



LignoBoost does business with lignin fuel

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Postgraduate students mean high-tech know-how for developments in the industry

The STFI-Packforsk mission is to carry out exploratory and industrial research and to act as a consultant for the benefit of trade and industry. One means of doing this is through research in the form of a postgraduate project. This provides new high-tech knowledge that can be implemented in companies.

It is a tradition at STFI-Packforsk to train several postgraduate students every year. For Hannes Vomhoff, Research Manager in Paper Process Technology, it is self evident to admit postgraduate students, so as to be able to deliver front-line knowledge to our customers.

“We have to continue to develop our methods all the time in order to meet the continually growing needs of our partner companies. We must be able to deliver knowledge and know-how, along with unique methods, processes and equipment that are directly useful to our contract customers.”

“STFI-Packforsk has a unique system of having doctoral students on staff, which is a marvellous way of carrying out fundamental research and training highly qualified personnel. This approach is worthy of emulation and should, I believe, grow in importance in the coming years.”

R. J. Kerekes
Professor Emeritus
Retired Director, Pulp and Paper Centre
University of British Columbia

Hannes Vomhoff, who was once a postgraduate student at STFI-Packforsk himself, is aware of how important it is to have the opportunity of going deeper into things and developing new knowledge and know-how.

“To be able to devote 4 to 5 years to a subject, which is what it takes to write a thesis, means that you can really go deeply into it. This is seldom possible with research assignments, where you often stumble upon unexplainable phenomena that you never have time to investigate any further. Individual companies don't generally have the financial means or the possibility to invest in postgraduate thesis work.”

Hannes Vomhoff has supervised several postgraduate students during the last few years. The result of this work has led to, for example, a completely new hydrocyclone and a new method for characterising unevenness in press filters. He is currently supervising a postgraduate student who is working with improving dewatering in the wire section, and there are plans for an additional student in the field of fibre fractionation.

After they graduate, most of the postgraduates look for work in the trade and industry sector, which is also the purpose. With their doctoral thesis as a basis, they continue their work. It is not only Sweden that benefits from their knowledge. Many of them are picked up by companies abroad.

Implementation of knowledge

Gustavo Gil Barros is one example of a postgraduate researcher at STFI-Packforsk, who has gone on to trade and industry. Since the second half of 2006, he has been a Development Engineer in Flexography for prepress and the printing process at Tetra Pak Packaging Solutions.

Following his degree work, Gustavo Gil Barros was offered a postgraduate position at STFI-Packforsk, which led to his thesis on the Influence of Substrate Topography on Ink Distribution in Flexography. The result of this work was determining the optical requirements of paper for achieving an accurate and precise topographical scan with the OptiTopo* technique. Apart from developing the OptiTopo technology, there were spin-off effects in



Göran Ström and Hannes Vomhoff are experienced at supervising research students.



Maria Enroth with her supervisors Associate Professor Göran Finnveden and Professor Nils Enlund from the Royal Institute of Technology.



Gustavo Gil Barros was congratulated by Nils-Bertil Mattsson, the Director of the Print Research Programme T2F.

the form of lasting contacts with former colleagues, clients and other specialists.

On the part of Tetra Pak, the appointment of Gustavo Gil Barros resulted in them getting a doctor with a technological background and theoretical ability, while, at the same time, they had a person who is used to collaborating with others and solving problems together.

“Yes, of course, it’s a win-win situation to have doctors joining the trade and industry sector after completing their postgraduate degrees,” comments Gustavo Gil Barros about the system.

“STFI-Packforsk provides an excellent training ground and the industry acquires analytical people who have technical and academic expertise. Furthermore, doctors have a solid contact network to be drawn on when solving problems.”

Sustainability

Another way of offering trade and industry high-tech knowledge is through the researchers employed at STFI-Packforsk, who elect to do their doctorate degree and then continue to remain and work in the Company. In November, 2006, Maria Enroth defended her doctor’s thesis on ‘Developing tools for sustainability management in the graphic arts industry’ and she has since continued working with environment and sustainability.

“I’ve learnt a skill and appreciated the opportunity of entering deeply into my subject. In my case, it’s an interdisciplinary thesis and it’s important to be able to use scientific methods to demonstrate facts and inter-connections as well as to contribute to an increase in understanding.”

“It was important to base the work on earlier research and, in a scientific way, to

collect data, together with interviews and surveys. At the same time, it’s important to be able to put sustainability matters into a concrete form, otherwise they can seem somewhat diffuse.”

“For our customers, who are many times part of the large world companies, Inter IKEA Systems and Tetra Pak, for example, my thesis is also significant. This illustrates that our work is methodical and that our results are reliable.”

Through her thesis, Maria Enroth has been able to develop and test tools for sustainability and observe whether they work in real life.

“Personally, I wanted to defend my doctor’s thesis, since I’m interested in doing things thoroughly. I also really enjoy developing new knowledge. Doing this doctorate has given me a great deal of inspiration,” concludes Maria Enroth.

Encouragement and support

Göran Ström is another Research Manager at STFI-Packforsk, who has supervised several postgraduate students. He considers it a platform for building up new knowledge and know-how and an excellent means for starting a new segment with a postgraduate project.


Göran Ström says, “We learn so much through our postgraduate students. Their newly gained knowledge is conveyed to others in the Company and we develop together. When someone develops a new method we naturally continue to utilise it. Such knowledge is passed on to our customers.”

“Postgraduates are important for us to be able to maintain the building up of knowledge in the organization. Furthermore, our postgraduate students are one way for the trade and industry

sector to raise its level of knowledge,” he continues.

Networking and contacts are significant elements. Postgraduate students often have contact with former colleagues at STFI-Packforsk and they are aware of how their new company can benefit from the expertise available there.

However, Göran Ström is a little concerned about financing in the future. In former years, authorities invested a lot in postgraduate students, but now appropriations seem to be getting less. This means that other forms of financing have to be utilised in order to guarantee this kind of knowledge build-up. ●

 **Ett sätt för** STFI-Packforsk att implementera forskningsresultat i industrin är genom doktorandprojekt. Bolaget måste ständigt vidareutveckla kunskap, metoder och processer för att tillgodose det kontinuerligt växande behovet hos partnerföretagen. Hannes Vomhoff och Göran Ström som haft flera doktorander menar att de är viktiga för att ska upprätthålla en kunskapsbyggande organisation.

De flesta doktoranderna söker sig ut till näringslivet efter sin examen. Gustavo Gil Barros, numera anställd på Tetra Pak, konstaterar att STFI-Packforsk är en utmärkt bas för utbildning. “Industrin får medarbetare som är såväl tekniskt som akademiskt kompetenta. Doktorerna har också fått ett gediget nätverk som kan användas för att lösa problem”.

Ett annat sätt att erbjuda näringslivet spetskunskap är genom de doktorer som fortsätter sin anställning. Maria Enroth har kunnat utveckla och testa verktyg för hållbarhetsarbete och se att de fungerar i verkliga livet. Hennes avhandling är tvärvetenskaplig och därför är det viktigt att kunna använda vetenskapliga metoder för att påvisa fakta och samband.

* OptiTopo is an optical contactless instrument for the topographical image of paper surfaces, developed by STFI-Packforsk and further improved on in Gustavo Gil Barros’ doctoral work.

New technology put to the test

LignoBoost inaugurated its demonstration plant on 12 February at Bäckhammar Mill near Kristinehamn. After 8 years' research and development, LignoBoost technology is now ready for industrial scale production, which will be demonstrated at the new plant.

LignoBoost, an STFI-Packforsk subsidiary, was started in May, 2006. Its aim is to commercialise a patented technology that involves extracting lignin from black liquor. The lignin, a biofuel, can be used instead of coal and oil. It is also of interest as a raw material for plastics, carbon fibres and chemicals.



Den 12 februari invigde LignoBoost sin demonstrationsanläggning vid Bäckhammars bruk utanför Kristinehamn. Efter åtta års forskning och utveckling är tekniken nu mogen för industriell produktion, vilket ska bevisas i den nya anläggningen. Drygt 60 gäster närvarade när Landshövdingen av Värmland, Eva Eriksson och Johanna Svanberg från Wermland Paper knöt banden som en symbol för det starka nätverk som möjliggjort utvecklandet och kommersialiseringen av den nya tekniken.



This new technology has been tested in many stages, from laboratory scale to pilot scale in the FRAM 2 Programme (see below). On 12 February, a further significant step was taken towards proper production, when the demonstration plant at Bäckhammar Mill was inaugurated. With slightly more than 60 invited guests from the media, trade and industry, the local authority and financiers of research, the County Governor of Värmland, Eva Eriksson, and Johanna Svanberg from Wermland Paper jointly tied a symbolic knot. This knot put focus on the strong network of parties who, together, have pioneered the way for and developed this new technology.

"With this demonstration plant and the enormous investment that STFI-Packforsk has made in LignoBoost, we're going to demonstrate that this part of the biorefinery is dependable and creates value in the form of increased capacity,



Johanna Svanberg from Wermland Paper and County Governor of Värmland, Eva Eriksson.



bioenergy and, at a later stage, chemical raw materials. This inauguration is partly the final aim of the investment project and partly the starting point for the commercialisation of LignoBoost," says Anders Engström, the COO of LignoBoost.

"To be able to launch a new technology for increasing the profitability of pulp mills and to produce a biofuel feels like more than very good timing," comments Peter Axegård, who is responsible for the commercial side of LignoBoost. ●

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LignoBoost does business with lignin fuel



As mentioned above, the commercial demonstration plant for the LignoBoost concept was launched in February, producing lignin as a solid fuel product. Together with Chalmers, STFI-Packforsk developed the technology on which this product is based.

Per Tomani, a Project Manager at STFI-Packforsk, comments, "This shows the strength of a research company such as STFI-Packforsk. We have the expertise to work together with the industry and other research centres to take a technology from fundamental chemistry to commercial production."

The foundation for this technology, now being used in the demonstration plant, was developed during the early years in this 21st century in the KAM and FRAM Programmes, managed by STFI-Packforsk. Professor Hans Theliander at Chalmers was in charge of that part of the sub-project that established the bases for precipitating and filtering the lignin. With laboratory scale trials, mill trials and the mixing of lignin in energy production on a full scale, researchers at STFI-Packforsk and Chalmers, together with companies in the industry, developed this technology and demonstrated

the extremely good potential of using lignin as a fuel. Production has now been increased to an expected level of 4,000 tonnes of lignin per year.

The technology being used in the demonstration plant involves mixing carbon dioxide into the black liquor. This reduces the alkalinity of the liquor; the pH level is reduced to approx. 10. Then the lignin precipitates and can be separated by filtration. The lignin cakes that are formed are dissolved in sulphuric water, which reduces the pH level to approx. 2 – 4. This stage, in combination with an acidic displacement washing of the lignin cakes, causes hydrogen ions to replace most of the sodium ions in the lignin. This produces a low level of ash content in the final lignin, which is a very good property when lignin is incinerated. The biggest operating cost is carbon dioxide. In the long run, it is hoped to be able to reduce this cost by replacing purchased carbon dioxide with use of that in the lime kiln flu gases.

Continuous operation the next challenge

The FRAM 2 Programme started in October, 2005, and will continue until December, 2008. Per Tomani from STFI-Packforsk is the Programme Director. FRAM 2 is developing the LignoBoost concept to be on an industrial scale to show how it will work together with the pulp production in a mill. Researchers at STFI-Packforsk are of the opinion that the demonstration plant is already proving that the developed principles hold. Today, relatively large quantities of good quality lignin are being produced and sold for producing energy. Now, the final stages remain, viz. optimising the process and proving that continuous operation is possible. This involves showing that the



Lignin cake from the demonstration plant.

estimated costs will show themselves to be true, along with demonstrating runnability for longer periods.

“So far, so good!” states Per Tomani. “All the stages in the process are working now, as we expected. We plan to show in 2007 that this technology works under continuous operation. We are currently optimising all aspects and producing the lignin in shifts.”

In FRAM 2, there will be further evaluations in 2007 of lignin as a raw material in energy production. Fortum Värme are going to increase the mixture of lignin in the carbon paste used for burning in Värtaverket in Stockholm and

STARTING IN 1996

FRAM 2 is the third stage in the research that led to the new industrial technology, simulation models and new know-how on the inter-connections among society, industry and energy production.

KAM (Kretsloppsanpassad massafabrik – The Ecocyclic Pulp Mill) ran from 1996 to 2002 and FRAM (Future Resource-Adapted Pulp Mill) from 2003 to 2005.



In the second filtration stage, the lignin is washed with acidic water, pressed and formed into solid fuel.

EON is going to test-run a bio boiler in Örebro. There will also be large scale trials in a lime kiln.

“In FRAM 2, we will develop the handling of lignin through the whole chain from the raw material, black liquor, to the use of lignin fuel in different incineration units,” continues Per Tomani. “We are going to develop the principles for handling, transporting and storing the large amounts of lignin that need to be dealt with during industrial scale production.”

Demonstrating the production of electricity and heat

The quality of the lignin fuel took really long strides in the FRAM 1 Programme. The new process steps, with washing in acidic water, resulted in a clean lignin fuel that has demonstrated itself to work extremely well when mixed with coal, for example. Now that FRAM 2 has resulted in production on a larger scale, there will be further work with demonstrating how it can be utilised. This will take place at the Fortum combined power and heating plant, Värtaverket, in Stockholm.

“The plant at Bäckhammar is producing such large amounts of lignin that, during the campaigns, we have every possibility of testing higher mixtures than the 2% mixture we tested before,” says Eva-Katrin Lindman at Fortum Värme.

If the lignin works well during the demonstration phase and the fuel is available in sufficiently large amounts, Fortum Värme will consider the possibility of permanent delivery and of preparing the lignin for use as an ordinary fuel in the production of its electricity and heat. ●

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Programmet FRAM 2 är det

tredje steget i den forskning som lett fram till ny industriteknik, simuleringsmodeller och nya kunskaper om sambanden mellan samhälle, industri och energiproduktion. Grunderna till den teknik som nu används i demonstrationsanläggningen utvecklades under de första åren av 2000-talet inom programmen KAM och FRAM som båda leddes av STFI-Packforsk. Professor Hans Theliander vid Chalmers ledde det delprojekt som lade fast grunderna för utfällning och filtrering av ligninet. I FRAM 2 ska LignoBoostkonceptet utvecklas till kommersiell industriell skala. Enligt programchef Per Tomani återstår nu att visa att den beräknade processekonomi håller, samt att visa körbarhet under längre perioder.

Under 2007 ska man även ytterligare utvärdera ligninet som råvara i energiproduktion. Fortum Värme kommer att öka inblandning av lignin i den kolpasta man eldar med i Värtaverket i Stockholm, och EON kommer att provköra i en biopanna i Örebro. Man kommer även att göra storskaliga försök i en mesaugn.



Åsa
Samuelsson

Åsa Samuelsson played a central role in developing the theoretical computer models for pulp and paper mills, called model mills, which were developed in the KAM and FRAM Programmes.

"I think that, with these theoretical computer models, STFI-Packforsk and ÅF Process have created a good basis for continued technical developments in the pulp and paper industry. Modelling new technologies and techniques means that the industry can try out and prioritise among different new technologies, without disrupting the processes. It's also possible to obtain a very good understanding of the economic effects of a technical project, something that is often a decisive aspect even in a research and development project."

It was at school that Åsa became interested in science. She realised that physics and chemistry were the right subjects for her to study at university. She attended a master's programme, Chemical Engineering with Physics, at Chalmers, a new and more mathematical variant of chemical engineering. She came to STFI-Packforsk from Chalmers as a scholarship holder to work with computer modelling as a tool for R & D. She then worked with modelling in the industry for six years at Eka Chemicals. For the past few years, she has been a Group Manager at STFI-Packforsk.

The group that Åsa manages at STFI-Packforsk, Energy and Mill Systems, is currently engaged in everything from major EU projects to assignments from individual companies. Today, the group has grown to nine.

Åsa is looking forward to continued developments and comments, "I want to see the mill models being developed as a practical tool for every mill. Each time that rebuilding is being considered, irrespective of how limited it may be, it will be possible to test it in advance using a mill model to evaluate the technical and economic consequences." ●

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Mill trials demonstrated possibilities

The LignoBoost concept was studied during two unique mill trials in 2006. The trials that continued for slightly more than a month each at the two mills, investigated both the technical and economic prerequisites necessary for the technology to precipitate and convert lignin into a bio fuel.

"The trials were extremely inspiring with very encouraging results," states Åsa Samuelsson from STFI-Packforsk. "Many factors in the technical project are mill specific and the opportunity of running mill trials in different parts of the world provided us with valuable knowledge."

The two mills were Celbi in Portugal and a mill in the USA, owned by Weyerhaeuser, a partner in the FRAM 2 Programme. They were two very different mills, with dissimilar conditions, when it comes to company culture, raw materials and techniques. Together with the mills, STFI-Packforsk gained a very comprehensive grasp of the consequences of lignin extraction for a mill. STFI-Packforsk began in its own laboratory with the technology, by running trials with black liquor from the mills in question. Then there was a scaling up to running trials on bigger equipment out in the mills for a 4 to 6 week period. These trials comprised the entire process, from the precipitation all the way to the final bio fuel product.

A comprehensive systems analysis was carried out in parallel with the precipitation trials. The aim was to evaluate how a future full scale LignoBoost plant would affect the whole mill, technically and economically.

"A pulp mill of today can be very energy efficient," says Åsa Samuelsson. "There

are great possibilities of exporting excess energy to other users. By extracting lignin, it's possible to increase pulp production and to use the lignin as a replacement for fossil oil in the lime kiln, for instance, or to sell it to the energy market."

All such changes lead to both technical and economical consequences, which STFI-Packforsk is able to investigate with the use of the models that were developed in the KAM and FRAM programmes. During the mill trials, PhD students from Chalmers University of Technology worked with producing measures for rendering the energy more effective in the mills under study. This was carried out in collaboration with researchers from STFI-Packforsk. ●

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Under 2006 studerades LignoBoostkonceptet i två breda fabriksförsök vid Celbi i Portugal och ett bruk i USA som ägs av Weyerhaeuser. I den drygt månadslånga försöken undersöktes både de tekniska och ekonomiska förutsättningarna med tekniken att fälla ut och förädla lignin till ett biobränsle. Fabriksförsöken omfattade hela processen från fällning, via bearbetning fram till en färdig energiprodukt. Samtidigt med försöken genomfördes en omfattande systemanalys för att kartlägga hur en framtida storskalig LignoBoostanläggning skulle påverka hela fabriken. Alla förändringar ger både tekniska och ekonomiska konsekvenser, som STFI-Packforsk kan reda ut med de modeller som man har utvecklat under projekten KAM och FRAM.



Åsa Samuelsson and Lars Norberg during the LignoBoost mill trials in the USA.



Left: Tiecheng Song from VTT was one of the lecturers at the *Innovative use of wood and fibres Seminar*, which was held at STFI-Packforsk on 21 March, when results from the Innovood Project were presented. Right: Arto Usenius from VTT, Dag Molteberg from Södra and Sven-Olof Lundqvist from STFI-Packforsk.

Packaging & the Environment

– the new requirements and how to meet them

A one day course will be held in Stockholm on 24 April and 27 September, providing practical guidance on how the requirements in the directive for packaging and packaging waste are to be met as efficiently as possible.

This is a result of collaboration between Miljöpack, a trade and industry group, and SIS, the Swedish Standards Institute.●

INFO AND REGISTRATION: www.sis.se

Innovood supports new products

Innovood is a project that has laid grounds for entirely new possibilities of finding wood or fibres with the right properties for new innovative products and processes. A database, combined with simulation models, provides support for finding raw materials that combine the properties needed. These tools are tested in case studies concerning both wood products and pulp.

“This database is unique in the world, due to the fact that it integrates the properties of forests, trees, wood, fibres, sawn timber and pulp,” said Sven-Olof Lundqvist, a Project Manager at STFI-Packforsk and coordinator of the project. “Innovood has involved Swedish and

Finnish researchers working together in a number of fields, which has led to new contacts and new know-how.”

A final report is currently being written and a concluding seminar has been held. Likewise, the whole programme, Wood Materials Science and Engineering, of which Innovood is a part, will come to completion during 2007.

“We expect that this research and collaboration will continue, based on the new database, models and network in Sweden and Finland” said Sven-Olof Lundqvist. “Innovood is truly a very good basis, around which to centre further work.”●

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Multi million grant to unique pilot plant



The Knut and Alice Wallenberg Foundation has awarded a grant of a total of SEK 35m to STFI-Packforsk (SEK 25m) and the Mechanics Department, School of Engineering at the Royal Institute of Technology (KTH) (SEK 10m) for a joint venture on developing a centre for paper research, the Centre for Advanced Paper Production Innovation (CAPPI).

“We’re incredibly delighted to have the possibility of developing and expanding EuroFEX, even further, into an ultra-modern plant and to be able to adapt it to future needs for the paper industry,” comments Dr. Daniel Söderberg, Major Project Manager at STFI-Packforsk.

STFI-Packforsk, which is a world leader in knowledge and expertise, when it comes to paper process technology and its connection to the properties of paper, is being given the exceptional opportunity of carrying out trials on a pre-industrial scale in the unique Pilot Plant EuroFEX, based on new findings from the fundamental research work that has come out of its collaboration with the Royal Institute of Technology.●

Skills Development Prize to Magnus Viström

Magnus Viström, who is a doctoral candidate at STFI-Packforsk, has been awarded the 2007 Skills Development Prize from the Gunnar Sundblad Research Foundation. The prize of SEK 500,000 will go towards financing a trip to Japan to study the developments in packaging there and to provide the Swedish industry with valuable input about what new applications for fibre-based products could look like.●



Magnus Viström and Ulf Carlsson who is the chairman of the Gunnar Sundblad Research Foundation.

STFI-Packforsk customers demanding and satisfied

STFI-Packforsk has had its customers interviewed about the criteria that have been most important when they chose a supplier for a specific task. At the top of the list came a desire for a high level of technical expertise, the required skills for the task and employees that are sympathetic to the needs of the customer. The customers replied that STFI-Packforsk came up to their expectations to a very good degree in all these areas. Without exception, customers place high demands on a company as supplier.

“Our customers are most demanding and it’s so gratifying to be able to see them satisfied,” states Gunnar Svedberg, the STFI-Packforsk President. “Our customers feel that the potential we have for improvement is to be better at working with our focus on the appropriate level of quality for a particular customer.”

STFI-Packforsk will continue to regularly survey and analyse customer satisfaction in future.●

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B

SVERIGE



PORTO BETALT

Sustainability for the IKEA catalogue

Every day we read about environmental influences and how important it is to strive for sustainable development. For a long time, STFI-Packforsk has carried out research into various environmental concerns, in the graphics sector, among others. With Martin Johansson and Åsa Moberg, her colleagues, Maria Enroth has, by way of example, been working together with Inter IKEA Systems* since the end of the 1990s in their sustainability work with the IKEA catalogue.

"The IKEA brand-name is well known all over the world, with our business being global. This places a certain responsibility on us and our aim is to be a good neighbour wherever we act," says Ingemar Stedt at Inter IKEA Systems.

"When it comes to the production of the IKEA catalogue, we decided to have a

wide sustainability perspective, with a strong focus on significant areas. A package of requirements on our suppliers was established, containing both general and industry specific demands. We also decided to cover the entire supply chain, from forestry to binding the catalogues. Follow-ups on performance and on the demands are carried out on a regular basis, by means of surveys and on-site audits. The areas that are monitored include art work, repro, paper deliveries, gravure and offset printing."

Maria Enroth relates how it all began with an environmental investigation, which, in the last few years, has developed into a sustainability strategy.

"Since the catalogue is public and is now printed in large editions, 170m copies, IKEA receives many questions about the environmental influence. The first step taken in our work was to chart the factors that have the greatest effect, from an environmental point of view, along with those that have little effect, all the time with the catalogue in focus," continues Maria Enroth.

"In this way, we had a platform to proceed from, which consisted, among others, of environmental reviews, co-operation with suppliers etc. It's important to be able to trace every step in the production of the catalogue. The raw material must come from responsible forestry. The object is to know what's going on in the production of the paper and the printing of the catalogue."

To be able to compare performance over time, it was decided to work with a package of indicators. One of them, CO₂ per catalogue, reflects the significant sustainability aspect of 'climate change'. By collecting data from the use of fossil energy and transportation, a decrease



in emissions, dissociated from volume growth, can be shown.

The strategy for sustainability for the period 2006 to 2009 also covers social factors, in which are included, for example, labour laws, safety, environmental and health committees as well as the involvement of personnel.

In her recently presented doctor's dissertation, Maria Enroth gives an account of the general knowledge contained in parts of the extensive sustainability work with the IKEA catalogue, together with results from other industrial research. ●

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 **STFI-Packforsk** har under många år forskat kring miljön inom den grafiska sektorn. Sedan slutet av 90-talet samarbetar man med Inter IKEA Systems i deras hållbarhetsarbete med IKEA katalogen.

– Varumärket IKEA är känt över hela världen, och vi arbetar globalt vilket medför ett visst ansvar, säger Ingemar Stedt på Inter IKEA Systems.

För produktionen av katalogen har man ett brett hållbarhetsperspektiv med starkt fokus på betydelsefulla områden i hela produktionskedjan. För att kunna jämföra prestanda över tiden arbetar man med indikatorer: Hållbarhetsstrategin för perioden 2006–2009 omfattar även sociala faktorer där till exempel arbetsrätt, säkerhet, miljö- och hälsoskyddskommittéer och personalinvolvering ingår.



Ingemar Stedt (Inter IKEA Systems) and Maria Enroth discuss sustainability matters at one of their frequent meetings.



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