



## Research fortifies position of corrugated board

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# When specialists pool resources

There are many ways to improve paper properties and quality. One is to accurately control where and how different fibres are positioned in the paper sheet. Noss AB is an innovative Swedish company that has specialised in this area.

Noss AB is one of the world's leading companies involved in fibre development, based on fractionation in screens and hydrocyclones, together with the accompanying chemical and/or mechanical treatments.

Connected to the STFI-Packforsk pilot paper machine is the EuroFEX fractionation system, equipped with NOSS hydrocyclones. Torgny Persson, the Division Manager of EuroFEX, is quite delighted with this collaboration.

"I'm so impressed with how a Swedish family-owned firm, imbued with a spirit of genuine entrepreneurship, has developed its operations to become a major player on the international market. They

are experts and, by working together, we are able to offer customers top quality pilot scale trials."

Bernt Bergström, the Manager of Process Systems Development at Noss AB, comments that the collaboration is very important for them too and that they appreciate the excellent contact they have with STFI-Packforsk.

"With the NOSS fractionation process being directly connected to the pilot paper machine and the expertise that STFI-Packforsk offers, we can demonstrate how our knowledge and equipment can affect the end product."

Bernt Bergström also describes how Lennart Wikdahl, a chemical engineer, who graduated from Chalmers in 1940 and who, after several years in the heavy chemical industry, founded in 1946 what is now Noss AB, with an emphasis on the development of new technology for the process industry.●

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Torgny Persson, Anders Mähler and Robert Johansson at STFI-Packforsk standing close to the NOSS equipment at EuroFEX.



**Det finns många vägar** att gå i jakten på bättre papper. Ett sätt att få exakt de pappersegenskaper man önskar är att bestämma hur och var olika fibrer ska placeras. För en del i kedjan mot ett sådant resultat svarar det svenska innovationsföretaget NOSS.

NOSS är ett av världens ledande företag inom fiberförädling baserat på fraktionering i silar och hydrocycloner med vidhängande kemisk och/eller mekanisk bearbetning. I anslutning till STFI-Packforsk pilotpappersmaskin finns EuroFEX fraktioneringssystem som är utrustat med NOSS hydrocycloner. Samarbetet innebär möjlighet att erbjuda kunder högkvalitativa pilotskaleförsök.

## Load distribution on paper exposed to stress

In her doctorate thesis, Isabel Endres at STFI-Packforsk demonstrates a new method as to how it is possible to measure the characteristics of paper when subjected to mechanical stress. This method, developed during her thesis work, is called the Local Contact and Stress Analyser. Paper is pressed in testing equipment and the load distribution is charted down to the very last micrometer.

In her thesis, Isabel describes a new method for measuring how paper reacts when it is subjected to mechanical stress



"The method that I've developed measures the local load distribution over the entire surface of the paper," says Isabel Endres.

or, to be more precise, what the local load distribution looks like. The method is built into a hydraulic press that applies a pre-determined pressure on the paper.

Uniformity in quality is a must for uncoated and coated paper qualities. Properties, such as roughness and thickness, must vary as little as possible, even when looked at on a micro scale. In practice, all papers are more or less not uniform due, among other things, to bad fibre distribution when they are being formed in the wet end of paper machines.

Fibre flocks alternate with valleys and this causes different parts of a paper to react differently to the stress it is subjected to when it passes through press rolls. This occurs when paper undergoes calendaring or printing.

This method records the unevenness of a paper in the form of unequal load distribution all the way down to the micro scale, which causes missing dots in photogravure printing and mottling in offset printing.

"The load distribution charts that I have produced were combined with the

standard measurements for formation, thickness distribution and roughness," says Isabel, who, after she was awarded her doctorate, has taken up an appointment at CTP.●

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**Isabel Endres** har i sina doktordistudier vid STFI-Packforsk utvecklat en ny metod för att mäta papperets egenskaper när det utsätts för mekaniskt tryck. Metoden kallas "Local Contact and Stress Analyser". Papperet pressas i en testrigg och lastfördelningen kartläggs ner till mikrometernivå. Med den nya metoden går det t ex att jämföra papper som kalanderats på olika sätt eller bestruktits med olika tekniker.

Egenskaper som ytvikt och tjocklek ska variera så lite som möjligt. Metoden registrerar papperets ojämnheter i form av ojämn lastfördelning ända ner till mikroskala som kan bland annat orsaka missade rasterpunkter i djuptryck och flammighet i offsettryck.



Anders Uhlin in the laboratory for chemical analysis at STFI-Packforsk.

# Exchange of technology on a grand scale

The exchange of experiences and information among research groups in Europe is a significant foundation for future collaboration. One area, where STFI-Packforsk is currently involved in the international arena, is the development of analytical methods for applications in the wood and pulp industries. Elisabeth Sjöholm, the Research Manager for the Chemical Analysis Group, is one of two Swedish representatives on the Management Committee of COST Action E41.

COST Action E41 is a platform for the exchange of know-how among researchers in Europe, who work on chemical analytical problems with cellulose, lignin and extractives. In this context, Elisabeth Sjöholm has excellent opportunities for gaining new ideas for developing the analysis work at STFI-Packforsk.

“It’s costly to carry out the development of analytical methods and it’s to our advantage, when it comes to finance and efficiency if we can work jointly with other laboratories,” comments Elisabeth Sjöholm.

“Constructing a network is therefore extremely important. All developments go rapidly and many areas must be covered. It’s impossible to be at the forefront in every field. COST Action E41 provides us with the splendid opportunity of learning about analytical methods, significant to our operations, while, at the same time, being able to demonstrate the methods and results that we’ve developed ourselves. Often you can get ideas from other areas of research. Biochemistry is just one example of this.”

There are twenty or so member countries in COST Action E41, which makes

it the biggest of the COST Actions. The scientific programme is divided into three work groups, viz. the characterisation of lignin, polysaccharides as well as extractives. STFI-Packforsk is represented in all three of these through Elisabeth herself, together with Anna Jacobs and Marianne Björklund Jansson.

A steering committee, with Tarja Tamminen from KCL as the co-ordinator, proposes work areas and a decision is then made by the Management Committee. As a member of this, Elisabeth is consequently able to have an effect on the direction of the work.


COST Action E41 facilitates an exchange of information among laboratories and, so far, STFI-Packforsk has taken in two research students. Elisabeth appreciates the technology exchanges that the visits have resulted in and the fact that the Company has been able to establish contacts with other research groups naturally.

Participants meet twice a year in workshops or at seminars and high-tech conferences. Every meeting has a theme and the activities of each country were presented at the first gathering. Subsequently, spec-

troscopy technology and techniques were discussed. The theme of the last meeting in Stockholm was chromatography. In forthcoming meetings, analyses of samples from the same pulp are going to be discussed. The aims of this work, already in progress, are to test as many new chemical analytical methods as possible by inviting all participants to contribute with experimental work.

Elisabeth refers to the fact that COST Action E41, launched in the spring of 2004, benefits the entire Swedish forest industry. Further developments in the areas of wood-based pulp fibres and various bio-products are important for strengthening the competitiveness of the forest industry. This places great demands on chemical characterisation and, consequently, co-operation in the field of chemical analysis has become a critical resource. ●

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 **Det är kostsamt** att göra analysutveckling, och bolaget vinner ekonomiskt och effektivitetsmässigt om arbetet kan samordnas med andra labb.

COST Action E41 är en plattform för kunskapsutbyte mellan forskare i Europa som arbetar med kemisk-analytiska frågeställningar. Det vetenskapliga programmet är uppdelat i tre arbetsgrupper; karakterisering av lignin, polysackarider respektive extraktivämnen. STFI-Packforsk är representerat i alla tre. Det innebär ett lysande tillfälle att ta till sig analysmetoder som är betydelsefulla för verksamheten samtidigt som egna metoder kan spridas.

COST Action E41 gagnar hela den svenska skogsindustrin. Vidareutveckling av den vedbaserad massafibern och olika bioprodukter är viktig för att stärka konkurrenskraften. Det ställer stora krav på kemisk karakterisering – det är då samarbeten inom kemisk analys är en viktig tillgång.



# Research fortifies position of corrugated board

PHOTO: JOHAN OLSSON

There are enormous opportunities for corrugated board packaging to be developed and to contribute to sustainable growth. With an increase in know-how, communication and research, this globally used packaging material, coming from renewable raw materials, can provide better dividends for the players involved.

In the trade and industry group, SUW The International Development Group for Corrugated Board, several interesting research projects are in progress, with the aim of improving the quality and productivity and, accordingly, the competitiveness of corrugated board.

"To give an example, we study the durability and life-span of corrugated board boxes, the production of corrugated board, converting, filling, printing and die cutting," says Birger Edholm, who is currently managing a project called Uniformity.

"Because companies from the entire chain are members of SUW, from the

production side of liner and fluting to the finished boxes with printing, we achieve a good breadth in our research."

"Traditionally, we work a lot in this group with field trials in combination with laboratory tests. The results are then implemented in the corrugated board factories."

## Desirable uniform quality

The Uniformity project deals with consistency and reducing variations in the important properties, e.g. warp and surface structure.

Warp is one problem that may occur with corrugated board. Factors affecting this are, to some extent, the properties of the paper and, to another extent, the glue application and running conditions in corrugated board machines. Storage conditions and storage time can also have an influence.

"For producers, shorter runs and tighter changes in quality mean that there is an increase in variations of the properties and so there is a risk of cassation or rejects," says Birger Edholm.

Studying and solving such problems are part of this project. With more uni-

form sheets, it will be easier to print on them and thus obtain very good print quality.

"We want to draw up recommendations for ways of running operations, so that the producers will achieve more uniform qualities. We plan to develop models as an aid in running machines to achieve the best results."

Another project that Mikael Gällstedt is responsible for concerns glueability. Here, the main interest lies in improving the uniformity of the glue in the cross-direction of a corrugated board and in the glueing of thicker qualities. The aim is to create a Trouble Shooting Scheme that producers can use whenever they have glueing problems with liner and fluting in a corrugated board machine.

Printability is another interesting project that came to a close in 2005.

"Sometimes, corrugated board is conditioned for a couple of days. In other words, the moisture level and temperature even themselves out prior to the printing," says Astrid Odeberg Glasenapp, the Project Manager.

"During the project, we tested printing immediately after production and after conditioning for two days. For most of the trials, the printing results were not only good, they were better for the fresh corrugated board. This came as a complete surprise, a positive one. Among other things, this means that production processes can be speeded up."

"It appeared that conditioning continues after two days, even if at a reduced strength."

Among other interesting projects, it is worth mentioning one concerning a comparison between paperboard and thin corrugated board. There could well be good arguments for using a thin corrugated board. ●

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## Förpackningar av wellpapp har

stora möjligheter att utvecklas och bidra till en hållbar tillväxt. Med ökad kunskap, bättre kommunikation och forskning kan förpackningsmaterialet som kommer från förnyelsebar råvara ge bättre avkastning hos aktörerna.

Inom näringslivsgruppen SUW, The International Development Group for Corrugated Board, pågår forskningsprojekt som syftar till att förbättra kvaliteten och produktiviteten och därmed konkurrenskraften för wellpapp.

Genom att företag i hela kedjan är medlemmar i SUW, får man en bra bredd i forskningen. Traditionellt inom gruppen arbetar man mycket med fältförsök i kombination med laborietester. Resultaten implementeras sedan i wellpappfabrikerna.



Members of SUW, a trade and industry group, meeting at STFI-Packforsk.

# Trade & Industry Group on the march

The need to solve mutual technical issues has meant that corrugated board producers have joined together for research in a trade and industry group, as it is called. With contributions from STFI-Packforsk and people from the companies themselves, the aim is to develop corrugated board with high and uniform quality, as well as cost efficient production processes and a functional utilisation of the raw material.



Ronald Bredemo is a Senior Project Manager at Kappa Kraftliner Piteå.

Ronald Bredemo, a Senior Project Manager at Kappa Kraftliner Piteå, became chairperson of the SUW, The International Development Group for Corrugated Board, in 2005. He sees his main task as developing co-operation even further, in a direction towards involving more international participants and a broader representation from those involved in connected activities.

"We can see that interest in this model for joint research (R & D) is growing, which is very pleasing," says Ronald.

"The SUW started in 1968 with just Swedish companies involved. Since then, it has attracted members from Norway, Finland and Germany. What's more, it just doesn't include corrugated board producers, but also paper mills, converters and chemical/glue firms. There's a lot of strength in having the entire chain taking part. In this way, technical solutions can really be optimal."

## Focus on technical issues

Corrugated board producers carry out their own research to a modest degree only. Furthermore, their organisation is very often too small. However, today there are issues that are common to the trade, but that do not affect competition among the companies. On the other hand, it is the exchange of technology that strengthens the individual organisation. Since participants come from various kinds of companies and play different roles, e.g. production managers, customer technical service advisers and research managers, this interchange covers a great many problems.

SUW research takes a practical direction and its aim is to give concrete, tangible advice to corrugated board producers.

This makes it easy for companies to take advantage of the results of the research. STFI-Packforsk has several of its researchers involved in the project, with Astrid Odeberg Glasenapp being secretary in the SUW. During her maternity leave, her colleague Birger Edholm is acting secretary.

In a democratic process, voting determines the projects to be pursued from a nomination list. This process ensures participation and promotes co-operation.

"The challenge facing us today is how to formulate results and disseminate them," comments Ronald.

He continues, "We have to develop the information going to our member companies. Should we utilise the Internet more in our communication, for example? And, if so, what form should this communication take? These are some of the questions I'm paying a great deal of attention to." ●



**Ett behov att lösa** gemensamma tekniska frågor har fått wellpaptillverkare att redan 1968 gå samman i en näringslivsgrupp. Med insatser från STFI-Packforsk och egna medarbetare ska wellpapp av hög och jämn kvalitet utvecklas, liksom kostnadseffektiva tillverkningsprocesser och funktionell användning av råmaterialet.

Ordförande i SUW, The International Development Group for Corrugated Board, är sedan hösten 2005 Ronald Bredemo, Kappa Kraftliner Piteå. Han ser som sin viktigaste uppgift att utveckla samarbetet ytterligare mot fler internationella aktörer och bredare representation av angränsande verksamheter. Utmaningen idag är hur resultaten ska formuleras och spridas.

## Profile



Astrid Odeberg Glasenapp

Astrid Odeberg Glasenapp has all the qualities of a talented Project Manager. She is inquisitive, always prepared to take on new ventures, while, at the same time, excellent at carrying out and meeting her responsibilities. These qualities are essential in her role of Project Manager in the Packaging Material Group, where her specialties are corrugated board and printing. She is a secretary in the SUW, a Trade and Industry Group, and Manager for Funcpack, a new research cluster.

Her expertise spans a broad area, from wood and pulp, to paper, corrugated board and printing.

"I learnt wood science and technology at the University of Hamburg. I majored in paper and pulp production. My doctoral thesis was on ASAM, the alkaline sulphite process in pulp production."

"For some years, I worked as a technical reporter for VDW, the German Corrugated Board Association. I was responsible for committees dealing with corrugated board, standardization and paper quality. It was a hectic time with a lot of travelling."

Then love came her way. She moved to Sweden and took up an appointment at STFI-Packforsk. Since then, she has finished a project on comparing thin corrugated board with carton board, assumed the role of secretary in the SUW, become a network operator in the T2F programme for flexographic printing on packaging materials, been elected Cluster Manager for Funcpack and Manager of her own projects on printing on corrugated board. She has been an instructor for doctoral candidates and students doing their masters theses, before going on maternity leave last December.

"One of the best things about my job is the close contact I have with customers and real situations. I get so much back in having contact with those that not only show interest in my research, but also reap the benefits of it." ●

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PHOTO: JOHAN OLSSON

#### Examples of projects in the Wood and Fibre Measurement Centre

- Measurement of the properties of wood and pulp using SilviScan and other instruments
- Development of databases for property variations in wood and fibre resources
- The evaluation of variations and their anticipated effects on products and processes
- The development of strategies for fibre allocation and processing
- Tree improvement, based on the growth and properties of timber, fibres and vessel elements
- Studies of genetic variations, heritability and links to gene sequences
- The development of new measurement techniques

“The SilviScan instrument is a unique tool for wood characterisation,” say Sven-Olof Lundqvist and Asha Ismael Olsson.

# Measurement of wood and fibre

The Wood and Fibre Measurement Centre at STFI-Packforsk houses unique equipment for the characterization of wood, fibres and vessel elements. Its main aim is to provide R&D services to the pulp and paper industry, its suppliers and customers. Furthermore, its unique resources are used in such areas as wood technology, forestry, tree improvement and genetics.

STFI-Packforsk is fully engaged in co-operation and contract work with researchers and companies around the world in all these fields and its ambition is to contribute to further partnerships.

“Our Measurement Centre has been built up over several years and it now includes a lot of equipment,” says Sven-Olof Lundqvist, who is responsible for the Centre together with research in optimal wood and fibre utilisation at STFI-Packforsk.

SilviScan is a special and effective piece of equipment in the centre. It is an instrument developed by Dr Robert Evans at the CSIRO, Australia. He was awarded the Marcus Wallenberg Price in 2001 for this break-through achievement. Through the integration of dif-

ferent measurement principles, wood samples may be characterised for many wood and fibre properties that are of industrial importance. Radial variations are determined for wood density, fibre width and microfibril angle. From these data, other properties may be calculated, such as fibre wall thickness, coarseness and wood stiffness (estimated MOE). Most of the earlier measurement methods were tedious and expensive, which was often an obstacle to research and applications. SilviScan technology offers a much more efficient characterisation, with a high enough resolution for most circumstances. This opens up many new opportunities, when it comes to research and development.

“This is one of only two SilviScan instruments in the world,” says Sven-Olof Lundqvist. “We have customers not only in Europe but also in North America, South America and Asia. We work with many different wood species.”

The measurement facilities are supplemented by databases, models and simulation tools, which are now used to find strategies for a better utilisation of wood and fibres in pulp and paper products and for improving forest resources in the future.

“Naturally, you can also use this equipment for applications in wood technology, tree improvement and forestry and even

for fundamental research in areas such as wood formation and genetics,” continues Sven-Olof Lundqvist. “SilviScan and the Wood and Fibre Measurement Centre have become resources that have been used a great deal. They generate joint efforts in many fields, together with universities, technical institutes and industries world-wide.”

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**STFI-Packforsks Wood** and Fibre Measurement Centre har unik utrustning för ved- och fiberkaraktärisering. Främst används resurserna inom pappers- och massa-industrin och dess leverantörer; men de nyttjas även inom träindustrin och plantageskogsbruk.

Mätcentret har byggts upp under flera år och utrustningen används av forskare och industrin över hela världen. Ett av dessa instrument är SilviScan, ett av två sådana instrument i världen. Med den nya SilviScan-teknologin kan man på ett snabbare och effektivare sätt än tidigare karaktärisera trä och fibrer vilket ger nya möjligheter inom forskning och utveckling.

Den avancerade mätutrustningen kompletteras med databaser, modeller och simuleringverktyg. De samlade resurserna används nu för att finna nya strategier för bättre ved- och fiberutnyttjande.

# New STFI-Packforsk Board

At a General Meeting on 29 March, Leif Brodén, CEO and Group Chief Executive of Södra, was elected as successor to Per Lindberg in the post of Chairman of the Board of STFI-Packforsk AB. The new Board that assembled immediately after the general meeting consisted of the following:

## Regular members

Leif Brodén, Södra, Chairman  
Stina Blombäck, Billerud  
Peter Edwall, Mondi Packaging Paper  
Karin Emilsson, Södra Cell  
Staffan Erenmalm, ABB  
Anders Flodström, KTH  
Håkan Widmark, IRECO Holding  
Sven Wird, Holmen  
Anders Wigsten, Stora Enso  
Mats Törnkvist, Korsnäs

Anna Jacobs, representative for CF (on parental leave)  
Pierre Ljungquist, representative for SIF

## Deputies

Georg Carlberg, Norske Skog  
Birgit Erngren Wohlin  
Lars Gädda, M-real Corp  
Göran Harrysson, Tetra Pak  
Staffan Rydefalk, representative for CF



Leif Brodén, Södra, is the new Chairman of the Board at STFI-Packforsk.

## Awards

### Kempe Digital Printing Award

For the first time, the conference in Örnsköldsvik for Research on Digital Printing on Paper Media, ROND, awarded the Kempe Digital Printing Award in February.

The aim of this prize is to stimulate innovative ideas in the field of digital printing. A PhD student, Ole Norberg, at M-real was bestowed the award for his idea on the topic of the production of colour patches using digital printing.

The theme of this year's conference, organized by the Digital Printing Center, Mid Sweden University, together with STFI-Packforsk, was New Analysing Methods in Digital Printing. The development of new optical and spectroscopic analysis methods makes it possible to study in detail the dynamic processes that occur during and after the printing, e.g. the interaction between paper and the toner particles or the paper and the ink, and how a paper influences the colour in the printing process. These new analysing methods can be used for studying and understanding the paper properties that will increase the printing quality. ●

### TAPPI Gold Medal

The 2006 TAPPI Gunnar Nicholson Gold Medal has been awarded to Nils Hartler, Professor Emeritus at the Royal Institute of Technology in Stockholm.

With 168 scientific articles and numerous patents, Hartler has made significant contributions to the fields of chip-quality and kraft cooking. During his lifetime, he has received numerous awards, e.g. the Royal Swedish Academy of Engineering Sciences, the Marcus Wallenberg Prize and the SPCI Ekman Medal.

His work has been of great importance to STFI-Packforsk, since a large part of his research was carried out at STFI (and its predecessor CCL), where he was the Manager of the Pulp Technology Department between 1958 and 1975. ●



Per Jonsson at Stora Enso, (right) hands over the prize, a diploma and Euro 4,000 to Ole Norberg.

## COMING EVENTS

### MAY

- 9–10 Advanced Training: 3-D structure of paper
- 10 Sustainpack SP5 Open Workshop on 3-D Fiber Based Composites
- 17 T2F Mini-seminar: Lägsta pris med bibehållen kvalitet
- 31–1/5 5<sup>th</sup> Fundamental Mechanical Pulp Research Seminar, Trondheim

### JUNE

- 7–9 6<sup>th</sup> Paper and Coating Chemistry Symposium

### AUGUST

- 28–1/9 5<sup>th</sup> Plant Biomechanics Conference

### SEPTEMBER

- 19 Research Seminar for STFI-Packforsk Partner Customers

For further information on coming events, see [www.stfi-packforsk.se](http://www.stfi-packforsk.se)

The Packaging Diploma Course starts in October.

[www.stfi-packforsk.se/diplomutbildning](http://www.stfi-packforsk.se/diplomutbildning)

## Continued accreditation

The annual audit of the following accredited activities, chemical and microbiological analyses, physical testing and those in the Optical Calibration Laboratory, took place in March. The audit of the accredited environmental durability testing activity in Kista took place in February. SWEDAC, the auditor, recommended continued accreditation for all these activities. ●

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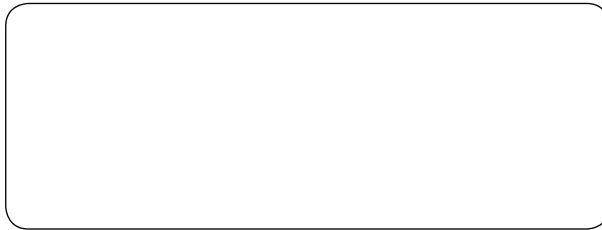


Technical auditor Petri Kärhä from the Technical University of Helsinki, examining the routines for the accredited calibration activity with Staffan Rydefalk, Technical Manager of the Optical Calibration Laboratory.



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# B



# Environmental business ratio for newspapers



PHOTO: MALIN WEDIN

With the aid of an industry-specific model, newspaper companies can have their environmental business ratio calculated, inspected and reported. The newspaper companies that are connected to Mint (environmental indicators and environmental networks for the newspaper industry) have access to an industry-specific network.

Environmental indicators, or business ratios, describe environmental loading related to benefits for various kinds of newspaper companies. By benefits is here meant turnover and delivered tonnes. The model was based on a comprehensive charting of environmental burdening operations where the most significant criteria were selected.

“Our ground work with building this model helps companies by focusing on significant environmental aspects of the industry, viz. what to measure, what to follow up on and what can be improved on, without needing to carry out a complete inventory each year,” says Åsa Moberg, the Project Manager.

“Newspaper companies fill in a form in an Excel based inventory tool and we examine the data and compile the environmental indicators. If a certain piece of information doesn't appear plausible, we follow up on the reason for this.

It's possible that something unusual has occurred in the company or maybe it's simply that a decimal point has been put in the wrong place when the report was filled in.”

There is a long list of information to fill in, which reflects the importance of environmental aspects in the industry these days. Significant points include energy and materials usage, hazardous chemical products and transportation.

The results, which are often included in a company's annual report on environmental work, gains in greater credibility, thanks to Mint.

### Give and take

Company representatives meet twice a year, together with the researchers from the Sustainability & Foresight Group that work with Mint.

“The meetings provide a good opportunity for the participants to discuss with others who work with environmental aspects of the industry too,” says Åsa Moberg.

“These meetings bear the stamp of openness and an interest on behalf of the participants in sharing their vast experience. The inventory tool provides the opportunity for making comments and it often occurs that people report on steps or measures that have been accomplished. The steps often lead to even better finances, since most of the time they deal with resource efficiency.”

The development of this model started in 1998 in co-operation with Nutek, The Swedish Agency for Economic and Regional Growth, the GFF, The Swedish Graphic Companies' Federation and the TU, The Swedish Newspaper Publishers' Association. Åsa Moberg thinks that it is great that a research project has so undoubtedly resulted in practical applications for the industry. The researchers at STFI-Packforsk now have the idea of further developing Mint to include indicators for sustainable development. ●

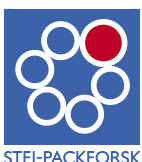
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**Med hjälp av** en branschspecifik modell, utvecklad vid STFI-Packforsk, kan tidningsföretag få sina miljönyckeltal beräknade. De tidningsföretag som är anslutna till Mint, miljönyckeltal och miljönätverk för tidningsföretag, får också tillgång till ett branschspecifikt nätverk.

Nyckeltalen beskriver miljöbelastningen relaterad till nyttan. Modellen har byggts efter en omfattande kartläggning av miljöbelastande aktiviteter där energiåtgång, materialanvändning, farliga kemiska produkter och transporter är betydelsefulla för branschen..

Nyckeltalen hjälper företagen att se vad de ska mäta, följa upp och kan förbättra utan att varje år behöva göra totalinventeringar. Ofta innebär åtgärderna bättre ekonomi för företagen eftersom de mestadels rör resurseffektivisering.



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