

European Round Table on the Deinking of Digital Prints

For the premiere of a new forum to improve communication within the paper chain, in January 20 representatives from printer manufacturers (HP, NexPress, Océ, Punch Graphix), paper mills, research institutes (CTP, PMV, PTS) and authorities (Federal Environmental Agency, Germany) met in Munich.



A first very important goal was already achieved: The forum agreed on a uniform test file for deinkability investigations. This

file will be made publicly available through INGEDE's internet site. A survey on the deinkability of digital prints will be the first application for this pattern. Every company interested will provide prints of significant printer types and send them to INGEDE. From there they will go as blind samples to the research institutes in order to get also information about the comparability and reproducibility of these tests at the participating institutes. The costs for these tests will be shared, INGEDE will cover a significant part. Participants from printer manufacturers are welcome to join. ●

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Ambassadors for recyclability

On the way to a global stakeholder

Recently with Packages Ltd. from Pakistan, the first member from outside Europe joined INGEDE. Now we represent 39 paper mills and research departments of the paper industry.

The origins of INGEDE are based in Germany. There the deinkers started joint research and joint communication, in the beginning focussing mostly on research.

In the meantime all major European deinkers became member of INGEDE. It is clearly a European organisation now, but still many of the activities originate from Germany. In the following years, INGEDE will in-

Improving contacts to the local paper chains

crease its activities more into other European countries. A major success was the INGEDE Seminar in London, another seminar in Paris will follow this fall.

Also the focus of INGEDE has changed. Besides research, today it is more and more to maintain deinkability by lobbying within the paper chain, by communicating with all stakeholders starting with suppliers up to printers and publishers.

For that, intense contacts in major European countries like France, Italy, Spain or UK are essential. Also in the smaller countries as well as the new members of the European Com-



*Walter Pillwein is
Member of the Board of INGEDE*

munity, the idea of recovered paper being a valuable resource has to be held up.

In order to intensify the contacts to national stakeholders, the idea of "country representatives" of INGEDE was born. This expands the one-way street of delegates representing their company within INGEDE to a second, a opposite lane, the members being also antennas for communication into their respective countries (p. 2).

These representatives will enable INGEDE to speak not just in English or German, they will provide technical support for national paper associations in the local language. They will also help to organise seminars and committees to intensify the contacts with the members of the paper chain and their associations. Breaking down the language barrier will also help to harmonise regulations in this field on an international level. ●

INGEDE

RECOVER



Paper collection – with toys and poison? Herbicide accident in the sorting plant

It was a small plastic bag designed for one kilogram of yellow powder. A bag in the wrong place – releasing about 200 to 300 grams of toxic dinitrocresole dust on the conveyor belt of Stora Enso's sorting plant in Eilenburg, Germany.

Eight workers who had inhaled the irritating dust suffered from nausea and nose bleed, they had to



be taken to the hospital. Fire men in protective suits retrieved the dangerous stowaway, a police helicopter flew it to a lab where the herbicide for cereal was identified.

It was impossible to find out who dumped the toxic substance with the potential to kill even humans into a paper container. "We cannot do anything about this", says Ulrich Höke, mill manager in Eilenburg. "All we can do is appeal to the peo-

ple not to abuse the containers for waste. Recovered paper is a valuable resource, and the less impurities it has, the easier it is to recycle."

Toxic waste is a rare exemption, but impurities are frequent. Recovered paper is a resource, though for some people seem not to realize this aspect: At Stora Enso, the workers have collected a long row of toy figures from the paper. Less decorative are samples like underwear or electronic circuit boards.



Implications of REACH for recovered paper

REACH is a new EU regulatory framework for the Registration, Evaluation and Authorisation of Chemicals proposed by the European Commission.

Manufacturers and importers will be required to gather information on the properties of their substances and to register the information in a central database. A Chemicals Agency will act as the central point in the REACH system.

The registration procedure has already been criticised being too complex, costly and bureaucratic.

According to the European Waste Directive, recovered paper is currently legally considered as waste and as such falls outside the scope of REACH – it will not have to be registered. Some EU members take the position that recovered paper meeting the requirements of EN 643 is no longer waste. In those states recovered paper might not be excluded.

New INGEDE policy

In order to define INGEDE's strategy and long term goals, INGEDE has put together an "organisation's policy".

INGEDE's major aims are among others to make environmentally compatible and efficient use of recovered paper in the production chain and encouraging manufacturers, developers and users of printing inks, printability aids, and adhesives for the paper chain, to maintain and improve the recyclability of printed products containing such materials.

But also consumers shall be made aware of the environmental and cost advantages involved, e. g. by pre-sorting recovered paper.

INGEDE will be the driving force for the European paper industry associations in professional questions about paper recycling by supporting CEPI and national paper associations through its technological knowledge on paper recovery and recyclability.



INGEDE's new "Country Representatives" will improve local contacts to members of the paper chains

They are INGEDE's new local contacts all over Europe: the "country representatives" will try to establish more intense ties to national paper chains and help play an active role in organising local seminars.

A very ambitious goal is setting up "Technical Committees" like the one in Germany. This group, consist-

ing of representatives of organisations, research institutes and manufacturers of printing ink, adhesives or printers discusses ways to improve the recyclability of printed products or orientation values to measure this property.

Contact by the country name, e. g. "sverige@ingede.org".

The deinkability of flexo inks

Flexographic Printing is a promising technology. It is fast, clean and looks cost saving – in the first place. But currently flexo inks are not deinkable together with standard offset news and magazines. Flexo ink particles mix with water, they are hydrophilic. The binder of these inks dissolves in the alkaline environment of the pulper, the first step of the recycling process in the paper mill.

Then the ink particles are released into the circulation water. They are **not removed during the flotation**. Alkaline pulping and flotation are designed to remove hydrophobic particles like offset or gravure inks. The flexo ink particles attach to the hydrophilic fibres and **lead to a significant grey shade** of the recycled paper. No customer would accept this product.



Reality is a mixture

In paper mills, there are always mixtures to process. The standard deinking grades consist of about half magazines and half newspapers. Flexo newspapers are excluded in some specifications for recovered paper for deinking. Even in a mixture with 25 per cent flexo news, this portion leads to a poor deinking result. With pure flexo news, today flotation deinking is simply not possible.

Several promising experimental results have been achieved within the last two decades. But never one of these inks made it to the printer. Now Harmsworth Quays Printing (HQP), who runs the world's largest flexo news printing plant, has agreed to change one of their machines to a experimental ink for six months.

This way for the first time there is an opportunity to further optimise the new ink. Also, the overprint will be collected separately and is available – at no extra costs – for a large scale deinking trial. ●

Flexo newspaper printing in Great Britain and in Italy is applied at important newspapers like Daily Mail, Evening Standard, La Repubblica or Corriere della Sera and some other smaller titles. To be able to print



They don't have to be bad: New results with flexo inks

more 4-coloured pages and supplements on improved paper qualities the flexo newspaper print shops have decided in the last years to increase their print capacities. As soon as all planned new presses become active, the flexo newspaper printing in Great Britain will show a market share of 10 per cent and in Italy of 20 per cent in relation to the used amount of newsprint paper. Furthermore other print shops using up to now coldset presses are thinking about investments in flexo printing.



Recycling problems and new approaches

The ink films of flexo newspaper prints are waterproof but not alkali resistant. So in the alkaline environment of the deinking process these inks films are disintegrated totally to an ink particle size of approximately 0.2–0.5 microns. Particles of this size are too little for the flotation process and remain in the recovered paper mixture.

A possible solution for this problem is to search for ink layers which also are insoluble in alkaline media. There are possibilities to achieve this. One way is the application of acrylate dispersions. These are fine plastic particles distributed in water. If the water vanishes after printing by means of penetration or evaporation the plastic particles touch each other, run into each other and at least form a closed coating. As an irreversible looping of the polymer

chains results, therein this ink layer is also resistant against alkaline.

Another way to achieve alkaline proof ink layers is the use of polyacrylates which carry additional chemical groups for interlinkage of the individual polymer chains. Also this network cannot be solved by alkalines anymore. Binders of both manner are known since long ago and are used in water based flexo inks for packages e.g. for washing or cleaning products.

For further development of flexo newspaper inks, lab tests of different binder combinations have to be made which may bring improvements of the deinking process and also will not disturb the printing properties. The results of tests with new binders at Centre Technique du Papier (CTP) in Grenoble make clear that – compared to the standard formulation – the test binders can improve the deinking behaviour. Some results were close to the normal deinking results of coldset newspapers.

To achieve a deinkable flexo newspaper, all partners in the paper chain have to cooperate. Print shops have to be willing to use such inks and to clean the anilox rolls before longer press down times. The members of the paper chain have to decide about an upper limit for the share of flexo newspapers in recovered paper mixtures. Also the deinking plants can help to improve the recycling of flexo newspapers. For a long time it is known that the deinkability of flexo prints will be improved at lower pH values and under reduced mechanical stress during the dissolving process of the recovered paper.

If all these factors are combined it surely will be possible to handle flexo newspapers in a manner that recycling of recovered paper is not be disturbed.

Condensed version of a presentation of Dr. Erich Frank, Flint Group, Stuttgart, Germany at the INGEDE Seminar in London in September 2005. ●

Plastic wrappings create recycling problems: Papermills pay for raw material, pay for disposal

They protect the magazine, bundle advertisement flyers or toys – the publishers name many reasons to wrap their magazines or promotional brochures in plastic foils. If these packets are not opened by the consumers or the recovered paper supplier, they give the paper mills a hard

time. Often they remain intact or are only split open partly during re-pulping. They leave the recycling process as reject as they have entered it or – even worse – soaked with water. “Think about recycling when designing a print product!” is what INGEDE asks publishers and advertisers. ●



New European Declaration on Paper Recycling: Increasing the amounts, improving the quality

The former European Declaration on Paper Recovery is growing up: the new declaration which representatives of more than ten European organisations will finalise by the end of June 2006, will get ahead of its predecessor. The first declaration, published in 2000, had been signed by associations of the paper industry (CEPI), recovered paper traders (ERPA) and corrugated box manufacturers (FEFCO). The new declaration will go far beyond: Publishers, printers, ink and others will most probably join the list of signatories of this declaration that has more ambitious goals than ever before and will extend to more European countries.

Recycling rate: more than 60 %

Currently more than 50 million tons of paper are utilised in Europe for the production of paper and board. This figure will increase further. In their last meeting, the associations aimed at an increase to more than 60 per cent recycling rate in Europe. The current figure, stated in the first declaration, was 56±1.5 per cent. In the future, based on a proposal by both the German and EU authorities, also exports of recovered paper to be recycled will be included in the calculation.

This approach takes into account the global trade with recovered paper and the fact that this portion of pa-



Trying to compose a declaration with as many supporters as possible: Bernd Böcking, Chairman of the stakeholder group in Brussels

per recovered in Europe will also be used for the manufacture of new paper and board. This will increase the recycling rate even further.

Recyclability and deinkability

But not only the recycling figures will rise. The associations also agreed to include the responsibility to improve the recyclability and deinkability of paper products.

After one more meeting in June, the new declaration will be presented to the European Commission and representatives of the member states at a European environmental conference on September 21, 2006. ●



The **International Association of the Deinking Industry** was founded in 1989, first with the target to support the voluntary agreement in Germany upon graphic paper recovery rates by its expert knowledge.

In the following years INGEDE consequently developed to an European expert association on deinking technology and recyclability of graphic printed products, today supporting also the voluntary declaration of European paper chain associations with ambitious recycling rates in Europe. Currently 39 European deinking paper mills and research departments are members of INGEDE, representing today more than 10.5 million tons of recovered graphic paper.

Paper Chain in Paris

Come to the annual **INGEDE Seminar Recyclability** which is planned for October 5, 2006 in **Paris**, from 10:00 to about 16:00 hrs. If you are an active member of the paper chain as a publisher, printer, recycler or member of their associations or if you work for a paper mill and are interested in the work of INGEDE, you are welcome to be our guest!

This year's topics include:

- Paper Recycling in Europe and in France particularly
- Recovered Paper Quality
- Deinking Process (Challenges and Developments)
- Recyclability of recovered paper (Problems with flexo and digital prints)

More information on INGEDE's web site www.ingede.com or by e-mail.

Meet INGEDE at the ZELLCHEMING EXPO, June 27-29, 2006 at booth 315!

The next **INGEDE Symposium** will take place on Wednesday, Jan 31, 2007.

International Association of the Deinking Industry

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