wish her good luck. Her undertakings as coordinator for Focus Area 2 Biobased coatings and as leader of Project 6 are taken over by Stig Bar-dage.

New at SP and in EcoBuild is Bror Sundqvist, who became a PhD in wood technology 2004 at LTU in Skellefteå on a thesis mainly devoted to thermally modified wood. He also has a background in product development of paints at Alcro-Beckers and Becker Acroma. Most recently, Bror worked for SQS, a company working with cash transports, where he developed protective inks and other obliteration techniques and took part in CEN standardization on cash transports. Bror takes over the leadership from Malin in Project 5 and in subprojects 5:1 and 5:2.

Unexpected but very pleasant spontaneous extra help is given by Farnaz Farahani. She is a masters student in industrial biotechnology in Borås who wants to expand her experience. She now lends a hand in Project 9.

### Centre Management



Magnus Wålinder  
Centre Manager



Mats Westin  
Deputy Centre Manager

## The annual meeting in February



The annual meeting was held this year at KTH, a more technological environment than a neutral conference venues. The attendance was good. Industry showed its interest, but also Vinnova took part to listen in. Ton Broekhuis, one of the members of the scientific board, gave a keynote lecture about *Jatropha*, an interesting plant with a potential as raw material for biobased materials. Some quite profound reviews of a few projects were presented, on a high scientific level. A useful talk on the concept "sustainability" and its meaning was also given, which links well with the guest editorial in this issue.

The editor took the opportunity to make mini-interviews with some participants: Vinnova's Bengt Johansson, Ulf Odda and Glenn Svensson from the AkzoNobel group and Per Brynildsen from Kebony. Both these enterprises have a weighty engagement in the centre ever since the start. Of course, different partners emphasize different aspects of the advantages of the centre.



*Stig Lande and Gry Alfredsen*

## A clear spin-off effect

The media have recently given much attention to the new research programme Future Fashion, where a consortium led by SP were trusted with a 40 Mkr grant from MISTRA (The foundation for strategic environmental research) for a five year period. This large project is really not linked to EcoBuild, but it was without doubt inspired to a large extent by the successful CelluNova project, P12. Several of EcoBuild's partners are also partners here, but also several new universities. Industry partners are H&M, Södra, Kiram, Myrorna, I:Collect, Fabric Retail Global and Stockholm County Council. ([www.mistra.org](http://www.mistra.org))

## What does experience show – is a centre like EcoBuild a good platform for cooperation?

- BJ: Yes, absolutely! It is a fine hot-bed for continued cooperation.
- UO/GS: Yes. We get a broader perspective than in a pure commissioned research project, with a good mix of basic science, applied science and product development. It is also valuable to meet other companies in a research context and to get a closer contact with some customers.
- PB: Yes, absolutely! We get access to high scientific competence, and it is interesting to be in the intersection between institutes and universities.



*Bengt Johansson*

## Does EcoBuild give opportunities that are not found in other research environments?

- BJ: We follow this with our system of measurable success indicators. We see that it gets broader, but also more stable and long-term than individual projects.
- UO/GS: Among other things there is the advantage of letting some employees gain academic qualification on neutral ground.
- PB: It is efficient to have many resources collected.

## Is the protection of ideas and results a difficult issue?

- BJ: No, it is regulated quite well by the centre agreement.
- UO/GS: It is both very important and quite difficult, but it has been solved well in this case.
- PB: No, but it must be taken very seriously.

## Would you like to see a continuation for EcoBuild after 2012?

- BJ: Naturally, we want that the centres that we support can continue, even if the forms will be partly different.
- UO/GS: In general we hope so, without making firm commitments today for our continued engagement.
- PB: Yes, absolutely.



*Ulf Odda and Glenn Svensson*

## Invitation to a licentiate seminar

Sara Khosravi will present her licentiate thesis at a seminar the 18th of May at 10:00 in lecture room K2, KTH, Teknikringen 28, Stockholm. The title of the thesis is "Protein-based adhesives for particleboards". All interested are welcome!

## A new short wood science seminar

Roger Rowell has just spent yet another period in the EcoBuild corridor in Stockholm and devoted a lot of time to dialogues with a couple of PhD students in the spurring phase of their thesis work. During two half days he also delivered a seminar which had attracted 50 participants, six of which were from our neighboring countries.

## Focus area 2 Biobased coatings

In the latest issue of the newsletter we started a new round of short presentations of people active in the centre.  
We continue here with Focus area 2.

Project P4 Clear coatings  
P5 Biopolyester coatings  
P6 Coatings for modified wood

Area coordinator:  
Stig Bardage, PhD in wood science, SP Trätekt:  
Durability, fungi, moulds, decay, coatings, wood  
structure, wood properties



In addition the following persons who were portrayed in Focus Area 1:  
Magnus Eriksson, SP Trätekt  
Mats Johansson, KTH  
Ulf Odda, Casco Adhesives  
Per Persson, Perstorp



Anwar Ahniyaz, YKI:  
UV-resistant clear  
coatings, engineered  
nanoparticles, metal  
oxides, synthesis



Tomas Deltin,  
Technical Manager, Akzo  
Nobel Nippon Paint Coil  
Coatings R&D:  
Quality control,  
field testing



Jimmy Dickerson, Ph.D.,  
Eastman Innovation Pro-  
jects: Acetylated wood,  
polymer science



Phil Evans, Professor,  
University of British  
Columbia, Vancouver,  
Canada



Heather Fogarty,  
Ph.D., Kebony:  
Wood chemistry,  
chemical treatment  
of wood, physical  
organic chemistry



Karl Christian Kris-  
tensen, Chemical  
engineer, Kebony:  
Modification of wood



Stig Lande, Dr., Research  
Manager, Kebony ASA:  
Wood modification,  
furfurylation, durability



Pia Larsson Brelid, Ph.D.,  
SP Trätekt:  
Wood modification,  
mechanical/chemical/bio-  
logical properties, process  
development



Carl J. Long II, Ph.D.,  
Eastman Chemical Co.  
Research Associate Global  
Applications Develop-  
ment: Coatings formu-  
lations, applications and  
performance testing



Kenneth Möller, SP:  
Material analysis,  
laquers, durability,  
spectroscopy



Ann-Sofie Olovsson,  
M.Sc Organic chemistry,  
Akzo Nobel Industrial  
Finishes AB  
R&D Coil Coatings



Sara Olsson, PhD stu-  
dent, SP Trätekt. Surface  
chemistry, pre-treatment  
of wood for improved  
UV resistance



Charlotta Reimertz,  
R & D Group Manager Joinery  
Wood coatings, Akzo Nobel



Tony Sellers, Eastman  
Special Projects. Acetyla-  
ted wood handling, pro-  
cessing & procurement



Per-Erik Sundell, PhD  
in polymer technology,  
SSAB Tunnplåt: Coatings,  
polymeric materials



Bror Sundqvist, PhD in  
wood materials science,  
SP Trätekt: Adhesives,  
surface coatings, wood  
modification



Paul Swan, Eastman Co. UK  
Limited, Principle Technical  
Services Representative:  
Industrial wood and coatings  
raw materials



Glenn Svensson  
Technical Manager  
Wood coatings, Akzo  
Nobel



Kent Sørensen, Senior  
specialist, Perstorp: Coatings,  
binders, polymeric materials



Emma Östmark  
PhD., SP Trätekt:  
Polymer synthesis, macro-  
molecular architecture, grafting,  
renewable materials

## Upcoming conferences

- 16-18 May 2011: Wood & Biofiber Plastic Composites, Madison, WI. <http://www.forestprod.org/woodandbiofibercomposites/index.html>
- 15-17 June 2011: Nordic Polymer Days 2011, Stockholm. [www.kth.se/che/konferens/npd2011/](http://www.kth.se/che/konferens/npd2011/)
- 16-17 June 2011: International Conference on structural health assessment of timber structures, Lisbon, Portugal. <http://shatis11.Inec.pt>
- 19-21 June 2011: Forest Products Society 65th Int. Convention, Portland OR
- 29-31 August 2011: BIOPOL 2011, the 3rd International Conference on Biodegradable and/or Biobased Polymers, Strasbourg, France. <http://biopol.unistra.fr/>
- 31 August-2 September 2011: Novel Materials from Wood or Cellulose, Stockholm. [www.innventia.com/iaws2011](http://www.innventia.com/iaws2011)
- 26-27 September 2011: 5th Int. Symposium on Wood Fibre Polymer Composites, Biarritz, France. [www.fcba.fr/wpc2011](http://www.fcba.fr/wpc2011)
- 21 October/4 November/17 November 2011: Framtidens byggmaterial, Göteborg/Stockholm/Malmö. <http://www.bygggtjanst.se/About/AboutBygggtjanst.aspx?sectionid=909287>
- 3-5 November 2011: ICWSE 2011 Wood Science and Engineering in the Third Millennium, Brasov, Romania. <http://www.unitbv.ro/il/en/ICWSE2011/tabid/6338/language/en-US/Default.aspx>

## 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 27 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. 140 MSEK during the period 2007-2012, spin-off effects included. VINNOVA, the Knowledge Foundation and the Swedish Foundation for Strategic Research contributes with 40 MSEK. The industry co-finances with 65 MSEK, half of which is as cash contributions and the rest as their own work efforts.

At the moment ca. 120 persons are connected to the activities of EcoBuild. Around 80 researchers are directly involved in the projects. 71 of these are senior researchers, out of which 46 have a PhD degree. Ca. 40 pursue their research mainly at institutes or universities and ca. 40 at the partner industries. The cooperation is reinforced by several cases of double affiliation. 8 PhD students work directly as EcoBuild students, and another 2 external students work within connected projects.

## Industrial partners

Akzo Nobel Industrial Coatings AB, Akzo Nobel Industrial Finishes AB, Arch Timber Protection, BioVelop A/S, Byggelit AB, Capeco AB, Casco Adhesives AB, Dellencat, Dr. Wolman GmbH - BASF Group, Eastman Chemical Company, Heatwood AB, Hennes & Mauritz AB, IKEA of Sweden AB, Jeld-Wen Sverige AB, Kebony ASA, KIRAM AB, Norner Innovation AS, Ofk Plast / Polyplank AB, Osmose Denmark A/S, Perstorp AB, SSAB Tunnpå AB, Svenska Lantmännen, Svenskt Konstsilke AB, Södra Skogsägarna, TanumsFönster AB, Vestre AB, Viance.

## Centre Board

*Ralph Nussbaum*, Research Manager Coatings IKEA  
*Lars Stigsson*, CEO KIRAM  
*Eva Hörwing*, CEO Byggelit Holding  
*Ulf Odda*, General Manager Casco Board Systems (Akzo Nobel)  
*Hans Thulin*, (ordf.) CEO TanumsFönster  
*Per-Erik Petersson*, CTO Chief Technology Officer/Prof SP  
*Pernilla Walkenström*, Swerea IVF  
*Per Brynildsen*, Research Director Kebony

## Main financiers of the Centre:



Knowledge Foundation >>

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