

IS THERE A FUTURE FOR THE EUROPEAN PUBLICATION PRINTING INDUSTRY?

A study of the European publishing markets
and the effects of important techno-economical
factors 2007-2010

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Abstract

This paper deals with a survey of the European Publication Printing Industry – and it highlights the potential development of future markets and some of the techno-economical factors which are important to the industry. Previous research has indicated that the cost of producing signatures in either gravure or commercial web-offset have been reduced by 65-70% over the last 20 years. Nevertheless, it is believed that most of the economic benefit of lower costs has not remained within the printing industry, but has been transferred to the customers. It has been a buyers' market during the last decade.

The extremely fast progress of digital technology since the middle of the 1990's has had a great impact on the publication printing industry, not only in gravure but in particular in web-offset. New and affordable software packages for editorial and image manipulation were quickly accepted, and within a short time the previous analogue technology was abandoned. These new techniques led to a dramatic change from the way in which the industry had previously worked, and the customer gained complete control of the work flow.

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Since the autumn of 2006 until January 2007, a series of in-depth interviews were conducted with top managers in the industry, both customers and suppliers to the industry. A scientific methodology has been used to evaluate the responses, and those have been discussed during extensive personal interviews.

The investigation includes interviews not only with the leading managers from the customer to the industry, but also some of the most important suppliers – printing press manufacturers, paper and ink manufacturers, plate and cylinder processing equipment suppliers, and other important contributors to the printing process. This approach makes it possible for the author to explain some of the issues in greater detail and to give the reader a deeper understanding of the current and future European market situation. Are there new technologies to be seen in the near future which will have a strong impact on the structure of the industry?

The findings indicate that those publication printers working in the segment of catalogue printing may find the market becoming increasingly difficult. Many of the major catalogue producers are changing their marketing focus from catalogue to E-commerce, which means that today's few but very thick products will probably be replaced by thinner but more frequent issues. The total volume of print will also be affected. Those printers working in the magazine market will also see major differences in the near future. Despite the fact that publishers are increasing the number of titles, the total volume is not expected to increase. The print runs will be more fragmented, and split editions aimed at targeted groups of readers will increase. This means a threat to very large gravure printers, because the newly installed superwide presses may not be sufficiently flexible.

This paper shows that the changes in market conditions and product requirements have been dramatic in Europe during the last 20 years, and that further changes are about to take place.

1. INTRODUCTION

The extremely fast development of digital technology since the middle of the 1990's has had a great impact on the publication printing industry, not only in gravure but particularly in commercial web-offset. New and affordable software for editorial and image manipulation were quickly accepted, and within a short time the previous analogue technology was abandoned. These new techniques of DTP (Desk top publishing) for editorial use led to a dramatic change from the way in which the industry had previously worked, and the customer gained complete control of the prepress work flow (Cox et. al 2005). Furthermore, it has been possible to reduce the entry barriers for new titles and editions (Birkenshaw and Smyth 2001, Cox et. al. 2005, Mowatt 2002), because the publishers have taken advantage of new advanced desktop publishing technology and, more importantly, the previous close relation between the publisher and its printing facility has disappeared.

The largest exhibition in the graphic arts industry, Drupa (Druck und Papier) in Düsseldorf, Germany, opens its doors every four years. During the recent exhibitions - in 2000 and 2004 – the main focus has been on the commercial web-offset industry, showing new technologies to enhance productivity and print quality. Since the millennium, new print capacity has come on stream which is probably unprecedented in the history of publication printing in Europe.

During the autumn of 2006, a series of in-depth interviews were conducted with many top managers in the industry, and with both customers and suppliers to the industry. In 1985, the European Rotogravure Association (ERA) published a study on gravure and web-offset (Bjurstedt 1986). The investigation included in-depth interviews with the leading printing industry managers, but customers and suppliers were not asked to participate. In the present investigation, a qualitative approach has complemented the quantitative, and the questionnaires have been answered during rather extensive personal interviews. This paper shows that changes in the market conditions and product requirements in Europe have occurred during the last 20 years, and that further changes are about to take place.

2. METHODOLOGY USED IN THE PRESENT SURVEY

The area of research covered in this paper is an investigation of the present European publication printing markets, and how these may change in the next few years. The research target is the European publication printers and to some extent those publishers who are still maintaining their printing facilities, but in this context the participating companies are not the printers but the main suppliers and, may be more importantly, the customers of the publication printers. In this case, a survey technique has been used, and a large group of companies and/or executives have been asked to participate. With this approach it has been possible to collect in-depth information about some very important questions to the industry. To the knowledge of the author no similar survey has been directed to the major customers of the industry, catalogue producers/buyers and magazine publishers, although in the middle of the 1980's some data were collected and presented in various conferences by representatives of the association

In this study of the European publication printing industry, the survey was targeted at those companies (and/or their contact persons and managers) who were members of the European Rotogravure Association (ERA). In the past many members were integrated publishers/printers, but there was a distinct difference between these two areas of interest. Hence there were very few print-buyers in the membership. One of the reasons was that those printers working on the commercial markets did not want their customers to be part of an association in which they could meet competing printers.

In 2006, the survey had a broader target group, and the main emphasis was on a qualitative approach with personal interviews and/or interviews by e-mail complemented by phone calls. The interviewees have been selected from among the most important customers and suppliers to the industry. Customers in publishing and catalogue production are, from time to time, invited to make presentations at the meetings of the ERA. Hence, it has in many cases been possible to establish a personal contact with those executives.

Because neither customers nor suppliers were asked to participate in the investigations of 1986, the 2006 questionnaire had to be redesigned. The structure was similar to previous questionnaires, and it was first tested with a small group to check both relevance and completeness. The depth was assured by asking some complementary questions and, for example, it became obvious that the customer's choice of supplier and printing method is related to the perceived environmental impact.

In this context, there are about 18 suppliers; paper and ink manufacturers, printing press manufacturers and prepress (plate and printing cylinder manufacturers) who were asked to participate in the survey. The reason for including the suppliers this time is that most of the research in developing new technology and/or production processes is now concentrated to the suppliers. Between 1956 and the end of 1980's, important work in this area was done by the larger publishers/printers (= users) in Europe, sometimes in cooperation with the ERA.

The main effort has been to interview these managers personally, and only two have declined for timing reasons to participate. Some of the interviews were made by telephone because of constraints of time and financial resources. All companies agreed to participate in the survey with the exception of two paper manufacturers. It can be stated that there were 100% coverage in all areas studied with the exception in paper manufacturing with 50% coverage. However, the participating paper manufacturers are representing about 65% of the European market (see Section 4). The reason for including the suppliers is that almost all of the research in developing new technology and/or production processes is now concentrated to the suppliers.

The other target was the customers to the publication printing industry, mainly magazine publishers and catalogue producers, which are the most important customers to the industry (see also Section 4). The number of publisher asked to participate were six of which one declined to participate. The catalogue producers asked were five of which none declined.

With the recommendations from Bruhn Jensen (2002, the interviewer chose to structure the discourse as follows:

- 1 Introduction about the purpose of the interview (survey) – secrecy, non-disclosure agreements etc.

- 2 Some minor less controversial questions about the market conditions in general
- 3 More complicated questions about background information and knowledge about the industry
- 4 A few more controversial questions related to the position of the company and problems perceived by the company/individual
- 5 Conclusion; asking some less controversial questions – some background questions

The questions can be found in Section 4 for each category. In order to be well prepared for the interviews, background information was collected for each company (or group of companies) to be interviewed. Today, such information is normally available via the Internet on the relevant homepages.

The duration of the personal interviews varied between one hour and about half a day. The answers were noted and later submitted to the interviewee for verification and acceptance. Those who were not possible to interview personally, were first approached with the questionnaire followed by a telephone interview lasting about ½-1 hour upon receipt of the response. The depth of the interviews was assured by asking some complementary questions where, for example, it became obvious that the customer's choice of suppliers and printing methods is related to the perceived environmental impact.

The method of doing most of the surveys as a qualitative study is of course time-consuming and expensive. On the other hand, it may only be possible to discuss some of the important issues face-to-face rather than through a more anonymous questionnaire distributed by mail. The notion of using more depth and time during the interview gives the interviewer more time to reflect and the possibility of adding supplementary questions. This strategy is also supported by Schatzmann & Strauss (cited in Bruhn Jensen 2002). Hence, the interviewer has gained not only a personal contact but also more in depth knowledge about the conditions on different markets in Europe. This context has been very valuable in the survey about the future markets for the European publication printing.

By using different sources - from both users and suppliers - in the recent survey some of the results deduced may be stronger than if they came from one source only. Another important issue in a survey concerns the generality of the answers. Are the answers also valid for those not taking part in the survey? Since it is not possible to contact all companies and/or executives in the European markets, is it possible to generalize the results from the survey and state that these are the common perception of the market in Europe? In this context, where the suppliers represent about 75-80% of their individual markets, it could be deduced that their answers are quite general and are valid for the purpose of this particular research study. In some cases, they represent

up to 100% of the market, i.e. the cylinder processing, ink makers and press manufacturers specializing in the gravure markets.

The situation is to some extent different with regard to the customers to the industry. There are many more customers, both magazine publishers and catalogue producers, and it has only been possible to approach some of the larger companies. The constraints have basically been the cost and time which has been possible to allocate to this survey, because a qualitative study is of course more time-consuming and more expensive. On the other hand, some of the more important issues may be easier to discuss face-to-face rather than in a more or less anonymous questionnaire distributed by mail. The notion of using more depth and time during the interview gives the interviewer more time to reflect and the possibility of adding supplementary questions. Hence, the interviewer gains not only a personal contact but also a more in-depth knowledge of the conditions on different markets in Europe.

3. RESEARCH QUESTIONS AND A PARADIGM SHIFT IN THE PUBLICATION PRINTING INDUSTRY

What effects do the techno-economical constraints have on the future development of the European publication printing industry? The hypothesis is that due to changes in advertising spending and consumer behaviour, the conditions for the European publishers and catalogue producers will change. This in turn will affect the publication printers and further adaptation, and a very flexible attitude among the publication printers is needed. This is a quite significant change from previous market conditions. Hence, this investigation will determine whether this hypothesis is verified or falsified.

Will new and emerging technologies, in new press designs and in cylinder/plate processing, be factors which aid the short-term survival of the publication printing industry? Since 2000, many new presses – both in gravure and commercial web-offset – have been installed, and the latest generation of publication presses are running wider webs and much faster. They need less staffing and give very fast make-ready, improved up-times due to new and improved press controls. This in turn means that the additional, aggregate net production capacity is very large and will not easily be absorbed if the future growth of the publishing market is limited.

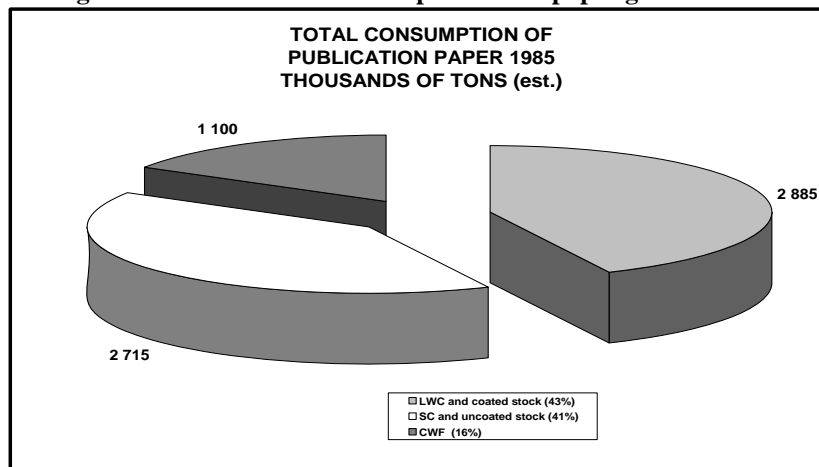
Are we witnessing a new paradigm shift in the technology of producing magazines or catalogues? The shift may show how the industry has changed “*from a craft labour structure to an industrial process*”. Process reengineering – how to integrate plate processing or cylinder engraving (incl. chrome plating/finishing) with an automated press make-ready process into an automated press run – has to be realised. The aim of this process is to produce a first saleable copy without manual intervention – faster than to-day and with less waste!

4. THE MARKETS FOR PUBLICATION PRINTING

4.1 MARKET SIZE AND VOLUME GROWTH 1985-2006

In 1985, the total consumption of publication printing paper was estimated by the European Rotogravure Association (ERA) with the assistance of the leading manufacturers of publication printing paper grades in Scandinavia, Germany and Italy, to be 6.7 million tons of paper. In this context it should be noted that statistics previously presented in Bjurstedt (2005) have to be corrected.

Figure 1 – Estimated volume of publication paper grades in 1985

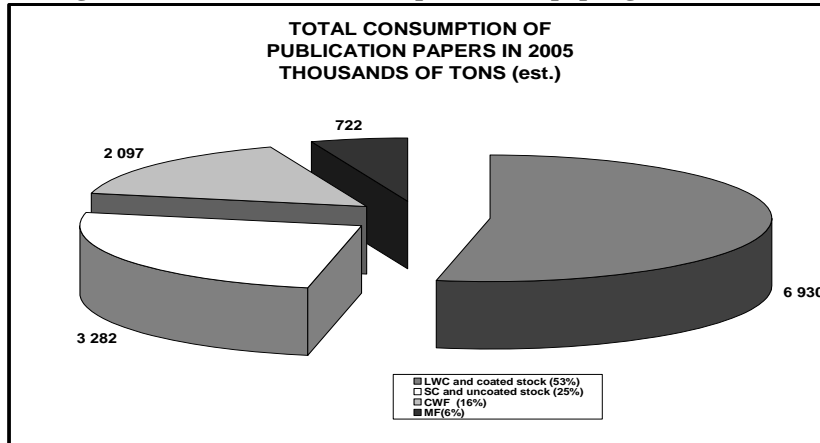


Source: ERA 1985(corrected)

During deliberations with Cepifine (see list of references), it was found that a volume of wood-free coated (WFC) grades used in heat-set web-offset has not been included in the previous statistics. Further, the previously estimated volume of SC grades shown was actually higher than the capacity available in the European mills. Hence, the consumption of SC grades in 1985 has been reduced, and WFC grades have been added correspondingly. Cepifine and Cepiprint started their collection of paper data in 1991, and for earlier years, such as 1984, the only reliable source is the corrected ERA statistics, Figure 1 – corrected volume of publication paper in 1985 (ERA 1985).

The growth in paper consumption for publication printing (including improved Newsprint or Machine Finished grades) has been quite substantial. The annual growth has been about 3.4% (compound) between 1984 and 2006, i.e. for 19 consecutive years. The data for 2005, Figure 2, has been validated by Cepifine and Cepiprint, two organizations within the European paper industry responsible on a monthly basis for collecting statistics from the members of the all production and deliveries of publication paper grades manufactured. The total deliveries to the European market in 2005 were 13 million tons.

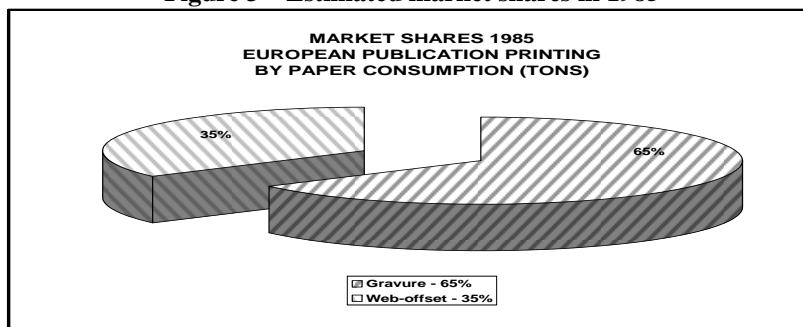
Figure 2 – Estimated volume of publication paper grades in 2005



Sources: Cefifine/ Cefiprint

In 1985, ERA estimated the relative market shares for gravure and web-offset, see Figure 3.

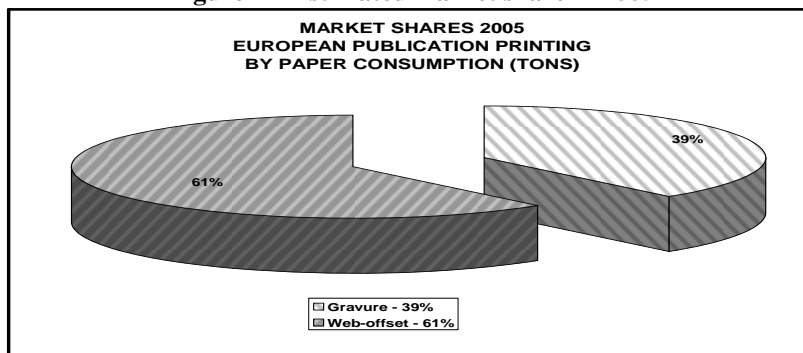
Figure 3 – Estimated market shares in 1985



Sources: ERA1985

The corresponding figures for 2005 are shown in Figure 4.

Figure 4 – Estimated market share in 2005



Sources: ERA, MAN-Roland

Aumiller (2005) has shown figures which are lower for gravure. The total paper consumption was rather close, but the suggested market share for gravure was as low as 35% in 2004.

However, there is another factor to be considered, namely the printed surface area. It has been suggested that the average grammage, particularly in gravure, has decreased, perhaps by 5-10%, since 1985. The reason is the rising costs of postage and transportation, hence the quest for lower grammage from publishers and print buyers (Birkenshaw and Smyth 2000). It is, nevertheless, almost impossible to obtain statistics about the actual paper surface area printed, hence, Figure 4 is a rough estimate. In another survey (Birkenshaw and Hart 2001), it was claimed that gravure, because of the erosion of market prices, has lost substantial market shares during the last decade.

Hence, from Figures 3 and 4, it can be calculated that the growth of the publication gravure market has been about 20% since 1985, and that the annual growth of gravure has been very small; about 1% since 1985. This is in contrast to the situation for commercial web-offset printing which has grown by about 200% during the same period of time, and where the annual volume has enjoyed a growth rate of 4.5%.

4.2 MAGAZINE PUBLISHERS

The magazine printing business is by far the largest customer segment for the European publication printers, and the volume is twice that of catalogue printing according to Hohol (2005). The performance of this sector is of the utmost importance for the future of publication printing, and in 2005 the volume is estimated to about 6 million tons of paper. There is no dramatic change in the blend of paper grades used in the publishing industry, although the SC uncoated grades seem to enjoy an above average growth. (Ibid. 2005). In 1987, ERA made an investigation in cooperation with those publishers who were integrated publisher/printer (in 1985 about 75% of all members), into the number of general interest titles vs. circulation in Europe, Table 1, above 100 000 copies (ERA List of Members 1985).

Table 1 shows that the major markets for general interest magazines were Germany, France, Italy and the Netherlands. It is, however, interesting to note, that in the Nordic countries the majority of the titles, despite the low circulations, were printed in gravure. The situation in the UK was quite the contrary where most titles, even those above 500 000 copies, were printed in heat-set web-offset.

Table 1 – Magazines in European markets (number of titles) in 1987

Market/ Circulation	100-200 000	200-300 000	300-400 000	400-500 000	> 500 000	Total
Germany	6	12	9	9	38	74
France	18	15	11	6	13	63
UK	12	8	5	0	9	34
Italy	3	6	5	5	8	27
The Netherlands	10	4	2	3	6	25
Sweden	14	3	3	0	1	21
Norway	3	2	2	0	0	7
Finland	9	2	2	0	0	13
Denmark	7	2	2	0	0	11
Total	82	54	41	23	75	275
Percentage (%)	30 %	20 %	15 %	8 %	27 %	100 %

Source: ERA 1987

Today, the European publishing business is very fragmented, and there are about 50 000 different titles in Europe, of which 17 000 are consumer magazines, 10 000 customer magazines and 22 000 B2B magazines (FIPP – Federation International de Presse Periodique 2005), but most of them are very small. FIPP produces a user manual (World of Magazine Trends) each year which shows for each country the number of titles in each segment (Ibid. 2005).

Table 2 - Magazines in European markets (number of titles) in 2005

Market/ Circulation	100-200 000	200-300 000	300-400 000	400-500 000	> 500 000	Total
Finland	14	6	1	0	5	26
France	11	7	8	11	19	56
Germany	9	8	1	3	35	56
Italy	6	6	10	4	16	42
The Netherlands	19	6	2	3	3	33
Norway	14	1	1	1	0	17
Denmark	6	2	1	0	0	9
Sweden	19	10	2	0	7	38
UK	14	4	4	3	17	42
Total	112	50	30	25	102	319
Percentage (%)	35 %	16 %	9 %	8 %	32 %	100 %

Source: FIPP World Magazine Trends 2005/2006

Table 2 shows that number of titles above 100 000 copies has grown by 16%, but the number of titles in each size segment remains about the same as in 1987 except for those titles with a circulation between 100-200 000 copies and 500 000 copies respectively. The last segment has grown with 30%, and more than 50% of the paper consumption is in this segment, which should be advantageous for gravure printers.

In 2005, FIPP published a list of the types of magazine titles belonging to each segment, Table 3.

Table 3 – Titles by segment in 2005

Segments/ Circulation	100-200 000	200-300 000	300-400 000	400-500 000	> 500 000	Total	Perc. (%)
Women's Magazines	22	8	4	10	21	65	20 %
TV Guides	11	10	6	5	27	59	18 %
General Interest	9	10	6	2	18	45	14 %
Consumer special	23	7	9	5	16	60	19 %
B2B/trade	21	1	2	1	0	25	8 %
Financial	19	5	2	1	3	30	9 %
Mens Magazines	7	9	1	1	6	24	8 %
Contract publications	0	0	0	0	11	11	3 %
Total by segments	112	50	30	25	102	319	100 %

Source: FIPP World Magazine Trends 2005/2006

Table 3 shows some interesting facts, but unfortunately it is not possible to do the same detailed analysis for 1987, because FIPP did not gather data about titles until some years later. Most of the segments shown in Table 3 existed in 1987. Television was deregulated by the EU about in the middle of the 1990's, and earlier there were only a few titles in each country. Today, the situation is different, and this segment has almost 20% of all titles larger than 100 000 copies. These titles also enjoy large circulations, 45% of the titles (i.e. 27 out of 59) are larger than 500 000 copies, and these can be found in France, Germany, the Netherlands and the UK. Contract publications are all above 500 000 copies, and the largest geographical markets are the Nordic countries and Switzerland. According to Hohol (2005), the five largest segments account for about 80% of the total paper consumption in 2005.

During the autumn/winter 2006/2007, a questionnaire was distributed to a six European publishers, some of them ERA Members, with a response rate of 83%, with the following question:

- 1) How do you evaluate the present situation in the European publishing markets?

There were some different opinions, but the most common answers were:

- a) all publishers have a digital agenda
- b) the brand is the main issue
- c) business around the brand is increasing, whilst the core product – the magazine – will be relatively less important in the future
- d) the large titles are declining, but the number of niche titles are growing rapidly
- e) the printing market is very competitive, squeeze on prices and lead times
- f) retail sales are sluggish because the points of sale are fewer and fewer (impact from large retail chains)
- g) cost of distribution is an area of great concern, particularly postal rates

In addition to this general open question, a number of questions with multiple choice answers were asked. Table 4 shows a summary of the answers given.

Table 4 – Summary of the answers from the publishers

What factors do you contribute to the growth of periodical products?			
Questions	Not likely	Do not know	Likely
<i>Ease of creating new titles</i>	40 %		60 %
<i>Steady growth of revenues</i>	40 %		60 %
<i>Lower cost of printing</i>	60 %		40 %
<i>Logistics easier and simplified</i>	80 %		20 %
<i>Editors are more creative</i>			100 %
If you compare volume - pages and editions - in 1986 with today?			
	More	Same	Less
<i>Do you produce</i>	60 %		40 %
What is the main reason for choosing a particular printing method?			
<i>Price</i>	100 %		
<i>Lead-time</i>	80 %		
<i>Print quality</i>	80 %		
<i>Print run</i>	80 %		
How do you confront the future?			
<i>Will the printed product be your prime source of income</i>	100 %		
<i>Will you be leaning more towards on-line services</i>	100 %		
What are the prime factors confronting print media in the future?			
<i>Not flexible enough</i>	80 %		
<i>Not cost efficient enough</i>	80 %		
<i>Younger generation is not used to read</i>	60 %		
<i>Cost of distribution</i>	60 %		
<i>Environmental issues</i>	60 %		

The answers in Table 4 are consistent with the results of other investigations into the behaviour of publishers, such as Birkenshaw and Hart (2001) and Hohol (2005). Publishers are more concerned about distribution costs than the print production costs, and the decrease in manufacturing costs (Paper V) seems to be taken as a Law of Nature. The changes in distribution economics have, however, created new problems of great concern lately, warns Hohol (Ibid. 2005); viz.:

- Losing retail points of sale,
- The supermarket chains are increasing the number of warehouses (they demand a higher part of the sales revenues)
- Increases in postal rates for the subscribed circulation
- New environmental legislation
- Imposed taxes on logistics, i.e. increasing the cost of distribution
- and, last but not least, the changing habits of reading, in particular those of the younger generation.

The competition for people's time from electronic media is of great concern, as well as the advertiser's changing perceptions of where their client's budget is most efficient. Price Waterhouse Coopers say that the largest spenders among advertisers and readers are found in France (€6.5 billion), the UK (€5.6 billion), Germany (€4.5 billion) and Italy (€4.2 billion) which is cited by Hohol (Ibid. 2005). These four countries accounted for almost 75% of all revenues in Europe in 2005 (total about €28.5 billion). However, it is not unlikely that the German statistics is showing lower numbers than it normally would do, because of the recession in the magazine market in the beginning of the millennium.

The respondents to the questionnaire suggested that the current trends in magazine publications are:

- The brand is part of the core business
- Volumes (of larger magazines) slowly declining, versioning and targeting of products
- Growing volatility in purchasing patterns
- Growing threat from electronic media and the use of the Internet
- Increasing awareness of environmental issues related to print (and paper supply)
- Logistics – paper transport from the mill and transportation of the finished product to the retailers/subscribers.
- Costs of distribution and postal rates are growing
- The push towards lower grammage grades will continue
- Publishers (and advertisers) demand ever shorter lead-times from their printers

In the forecast presented by Hohol (2005), the total annual volume of paper is expected to be close to 8 million tons in 2014. The volume of print will probably show a small to modest growth rate, but the increasing number of

titles will lead to shorter and more fragmented print runs (Ibid.) Time to market will increase in importance, and this will add to the pressure to decrease the lead-time from the time when the digital files are supplied until the products are available for sale at the retailer (Birkenshaw and Hart 2001).

The advantage for the printer, however, is that the production process repeats itself at regular intervals. This makes a tight integration between customer/printer necessary but not sufficient for a smooth production. The printer has to deliver the best service, excellent quality, short lead-time to the more demanding customer, who is not willing to pay a premium price. Nevertheless, these market conditions will put both paper-makers and printers under pressure. How do you as a gravure printer handle shorter and fragmented runs under such market conditions? The very wide gravure presses may not be flexible enough for such conditions.

One of the top priorities, which was not covered extensively in the questionnaire for the publishers, is the environmental issue. The environmental questions related to the paper supply are one of the top priorities of all large publishers, who have been pushed by the increased awareness of general public opinion. Almost all the major publishers have the pronounced target that all future paper supplies shall come from certified forests and/or other certified sources of fibres. This is stated on all web-sites of the respondents and also from FIPP (Annual Report 2005/2006).

On the other hand, when it comes to the printers, the concerns are not as strong as with the paper supplies. Nevertheless, FIPP recommends that publishers should use printers having either ISO 14001 or EMAS (European Eco Management and Audit Scheme) schemes. It should be noted here that one of the strongest proponents for the use of toluene in publication gravure is the German association of periodical publishers (Verband Deutsche Zeitschriftenverleger - VDZ). The organization was very active when the Eco-label for printed matter was discussed (VDZ 2004).

Another attitude related to the printers can be found in France, where the largest publisher – Hachette Filipacchi with a paper consumption in newsprint and magazine paper grades of about 450 000 tons – has a very stringent regulation for its contracted printers and paper suppliers (Reference Document 2005). Similar opinions are voiced in e.g. (Parritt cited in FIPP Annual Report 2005/2006), *“Print and paper is an industry with real potential for sustainable development.”* *“Magazines themselves can contribute to sustainable development as they are powerful influencers and beneficial to improving literacy and to learning.”*

Another publisher insists that paper manufacturers must be prepared to meet stringent environmental requirements: *“.... our future relationship with paper companies will be characterized by compliance with very rigorous environmental standards. This will likely be the most important issue for us and other magazine publishers in the coming decade.”* (an anonymous publisher cited in Hohol 2005, page 68).

4.3 THE EUROPEAN CATALOGUE MARKETS

The second largest customer category in publication printing is the catalogue producers, mainly of mail-order catalogues (or so called Remote Distance Sellers producers). Hohol (Ibid.) writes that this segment had a projected paper consumption of 2.9-3.0 million tons of paper in 2006 (Ibid.). There are about 2 000 companies active in this segment in Europe according to EMOTA (European Mail Order and Trade Association - now renamed to the European Association of Distance Selling). The five largest companies have an estimated paper consumption of about 1 million tons annually, which is about 35-40% of the total consumption in this segment (Ibid. 2005).

Companies	Sales
• Argos (Great Britain)	€5.0 billion
• Quelle/Karstadt (Germany)	€ 3.0 billion
• Neckermann.de (Germany)	€ 1.5 billion
• Redcats Group (France)	€ 4.3 billion
• Otto Versand (Germany)	€14.6 billion
• IKEA Inter (Sweden)	> €17.5 billion (no official figure available)

The recent sales figures have been taken from the corporate web sites. These companies, except for Argos which is working only in the British islands, are much diversified. This segment can be divided into: a) those that are in the traditional mail-order business and b) those companies which are using the catalogue as a marketing tool for pulling the customers into their stores (e.g. IKEA and Argos).

During the autumn/winter 2006/2007, a questionnaire was distributed to four of those companies with the following question:

- 1) How do you evaluate the present situation in the European mail order market?

There were some different opinions, but the common answers were:

- a. All catalogue producers have a digital agenda
- b. Tough market with pressure on prices
- c. Smaller sizes and lower grammage because of postal and distribution costs
- d. The printing market is very competitive, squeeze on prices and lead times
- e. Not one thick catalogue, but many more frequent and thinner
- f. Neckermann.de seems to move from catalogue and inserts to the Web only

In addition to this general open question, a number of questions with multiple choice answers were asked and Table 5 summarizes the answers given.

Table 5 – Summary of the answers from the mail order producers

What factors do you contribute to the growth of catalogues?			
Questions	Not likely	Do not know	Likely
<i>Ease of creating new titles</i>	50 %		50 %
<i>Steady growth of revenues</i>	33 %		67 %
<i>Lower cost of printing</i>	33 %		67 %
<i>Logistics easier and simplified</i>	67 %		33 %
<i>Editors are more creative</i>	50 %		50 %
If you compare volume - pages and editions - in 1986 with today?			
	More	Same	Less
<i>Titles</i>	100 %		
<i>Pages</i>	67 %	33 %	
<i>Special catalogues</i>	100 %		
What is the main reason for choosing a particular printing method?			
<i>Price</i>		67 %	
<i>Print quality</i>		67 %	
<i>Printed volume</i>		67 %	
<i>Paper (SC)</i>		67 %	
How do you confront the future?			
<i>Will the printed product be your prime source of income?</i>		50 %	
<i>Will you be leaning more towards on-line services?</i>		67 %	
What are the prime factors confronting print media in the future?			
<i>Not flexible enough</i>		50 %	
<i>Not cost efficient enough</i>		50 %	
<i>Cost of distribution</i>		67 %	
<i>Environmental issues</i>		50 %	

The strategic issues for these companies are very much the same as those for the magazine publishers. The Internet has become a business driver during the last few years, and some producers have already announced that they will reduce their catalogue volumes during the next few years (Gutschi 2006). The traditional mail order catalogue producers regard the Internet as the new sales channel complementing the more traditional telephone or orders by regular mail.

Other companies use the catalogue as a vehicle for attracting the customers into their warehouses and/or shops. For these companies, telephone sales and/or sales by the net still account for very small numbers. The companies are growing with new outlets, which mean that the volume of printed catalogues is also growing.

One example is IKEA which is the most fast growing of all. IKEA plans to open 25-30 new warehouses every year. Even if the major part of those is outside Europe, most of the catalogues are still printed in Europe, except for the North American and some of the Far Eastern editions (2006 Fact and Figures).

One of the larger German producers is more specific about the future of printed catalogues. In a recent article (Gutschi 2006), the managing director says that the era of a few very thick catalogues is over. He will reduce the printing budget by 2/3 by 2008, and there will be more frequent but much thinner products. The average print run will be considerably smaller, because the new versions will be sent only to those who have earlier shown an interest in a particular assortment. The other giant in the mail order business in Germany, Quelle, announced on the 28th of November 2006 that starting in 2007 the catalogues for clothing and other trend-sensitive products will be published monthly.

One common concern, however, is the environment. Although not specifically mentioned in the questionnaire (only indirectly), it is considered to be of utmost importance. All the major players, purchasing about 1 million tons of paper every year, have imposed strict control of the origin of the virgin fibres. One example is Otto Versand who claims that a reduction of the format has reduced the paper consumption by 1 150 tons of paper, which is about 3.6% of the total consumption of 320 000 tons annually. All paper grades used are chlorine-free, and also here there have been discussions about FSC-certified (Forest Stewardship Council – a scheme for sustainable managed forests (there are no FCF-certified forests in either Finland or Germany) sources of fibres. It is claimed, however, that they did not find the quantities nor qualities of FSC certified grades needed (Otto Versand Annual Report 2005). In 2006, WWF claimed that Otto Versand printed the first gravure produced catalogue with FSC-certified grades (www.fsc.org).

For the gravure printers there are stringent rules about residual solvents (toluene) in the catalogues, and catalogue producers are more concerned about this than magazine publishers. One reason is said to be that a magazine has a shorter shelf life than a catalogue, and that makes it more susceptible to a possible aromatic smell. Otto Versand (Ibid. 2005) says that regular measurements have been carried out since 1997, and that the level has been reduced significantly.

In the ERA Newsletter (Gravure News 2006, p. 11), it was stated that:
“...have to constantly update their products. This will affect catalogues; instead of the main catalogue, more segmented and more frequent catalogues.....” *“The growth in the mail order business is no longer driven by the classic catalogue, since the share of ecommerce has reached more than one third.”* A quote from Sommer, member of the executive board of Karstadt/Quelle: *“The mail order houses have underestimated the effects of the new technologies, as Internet on their*

business” ----“And the catalogue will more support the Internet as the link between customer and web”

EMOTA (2007) states that these companies are promoting the Internet as the prime channel for sales, and that in some cases these sales are more than 50% of the total sales. The traditional catalogue has the disadvantage of long lead-times; and fast moving consumer goods, like fashion and electronics, have a short shelf life. Hence, the responses suggest that the catalogues will be much thinner, more frequent and more targeted in the near future. The same pattern as in magazine publishing will influence the publication printers directly:

- Volumes (of larger catalogues) are slowly declining
- Versioning and targeting of catalogues
- Growing volatility in purchasing patterns
- Growing threat from electronic media and the use of the Internet
- The number of special catalogues is growing
- Time to market is crucial – shorter lead-times
- The trend towards lower grammage is continuing

With shorter runs and more fragmented volumes, the present gravure technology may not be fast enough or flexible enough for these market conditions.

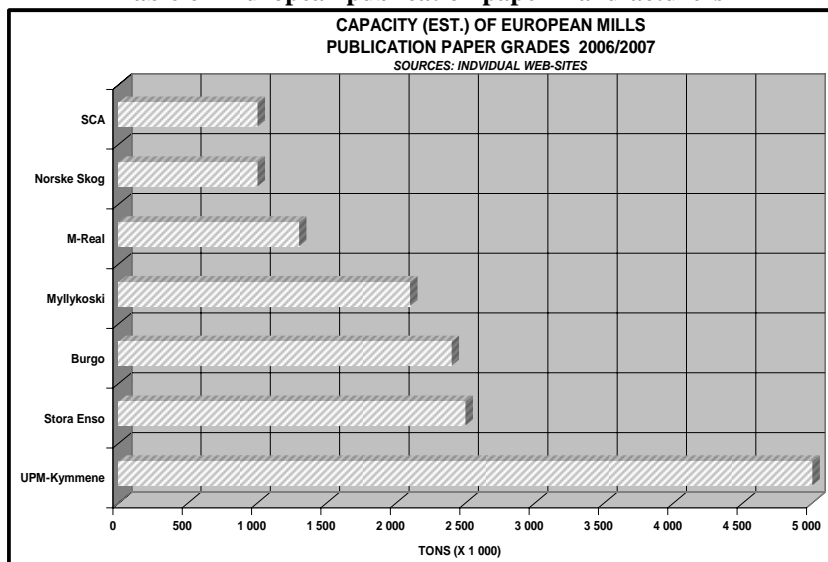
4.4 PAPER SUPPLIERS

One driver in the consolidation process in the paper industry has been economy of scale. If investment in super-wide gravure presses has been impressive, the recent investments in paper machines are more than twice the widths of those presses and more than 10 times more expensive. A new paper machine normally replaces 2-3 older ones, which is the case with the new PM 12 in Kvarnsveden, Sweden, a mill belonging to Stora Enso, with a capacity of 420 000 tons of SC magazine grades. The total investment is in the order of €400 million (Stora Enso 2006).

In 2006, the segments of publication paper grades (wood-containing paper grades with the exception of newsprint and directory grades), the companies shown in Table 6 are dominating in the European markets (corporate web sites 2006/2007). In this table, the total capacity is about 15 million tons in 2006/2007, although the demand is only estimated to be 14 million tons (Hohol 2005).

All the paper mills support forest certification schemes, chains of custody and/or environmental auditing. The first SC paper mill – UPM SC mill in Schongau, Germany - was recently awarded the Eco-label for publication paper grades (UPM Eco). The requirements from magazine publishers and catalogue producers for sustainable work practices in the paper processing chain are increasing, and it is expected that all paper-makers will soon adhere to both Forest Certification Scheme and an Environmental Auditing Scheme.

Table 6 – European publication paper manufacturers



Sources: individual corporate web sites

During the autumn/winter 2006/2007, a questionnaire was distributed to six of the major European producers of publication paper grades, with a response rate of 50%, with the following questions:

1) How do you evaluate the present situation in the European publication printing market?

The paper mills all have similar market conditions, and their answers were quite similar:

- a) Low growth to stagnant markets in publication gravure
- b) Paper prices under severe pressure despite higher costs for fibre and energy
- c) SC is making fine progress in printability and is approaching LWC

2) What are the top 5 technical issues/solutions in your opinion with the greatest impact during the last five years?

- a) Wider reels (< 3.6 m) in high speeds needs further development in manufacturing and logistics
- b) Printability and ink behaviour on MF grades
- c) Surface gradients on SC paper
- d) Colour profiles and management must be adapted to the paper grades (learning curve)

- e) Larger reel diameters in HSWO market (from 1.25 to 1.5 m in diameter)
- 3) What are the most important issues in the next five years? Which are the five top issues?
- a) Higher process stability in the mills
 - b) Higher efficiency in the mills
 - c) Lower waste in the press room (= less breaks and less paper-related waste)
 - d) Environmental issues (sustainable forests and custody chains of fibres)
 - e) Help publishers/advertisers/catalogue producers to find the right paper grade for the application
- 4) What are the important threats to the publication printing industry during the coming years?
- a) Energy costs in the paper industry
 - b) Energy costs for logistics (still cheap to transport paper)
 - c) Legislation about environmental issues
 - d) Offset is gaining in flexibility – gravure must maintain the quality difference between gravure and web-offset
 - e) Gravure developments in the emerging markets

In addition to these general open questions, a number of questions with multiple choice answers were asked, and Table 6 summarizes the answers given .

Table 6 – Summary of the answers from the paper manufacturers

Do you think that further reductions in the costs of printing are possible?			
Questions	Not likely	Do not know	Likely
<i>Are further reductions to be expected?</i>	33%		67 %
<i>Have we come close to the end of what is achievable</i>	67 %		33 %
Other techno/economical issues			
Questions	Not likely	Do not know	Likely
<i>Is it likely with paper reels wider than 480 – 490 cm</i>	100%		
<i>Trend to lower grades are continuing</i>			100 %
<i>Is it possible to eliminate waviness in heat-set</i>	100 %		
<i>New drying concepts in gravure?</i>	67%		33%
<i>New drying concepts in heat-set</i>	67%		33%

It should, however, be noted that MF (machine-finished improved newsprint) is expected to have a rapid growth in the next few years, because many print buyers are expected to downgrade their paper for economic reasons. The achievable print quality on MF grades is acceptable for some products (Scott 2006, Hohol 2006), but adaptive actions in both gradations and ink

manufacturing (special extender) are needed. It is not possible to achieve a similar quality using heat-set web-offset

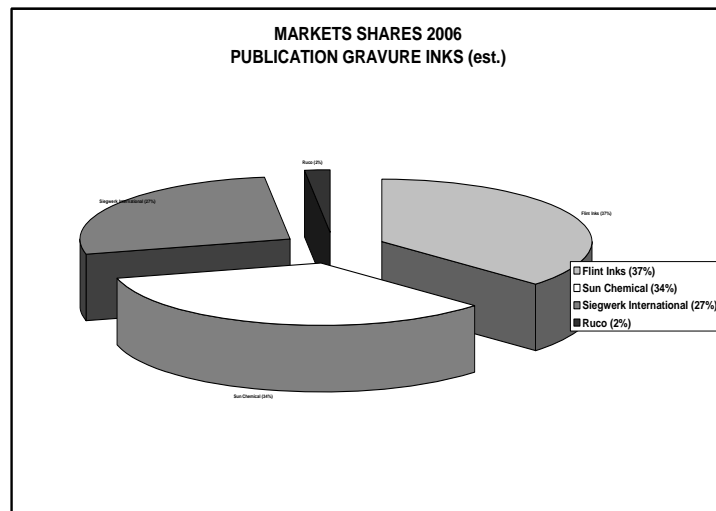
4.5 INK SUPPLIERS

Gravure inks are an important part of high quality publication gravure printing. Although it is debatable whether economy of scale applies in the manufacturing of inks, there are considerable advantages in R&D of being a large company. There have been many mergers and acquisitions in the ink making industry according to Ink World Magazine (2006) and EMOC (Anon. 2003).

1999	Sun Chemical buys Coates Lorilluex, France
2002	Acquisition of Gebrüder Schmidt in Germany by Flint Inks., US.
2004	Merger of BASF printing inks and Akzo Nobel Inks (the new company called XYZ Solutions)
2005	Merger of Flint Inks and XYZ Solutions
2006	Acquisition of Sicpa Inks by Siegwirk International

In the European publication markets, there are three major and one minor supplier only (Source: World Magazine 2006), Figure 5.

Figure 5 – Publication gravure ink market:



Source: Ink World Magazine 2006

During the autumn/winter 2006/2007, a Questionnaire was distributed to the three major European producers of publication inks, with 100% response rate, with the following questions:

1) How do you evaluate the present situation in the European publication printing market?

The answers were very much the same as for the papermakers, e.g. growing concern about the publication printing markets:

- a) Low growth to stagnant markets in publication gravure
- b) Ink prices under severe pressure despite higher costs for raw materials and energy
- c) Ink over-capacity

2) What are the top 5 technical issues/solutions in your opinion with the greatest impact during the last five years?

- a) Printability and ink behaviour on MF grades
- b) Improved ink mileage
- c) Even printability on SC paper
- d) Universal extender for high quality independent on paper grade (MF/SC and/or LWC)
- e) Missing dots

3) What are the most important issues in the next five years? Which are the five top issues?

- a) EU restrictions on the use of toluene
- b) Pressure from print buyers transferred to the ink market
- c) Pressure from increased web-offset capacity
- d) Securing raw materials for publication inks
- e) Is paper quality decreasing?

4) What are the important threats to the publication printing industry during the coming years?

- a) EU legislation – environmental issues and chromium
- b) Increasing costs of raw materials
- c) Uncertain future in catalogue printing
- d) Competition with heat-set and cold-set web-offset
- f) Lack of workers skills

In addition to these general open questions, a number of questions with multiple choice answers were asked, and Table 7 summarizes the answers given.

Table 7 – Summary of the answers from the ink manufacturers

Do you think that further reductions in the costs of printing are possible?			
Questions	Not likely	Do not know	Likely
<i>Are further reductions to be expected?</i>			100 %

<i>Have we come close to the end of what is achievable</i>	67 %	33 %	
Other techno/economical issues			
Questions	Not likely	Do not know	Likely
<i>Are other solvents than toluene feasible</i>	33%	33%	33%
<i>New drying concepts in heat-set web-offset</i>	100 %		
<i>Is it possible to eliminate waviness in heat-set</i>	100 %		
<i>Same ink (same colour scale) to all gravure printers?</i>	100 %		
<i>ISO standards will not differentiate between gravure and web-offset</i>	100%		
<i>Will a new standard enhance the gravure gamut</i>	100%		
<i>Other colour spaces than CIE lab</i>	100%		

The ink makers have very much the same opinion with the exception of the use of toluene as the main solvent in publication gravure. In almost all other questions they have the same opinion, e.g.

- Heat-set drying will continue in web-offset
- Waviness will be difficult to eliminate in web-offset
- The colour space will remain CIE lab
- Ink supplied will comply to the ISO standard

Since the middle of the 1990's, the activities in the ERA Environmental, Health and Safety (EHS) Commission have been devoted more or less to environmental issues only, and when the toluene problem became acute, ERA commissioned a Special Task Force to deal with the matter (Source: ERA EH&S Commission).

- Finding alternatives and/or substitutes for toluene as solvent
- Development of water-based inks (print quality not yet commercially acceptable) – some patents on water-based inks have been filed
- Development of substitutes for solvent-based inks (e.g. Hot Tec ink - solid inks without solvent, the solid was made liquid by heat - was developed by Siegwirk International until 2000)
- Developing solvents with a low residual content in the finished products (the Danish example, but also demands from customers – ref. previous section 4.2 and 4.3)

There have been many attempts to replace toluene as the primary solvent in publication gravure. Up to the end of the 1970's in some countries, i.e. in the UK, France and the US, toluene was not readily accepted and other aliphatic (a blend of various derivatives from petrol) solvents were used. Toluene became acceptable when modern solvent-recovery systems were developed which limited the toluene emissions to the air to about 4-6%. With such high recovery rates, the investment in modern solvent-recovery systems was

relatively easy to amortize, and toluene was readily accepted in those countries. A superior print quality in publication gravure is said to be achieved by using toluene-based inks.

In 2004, however, a US petrol company announced that a solvent based on tertiary-butyl-acetate (TBACTM) for use in publication gravure was registered with the US authorities (Lyondell Chemical Co 2004). Although initial tests verified the claims that this solvent was exempt from the US definitions of VOC (Volatile Organic Compound) and HAP (Hazardous Air Pollutant), there has been no further publicity. One ink maker claimed that the first attempts to produce a black ink failed, because the standard resins were not compatible with the new solvent. It was also suggested that the cost was prohibitive and about three times the standard cost for toluene. Hence, the work to find a substitute for toluene (aromatic) solvent-based inks goes on.

4.6 PREPRESS AND PRINTING FORM PREPARATION – THE DIGITAL WORKFLOW

Work-flow solutions for the printing industry are currently based on technologies developed by Adobe Inc. Both the PDF and the JDF technologies have been licensed to third parties by Adobe which enjoys a near monopoly situation in this market (Bjurstedt 2005). In the printing industry there are only three global companies which can offer a total business concept; selling equipment, software and materials for the printing industry, Kodak, Agfa and Fuji Film (EMOC 2003).

In the past, all three were the leading suppliers of graphic film to the printing industry but they have managed, nevertheless, to move their business from analogue to digital technologies (including electronic equipment) during the last 10 years. The focus of the business for Agfa and Fuji are Europe and East Asia respectively, and that they and Kodak have in effect split the world market into three geographical markets, even though they each have a global presence (EMOC 2003).

During the autumn/winter 2006/2007, a questionnaire was distributed to three of these companies in the prepress sector, with 100% response rate, with the following questions:

1) How do you evaluate the present situation in the European publication printing market?

In this case the answers were very similar between the companies:

- a) The European markets is stagnant with very little growth
- b) Pressure on prices – digital plates in particular – market price incl. chemistry to-day is about 8-10 €/m²
- c) CTP (Computer to Plate) is mature technology – in the 3rd generation of equipment

- d) Overcapacity in print pushes the prices in prepress down
 - e) Increased demand for value added services
- 2) What are the top 5 technical issues/solutions in your opinion with the greatest impact during the last five years?
- a) Workflow solutions (handling of digital files etc.)
 - b) Improved CTP solutions
 - c) Development of thermal plates
 - d) Digital proofing (inkjet technology)
 - e) Digital photography
- 3) What are the most important issues in the next five years? Which are the five top issues?
- a) Unified workflow solutions
 - b) Process-less plates also for long runs
 - c) Error-tolerant processes – find and correct automatically
 - d) Ink jet technologies for applications in large format offset and/or screen
 - e) Think globally and act locally
- 4) What are the important threats to the publication printing industry during the coming years?
- a) Less printing because of customized and targeted logistics of printed matter
 - b) Internet and e-commerce – an opportunity or threat?
 - c) Many and smaller titles – demand tight integration
 - d) Fear – resistance to change is the greatest threat to the industry
 - e) Inability to provide visions and associated value added services

In addition to these general open questions, a number of questions with multiple choice answers were asked, and Table 8 summarizes the answers given.

Table 8 – Summary of the answers from the prepress manufacturers

Do you think that further reductions in the costs of printing are possible?			
Questions	Not likely	Do not know	Likely
<i>Are further reductions to be expected?</i>	33%		67 %
<i>Have we come close to the end of what is achievable</i>	67 %		33 %
Other techno/economical issues			
Questions	Not likely	Do not know	Likely
<i>A break-through for processing of lithographic plates</i>	100%		

<i>Is aluminium the material of choice?</i>			100 %
<i>Is it likely to expose plates directly in the press?</i>	33 %	33 %	33 %
<i>Is it likely to sell CTP techno-logy in sizes of 2.5 x 1.5 m²</i>			100 %

4.7 GRAVURE CYLINDER ENGRAVING SOLUTIONS

If there are three major players in the lithographic prepress market, there are only two in gravure prepress - engraving, plating and cylinder logistics equipment – Dätwyler AG in Switzerland and the Max Ried group. The latter group includes Walter plating systems for gravure cylinders, Bauer for cylinder storage and logistics and Hell Gravure Systems for cylinder engraving equipment. In 2004 Kodak acquired Creo Inc., one the largest companies of CTP plate setters. Nevertheless, at Drupa 2004, Creo displayed a cylinder processing project called the Exactus. After the exhibition, the equipment was installed at a large publication gravure printer in the US. The project was a failure, and the equipment installed has been dismantled and withdrawn.

During the autumn/winter 2006/2007, a questionnaire was distributed to these two companies, with 100% response, with the following questions:

1) How do you evaluate the present situation in the European publication printing market?

In this case the answers were very similar:

- a) The European markets for publication gravure cylinder equipment is very small in comparison with the packing markets
- b) Strong growth in web-offset – lower margins for gravure printers
- c) Consolidation of gravure printers
- d) Growing overcapacity
- e) We are following our customers very closely – we understand their needs

2) What are the top 5 technical issues/solutions in your opinion with the greatest impact during the last five years?

- a) Work-flow solutions (handling of digital files etc.)
- b) Full automation in cylinder plating systems (Cu-, Cr- and Zn-plating)
- c) Standardisation of data file formats
- d) Fully automated K6 mechanical engravers
- e) Direct Laser technology for gravure

3) What are the most important issues in the next five years?
Which are the five top issues?

- a) Fewer steps in cylinder processing and improved text/LW
- b) Faster turn-around and shorter lead-times
- c) Further reduction of costs – to improve the competitiveness of gravure
- d) Some German gravure printers are aiming at 40 €/m² for cylinders whilst web-offset plates are around 30 €/m².
- e) Many gravure printers have mechanical engravers > 20 years old, needs modernization

4) What are the most important threats to the publication printing industry during the coming years?

- a) Low or no growth of printed matter
- b) Further reduction of costs in the prepress
- c) Not able to increase flexibility for certain demands
- d) High costs for materials – paper and ink
- e) Inability to reduce costs to stay competitive

In addition to these general open questions, a number of questions with multiple choice answers were asked, and Table 9 summarizes the answers given.

Table 9 – Summary of the answers from the prepress manufacturers

Do you think that further reductions the costs of printing are possible?			
Questions	Not likely	Do not know	Likely
<i>Are further reductions to be expected?</i>			100 %
<i>Have we come close to the end of what is achievable</i>	100 %		
Other techno/economical issues			
Questions	Not likely	Do not know	Likely
<i>A break-through for processing of gravure cylinders?</i>			100%
<i>Break- through of other materials?</i>		50%	50 %
<i>Break- through of other materials like Zn?</i>	50 %		50 %
<i>Break- through of other materials like epoxy?</i>		50 %	50 %
<i>Break- through of other metals?</i>	100 %		
<i>Break- through of laser?</i>	50%		50%
<i>Mechanical engraving still dominating?</i>			100%
<i>New calibration systems in mechanical engraving?</i>	50%		50%
<i>Is likely to introduce another colour space?</i>	50%	50%	
<i>Is it likely that a transparent tracking system will be introduced?</i>			100%

It is striking that these two competitors have diametrically different opinions about a few fundamental issues in the area of cylinder processing. The one offering Direct Laser engraving systems on zinc cylinder surface expects that laser technology will have a break-through in the minds of publication

gravure printers. The other company, on the other hand, does not believe in laser technology, and states that the mechanical engraving systems have not yet reached their potential. Both would, however, very much like to see further investment in the area in order to modernize the ageing equipment. It seems from the comments from Germany that the German publication printers are feeling the competition from heat-set web-offset and trying to lower the unit costs of gravure cylinders.

4.8 PUBLICATION PRESS MANUFACTURERS

There are only two competitors manufacturing publication gravure printing presses, Koenig & Bauer (with its Albert Frankenthal division (KBA)) in Germany and Officine Meccaniche Giovanni Cerutti SpA (Cerutti) in Italy. Since the middle of the 1980's, these two companies have had almost equal shares of the publication press market, but in the last two years – with the development of the very wide gravure presses (4.32m) – KBA has gained a slight advantage (Source: ERA List of Presses 2005). It should be noted that KBA does not manufacture only gravure presses, the division is also responsible for R&D and the manufacture of reel stands and folders for commercial presses, heat-set and semi-commercial newspaper presses, for the Koenig & Bauer group. Today, MAN-Roland is the largest manufacturer of web-offset presses.

During the autumn/winter 2006/2007, a questionnaire was distributed to these three companies manufacturing publication printing presses, with 100% response, with the following questions:

1) How do you evaluate the present situation in the European publication printing market?

In this case the answers were quite similar for all three respondents:

- a) Not many new orders in the order books
 - b) Strong investments during the last few years
 - c) Very little investments in publication gravure presses in France, Switzerland and the Nordic countries
- 2) What are the top 5 technical issues/solutions in your opinion with the greatest impact during the last five years?
- a) Wider webs – from 10 ribbons to 12-14, web-offset from 140 to 200 cm
 - b) Complete automation of the press
 - c) Presetting of formats (folders, ink etc.)
 - d) Automatic loading/unloading of plates/cylinders
 - e) Higher speeds
 - f) Reduction of waste

3) What are the most important issues in the next five years?
Which are the five top issues?

- a) Total press automation and control
- b) Faster turn-around and shorter lead-times
- c) Long grain folders with (limited variability) up to 70 000 copies/hr
- d) Tandem presses in web-offset - 2 x 32 p/2 x 48p makes 64/96 pages.
- e) Reduction of cylinder costs – survival of the process

4) What are the important threats to the publication printing industry during the coming years?

- a) Environmental and energy issues
- b) E-commerce and catalogues – will print survive?
- c) Consumer behaviour – will the young generation still read?
- d) What markets will print serve in the future? How about content?
- e) Overcapacity in the publication printing markets

In addition to these general open questions, a number of questions with multiple choice answers were asked, and Table 10 summarizes the answers given.

Table 10 – Summary of the answers from the press manufacturers

Do you think that further reductions in the costs of printing are possible?			
Questions	Not likely	Do not know	Likely
<i>Are further reductions to be expected?</i>	33%	33%	33%
Other techno/economical issues			
Questions	Not likely	Do not know	Likely
<i>Is it likely that web-offset can be designed for 2.5m width and cut-off < 900mm</i>	67 %		33%
<i>Is it likely that plates can be exposed in the press?</i>	67%		33%
<i>Is it likely that new drying concepts will be introduced in gravure?</i>	33%		67 %
<i>Is it likely that a gravure press can be designed for 5m widths?</i>		67 %	33 %
<i>Speed above 20 m/s?</i>		33 %	67 %
<i>New drying concepts in web-offset?</i>		33%	67%
<i>Is it likely that waviness can be eliminated in web-offset?</i>		100%	
<i>Is it likely that medium sized gravure presses will be a complement in some markets?</i>	33%		67%
<i>North America?</i>	33%		67%
<i>Japan?</i>	33%	33%	33%
<i>Asia?</i>	33%	33%	33%
<i>Smaller European markets?</i>		33%	67%

Table 10 shows some interesting diverging opinions among the press manufacturers. The point about new drying concepts for publication gravure presses has some other implications. Due to severe EU regulations concerning electronics, electrical and mechanical devices in hazardous environments, the so-called ATEX directives, the design of publication gravure presses is costly in relation to what would be the case if the industry were using inks which did not contain highly flammable solvents. One of the respondents believes that there would be many advantages if the industry could find a substitute which is neither classified according to the ATEX directives nor emitting volatile fugitive gases (VOC). A “green” gravure process could in combination with a medium-sized gravure press certainly make an impact on customers and the public, and open up completely new markets, in Asia, Japan, South America and the smaller countries in Europe.

5. CONCLUSIONS

From the responses in the interviews and the questionnaires it has become obvious that there are some factors which may have a profound effect on the future of the publication printing industry.

Although the forecast for European magazine publishing markets suggests a moderate growth, there are other factors to consider. Spending on media advertising will be one of the most important factors affecting future magazine publishing activities. The uncertainty is whether the future spending on advertising in periodical printed media will remain stable or quickly lose in relation to the electronic media such as Internet, Cable TV etc. Further, will printed matter keep its attractiveness to the general public or will reading habits decline? There are, nevertheless, from the responses and other investigations, such as (Hohol 2005) some factors which will affect the printers:

- The brand of a magazine is becoming more important than the printed product
- The growth of new titles is considerable, although these are typically small in circulation
- The large titles are losing in circulation
- Time-to-market is important – shortest possible lead time from the last editorial page until the first saleable copy at the retailers
- Targeting and versioning may become important also in Europe (as it has been for a long period of time in the US)

Similarly, the European catalogue markets are going through changes, from one extreme where the printed product will lose very much in importance to the other extreme where producers have the printed catalogue as their main marketing tool. The buying pattern and habits of the general public are of great importance, and these merits further research. Again, new emerging technologies from electronic media, the Internet etc, will most probably have an impact on consumer behaviour and their buying patterns. However, the

responses indicate that there are some important factors for the European printers to consider:

- The catalogues for the traditional mail order company will be more frequent but thinner. The era of a few but thick “directory” types is over
- Smaller, targeted special catalogues will grow
- Time-to-market will be important – special catalogues for fast consumer goods such as fashion, electronics must have a fast turn-around cycle

Both magazine publishing and catalogue markets will need to consider the following factors:

- The use of inexpensive grades and lower grammage will increase
- Awareness and demand for the use of environmental and energy-conserving paper grades will grow strongly
- The publication gravure and heat-set web-offset processes have to conform to the same environmental constraints as to those of the paper manufacturers

The notion that, due to changes in the media markets, the conditions for the European publishers and catalogue producers will change is supported by the results of this study. This will of course also affect the publication printers and, for their survival in a very competitive market, further adaptations and a very flexible attitude are mandatory. In terms of strategy, the publication printer needs to be both a cost leader and differentiated on the market. The major differentiation will most probably be in the value added services which are marketed and promoted to the customers. One example might be an intensified environmental effort with increased pressure for new “green” products from both ink and paper makers, such as finding substitutes for the present use of aromatic solvents in publication gravure printing.

Will new and emerging technologies, in press designs and in cylinder/plate processing, be among the solutions for the short-term survival of the publication printing industry? The responses from the manufacturers indicate that, although if it would be possible to design and install even wider presses in the future, there are other concerns which are more important for future demands from the printers. In order to be more efficient and productive, the printer will demand much higher up-time in the press room processes and, last but not least, the demand for ever more rapid change-overs to new jobs will continue. This is, of course, important if the circulations and/or versioning of magazines and catalogues lead to very frequent changes of pages and/or complete new jobs. This view is also supported by an article in the trade press by Klemm (2006), when he is reporting from the ERA Annual Meeting in Manchester 2006.

The constraint lies, implicitly, in that these new features are not easily to retrofit into existing presses. The publication gravure printers have always

been of using very old presses, slow and not very productive, rather than buying new more efficient presses. The technological developments in this segment have been rather slow, invisible and targeted to even wider and wider presses. One of the respondents suggested that one of the technical constraints when designing gravure presses is the compliance of EU ATEX explosion-proof rules. The additional costs to comply are said to be of the order of 20-25% of the total press, but there are other considerations, i.e. paper printed with water-based inks are notoriously difficult to de-ink in the recycling process (flexographic printed newsprint is one example).

In commercial web-offset, on the other hand, since 1994-95 new press design and press technology has been readily accepted, and new presses are being bought much more frequently. Since the millennium, about 40-50% of the press capacity in web-offset has been renewed, whilst in gravure the figure is probably less than 25% (Bjurstedt 2006).

While publication gravure printers were pioneers in going digital directly to the cylinders already in 1982-83, the lithographic technology was rather slow to catch up and was more than 10 years behind with CTP. In 2006, however, this technology is already in its 3rd generation of technological developments, whereas the basic mechanical cylinder engraving technology is more or less the same as in 1980, albeit many technical improvements have been implemented. One manufacturer commented “we know our customers very well and follow them closely”. It might be an example of marketing myopia, where the supplier is only watching his direct customer without taking notice of what changes are about to happen with his customer’s customer or even further along in the value chain.

Since 2000, however, direct laser engraving technology has been very successful in the packaging and speciality gravure markets, but it still has a limited success in the publication gravure markets. The constraints are basically in the perception and attitudes towards using another material (zinc rather than copper as image carrier) rather than the laser technology itself. It is to be expected, however, that, with the ever-increasing pressure from the customers for lower costs of cylinders and shorter turn-around, that these demands will undoubtedly be important factors in changing attitudes of some of the more conservative printers.

Hence, all publication printers need:

- To change their attitudes and accept new technology in cylinder processing
- To find new financial means to change their existing presses to the state of art technology.
- To improve the perception among customers of environment-friendly processes
- To realize that conservation of energy is a must for future competitiveness in relation to electronic media

Hence, the hypothesis that removing these techno-economical constraints will be one of the most important areas for the future survival of publication printing is supported.

Are we witnessing a new paradigm shift in the technology of producing magazines or catalogues? Is industry changing “*From a craft labour structure to an industrial process*”? Process re-engineering – how to integrate cylinder engraving (incl. chrome plating/finishing) with an automated press make-ready process to an automated press run – is a problem to address and solve. The aim of the production process is to produce a first saleable copy without manual intervention – faster than to-day and with less waste! The European publication gravure printing industry is not quite there yet, but new solutions in this direction is expected to be shown at the most important trade fair in the industry, the 2008 Drupa exhibition.

“The pioneers are breaking the ground and the settlers are moving in”

6. REFERENCES

1. Aumiller, J. 2005. *Web-offset in the European Magazine and Catalogue Market*. ERA Annual Meeting 2005, Amsterdam, Holland, 2005
2. Birkenshaw, J.W. and P.E. Hart. 2000. *PRIMA: The future of Print*. Pira International, Leatherhead, UK, 2000
3. Birkenshaw, J.W. and S. Smyth. 2001. *The impact of market and technology changes on publishers and printers*. Pira International, Leatherhead, UK, 2001
4. Bjurstedt, Anders 1986. *Gravure vs. web-offset – separating the facts from the myths*. Gravure Research Institute – Report No M-351, Fla., USA, 1986 Bjurstedt, A. 2005. *The European Publication Printing Industry. An industry of profound change*. Royal Institute of Technology. Stockholm. 2005
5. Bjurstedt, A. 2006. *Break-even analyses Gravure vs. web-offset. A new approach!* IARIGAI 33rd Research Conference, Leipzig, Germany
6. Bruhn Jensen, Klaus 2002. *A Handbook of media and communication research – Qualitative and Quantitative Methodologies*. Routledge, Taylor & Francis Group, New York
7. Cox, H, S. Mowatt and S. Young. 2005. “*Innovation and organisation in the UK magazine print publishing industry: a survey*”. *Global Business and Economics Review*, Vol. 7, No. 1, pp. 111-127. 2005
8. Cepiprint. 2006. *1990-2005 Demand and Supply Statistics*. Cepiprint, Brussels, 2006
9. Cepifine. 2006. *E-mail correspondence*. Cepifine, Brussels, 2006
10. *ERA Newsletter No. 165. Issue 2/2006*. European Rotogravure Association, Munich, Germany, 2006
11. Internal paper. *ERA Health, Environmental & Safety Commission*. European Rotogravure Association, Munich, Germany. 2006
12. ERA List of Members, European Rotogravure Association, Munich, Germany, 2006
13. ERA List of Members, European Rotogravure Association, Munich, Germany, 1987
14. ERA List of Presses, European Rotogravure Association, Munich, Germany, 1987
15. ERA List of Presses, European Rotogravure Association, Munich, Germany, 2006
16. FIPP, 2006. *FIPP World Magazine Trends 2005*. Federation International de Presse Periodique, London, 2006

17. Gutschi, H. 2006. *Das Beste der zwei*. Versio! Issue 02-06. Germany, 2006
18. Hohol, R., 2005. "Europe's Vibrant Magazine Industry". Cepiprint April 2005, Brussels, Belgium, 2005
19. Klemm, P. 2006. *Der Tiefdruck muss mit dem Tempo seiner Kunden mithalten*. Deutscher Drucker 31, issued 12th of October 2006
20. Mowatt, S.2002. *Technology and industrial change: the shift from production to knowledge-based business in the magazine print publishing industry*, in Kantarelis, D. (Ed.): *Global Business and Economics Review – Anthology 2002*. pp 282-296. 2002
21. Patel, Runa , Davidsson, Bo 1991. *Forskningsmetodikens grunder – Att planera, genomföra och rapportera en undersökning*. Studentlitteratur, Lund
22. Scott, J. 2006. *A Publisher's View. Publishing & Print in the UK – and beyond*. ERA Annual Meeting, Manchester, UK, 2006
23. Östbye, H., K. Knapskog, K. Helland, L.O. Larsen. 2003. *Metodbok for Medievetskap*. Liber AB, Malmö, Sweden, 203

WEB RESOURCES

FIPP Annual Report	URL:http://www.fipp.com , accessed on August 8th, 2006
Otto Versand	URL:http://www.otto.com , accessed on November 28th, 2007
Neckermann.de	URL:http://www.neckermann.de , accessed on February 13th, 2007
Quelle/Karstadt	URL:http://www.quelle.com , accessed on February 13th, 2007
Lagardère Annual Report	URL:http://www.lagardere.com , accessed on January 28th, 2007
VDZ	URL:http://www.fdz.de , accessed on August 8th, 2006
Ecolabel	URL:http://www.ec.europa.eu/environment/ecolabel , accessed on November 27th, 2007
Redcats Group	URL:http://www.redcats.com , accessed on January 11th, 2007
Lyondell Chemical Co	URL:http://www.lyondell.com , accessed on January 2nd, 2007
Agfa	URL:http://www.agfa.com/sweden , accessed on November 28th, 2006
Kodak	URL:http://www.graphics.kodak.com , accessed on November 28th, 2006
Hell Gravure Systems	URL:http://www.hell-gravure-systems.com , accessed on November 28th, 2006
MDC Max Dätwyler AG	URL:http://www.daetwylergmbh.de , accessed

on November 28th, 2006
 EMOC [URL:http://www.eurofound.eu.int](http://www.eurofound.eu.int), accessed on
 November 28th, 2007
 Ink World Magazine [URL:http://www.inkworldmagazine.com/article
 s](http://www.inkworldmagazine.com/article_s), accessed on December 20th, 2006
 IKEA [URL:http://www.ikea.com](http://www.ikea.com), accessed on
 November 28th, 2006
 Argos [URL:http://www.argos.co.uk](http://www.argos.co.uk), accessed on
 January 11th, 2007
 Cepiprint [URL:http://www.cepiprint.com](http://www.cepiprint.com), accessed on
 October 20th, 2006
 Cepifine [URL:http://www.cepifine.com](http://www.cepifine.com), accessed on
 November 29th, 2007
 Sun Chemical [URL:http://www.sunchemical.com/europe](http://www.sunchemical.com/europe),
 accessed on January 22nd, 2007
 Flint Inks [URL:http://www.flintgrp.com](http://www.flintgrp.com), accessed on
 January , 2007
 Siegwerk Group International [URL:http://www.siegwerk-group.com](http://www.siegwerk-group.com),
 accessed on January 22nd, 2007
 Myllykoski [URL:http://www.myllykoski.com](http://www.myllykoski.com) , accessed
 on January 29th, 2007
 Stora Enso [URL:http://www.storaenso.com](http://www.storaenso.com), accessed on
 January 22nd, 2007
 UPM-Kymmene [URL:http://w3.upm-kymmene.com](http://w3.upm-kymmene.com), accessed
 on January , 2007
 Holmen Paper [URL:http://www.holmenpaper.com](http://www.holmenpaper.com), accessed
 on January 22nd, 2007
 Burgo [URL:http://www.burgo.it](http://www.burgo.it), accessed on January
 29th, 2007

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