

INKJET APPLICATIONS IN NEWSPAPER PRODUCTION



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INKJET APPLICATIONS IN NEWSPAPER PRODUCTION

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ABOUT THE WORLD PRINTERS FORUM

The World Printers Forum of WAN-IFRA aims to be the central point of the international news media print community, including printers, materials suppliers and equipment manufacturers for the print production value chain from prepress to press and to product finishing and delivery.

It addresses all print-related questions. Its objective is to encourage innovation and productivity as well as product development that can be instrumental for publishers to exploit future-oriented news media products. It promotes the power of print and the sustainability of print production.

The World Printers Forum has also launched an online forum, an exchange platform for discussing, informing and debating all topics related to newspaper production. The Forum is open to everyone and is free to use.

The online forum is an ideal exchange platform for newspaper production experts to voice their opinions, share technical knowledge and learn from other experts.

To join our network go to

www.wan-ifra.org/wpf

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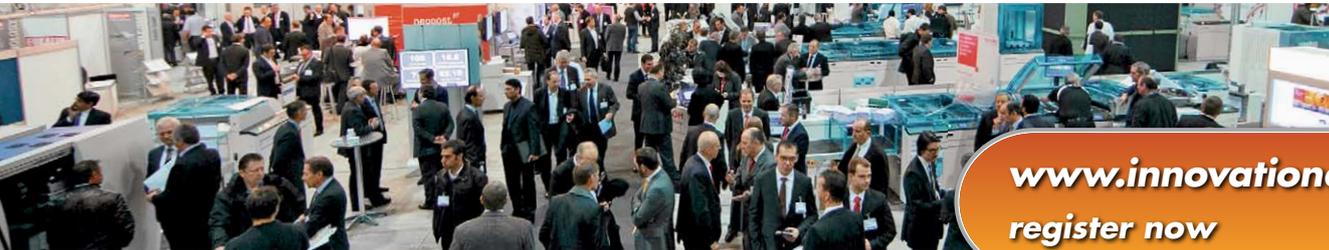
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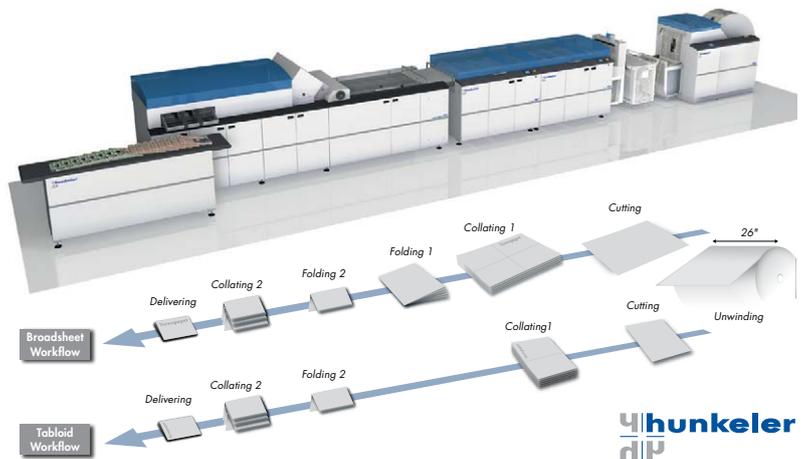
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1. INTRODUCTION

IS DIGITAL PRINTING
THE NEXT BIG THING
IN NEWSPAPER
PRODUCTION?



In the last year, the Board of the WAN-IFRA World Printers Forum, following in-depth discussion, prioritised a series of topics for closer analysis. One of these topics is digital newspaper printing. The Board considered it to be of special importance to investigate the present and future areas of application of digital printing for newspaper publishers and printers. Therefore the focus was less on technical specifications and performance data, that in any case change as development occurs, and more on concrete, economically viable and innovative business sectors that, with the aid of digital printing in a newspaper environment, are today already of significance in practice or that could become important in the future.

In the summer of 2016, the World Printers Forum launched a new Micro Website on digital newspaper printing as part of the “Insights” section of the WAN-IFRA website. Digital inkjet was one of the dominating technical topics of the recent Drupa 2016 exhibition in Düsseldorf, Germany. New inkjet printing plants opened in Switzerland, France and the UK and are planned in the USA. The new WAN-IFRA site collects all kinds of information on the subject, including articles, press releases, research reports, videos, pictures and conference presentations (wan-ifra.org/microsites/inkjet-newspaper-printing).

The term “digital printing” is, in fact, misleading. If printing is described as a process by which an image is transferred in an automated operation to a substrate with the aid of a printing machine, then it must inevitably be concluded that any thus-defined printing process represents a mechanical and not a digital operation. Where ink is applied to paper it will always be a mechanical process.

However, the term “digital printing” has been in common use for many years. It is used to cover all printing processes that manage without a printing form. Whereas conventional printing processes, such as letterpress, gravure, flexo, or offset, use a solid and unchangeable printing form to produce large numbers of identical copies, “digital printing” knows no such solid printing form. For this reason, the appropriate term “non-impact printing” was proposed. But even though this constitutes a much more accurate description, it has not to date come into widespread use.

Instead, everyone talks about digital printing. In modern printing – no matter which process is concerned – everything is in fact digital apart from the final process of ink-to-paper transfer. The entire prepress process, generation and processing of text, graphics, images and all other page elements, as well as page design, make-up and imposition, have long been all-digital processes which ever printing process is involved.

The only fundamental distinction between the processes is the manner in which the ink is applied to the substrate. What this means is that the printing processes differ in how the paper is imaged or printed. In inkjet printing, this is a highly complex and elaborate process, as thousands of inkjet nozzles must be controlled electromechanically within fractions of a second in such a way as to ensure that the correct amount of ink is applied at the right time to the right area of the print surface in a non-contact operation.

The common term of digital printing has become the generic term for all printing processes that 1) work in a non-contact way and 2) manage without a solid printing form. Conversely, as a consequence, with digital printing, the content and form of every printed page can vary from the previous one. Therefore, in digital printing, one and the same printing press can be used without interruption to print products with page counts ranging from one to more than 1000. It is possible also to combine any desired products having any page counts in any desired sequence in a single printing operation. Moreover, individual modifications in form and content can be carried out from one copy to the next (e.g. personalisation). All this is possible without interrupting the printing process to exchange printing forms. These are characteristic properties of digital printing that are decisively changing the areas of application.

We thank the following experts for their contributions to this work. Without their help this report would not have been possible.

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Stefaan Vanysacker, Genscom, Antwerp, Belgium

Rodd Winscott, Topweb, Chicago, IL, USA



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2. APPLICATIONS OF INKJET

FOR NEWSPAPER PUBLISHERS AND PRINTERS

In order to make the best use of industrial inkjet digital printing in a newspaper environment, it is imperative to identify the applications and niches that can be served better and at lower cost with the aid of digital printing than by conventional printing processes. These include applications that are not even possible in conventional printing. To do so, it is useful to consider the specific strengths of inkjet printing and identify areas of application in today's and tomorrow's newspaper production, or those that are potentially suitable for tapping into new revenue sources.

Ideally, inkjet printing will be used for new business sectors that become economically viable by the use of this process. In this case, technical innovation and business innovation come together.

2.1: REMOTELY PRINTED INTERNATIONAL NEWSPAPERS

The best and longest established application for digital newspaper printing is the centralised production of newspaper editions in areas far removed from their original places of publication. The frequently higher production costs per copy are offset by the saving of transport and delivery costs to remote regions. But even more important is the fact that the digitally-printed newspaper copies can reach the market just as fast as the copies produced at the original place of publication.

In many cases, small and remote locations that are frequented by many international visitors are of interest to many leading global newspapers. These are typically tourist centres such as islands or holiday resorts in distant countries. Major foreign cities can also be of interest, places where employees of international corporations generate a certain demand for newspaper products from the employees' home region or in their mother-tongue. International travel hubs also fall into this category. In addition, some of the need for international press products stemming from airlines and cruise ships can be covered by digital newspaper printing.

Inkjet digital printing centres are located, for example, in Malta, Rome, London, Paris and Dubai as well as similar places with a large international clientele. In many cases, such a centre prints up to 100 newspaper editions per night. From the technical point of view, it is of major benefit that no interruption to the print run is necessary for product and format change, nor for changing the page count. Frequently the print runs for the individual editions vary between five and 300 or more copies. It is also easily possible to adapt the print run to suit the daily market requirements (based for instance on the quantum of tourist inflow). This can effectively lower the numbers of return copies.

With the aid of inkjet printing, it is also possible to simply arrange the production sequence so that the editions needed first will be printed first. Format and length of print run do not constitute production-relevant factors. It is no surprise that some of these inkjet centres for the printing of international press products are operated directly by distribution companies and not by publishing and printing houses.

One interesting aspect of this variation of digital newspaper printing is the fact that on-site digital printing in remote places enables a gradual development of the local market there.

"Nothing is as old as yesterday's newspaper" is a well-known saying. Years ago, the London Financial Times discontinued its practice of transporting newspaper copies to Johannesburg in South Africa in favour of digital printing on location – at that time still in monochrome printing. The critical advantage was that the readers there received their newspaper copies on the morning of the day of publication. That is undoubtedly especially important for a financial newspaper. As a result of the early availability, the circulation of the newspaper increased over ten times, i.e. from 300 to 3000 copies.

However, this exceeded the then ceiling of economic efficiency for digital newspaper printing and the publisher once again placed the printing contract with a conventional newspaper printing plant. This story

Remotely Printed International Editions

CHARACTERISTICS	IMPORTANCE
Low start-up waste	High
Personalisation	Low
Customisation	High
Format variability	High
Variety of substrates	Low
Automation	High
Operation efficiency	High
Cost per copy	High
Printing speed (copies/hour)	High
Colour printing quality	Medium
Stability during print run	High
Process standardisation across print plants	Medium

caused some amusement among newspaper printers who mocked the small efficiency window of digital printing.

But when looked at in another way, this example shows that digital newspaper printing can be an ideal means for the development of a local market due to its ability to gradually and simply adapt print run lengths as required. When deciding how remote markets should be supplied – either transporting newspaper copies by air or digitally printing the copies on-location – publishers should not take into account the cost aspect alone in their deliberations, but also include the possibilities of market development.

2.2: REGIONAL AND LOCAL EDITIONS

Many newspaper publishers are aware of the fact that one of their strengths in the competition among the various media lies in local and regional activities. For this reason, in some countries, especially in Central Europe, newspaper publishing companies produce many local

sub-editions in which the focus of both editorial and advertising content is on the geographic units covered in each case.

This division of the main product into local editions causes complications for conventional coldset printing and the production of the newspaper. The printing press must be stopped in each case to exchange regional and local pages. After plates have been changed, the press must be re-started. This not only causes a loss of time, but also additional paper waste, as after the renewed start-up the offset press must be brought back to stable production.

Depending on the market requirements and the marketing concepts of the publishing companies concerned, in many cases up to 20 or even more local editions are required nightly. For the printer, that means stopping the press 20 times, exchanging plates and re-starting. Moreover, the length of print run for some local editions can be very short. One repeatedly hears stories of local editions with circulations below 1000 copies. This makes things more difficult for the printers, as the offset process reacts relatively slowly to

commands and needs a certain time to return to stable production after press re-startup. If the printed part-run of a local edition is very small, it becomes difficult to control the press within the short printing time.

These challenges spurred the strong demand for automatic plate-changing systems. Such systems are now offered by newspaper press manufacturers and are ordered as part of nearly all new investments (at least in Central Europe). Automated plate change permits the downtime of the web offset press to be cut to a maximum of three minutes. But the press downtime continues to be unavoidable.

Increasingly shorter print runs can lead to an unfavourable ratio of changeover time to production time, with a resulting negative effect on the per-copy cost and overall production times.

2.2.1. INSERTING OF DIGITALLY PRINTED LOCAL PAGES

Consequently the idea emerged to cease production of short-run local and regional sub-editions by the offset process and instead apply the digital printing process, and after printing, combine the products in the mailroom. The WAN-IFRA Report “Digital printing for newspapers” in 2013, stated: “In such a case, digital printing could be used as a complementary production process to produce the many local sections in parallel to the main newspaper section, which would continue to be printed on the web offset press. The two parts would then be combined in the mailroom.” (Page 4)

At the beginning of 2013, Centro StampaQuotidiani (CSQ) in Erbusco became the first newspaper printing plant in Italy to put a digital printing press into operation. With hybrid products printed in part in offset and in part by the inkjet process, it offers its customers the possibility to better serve the local markets and to generate additional income. “We are now in the position, using the inserting machines, to combine offset products with digitally printed local pages and supply these products in a targeted way to the corresponding districts,” says Dario de Cian of CSQ.

However, this application of digital inkjet printing has not succeeded in gaining a foothold at newspapers to the extent assumed some years ago. Why is that so? “During the three years of our experience, some of our customers have started and then stopped the publication of this kind of products. Today only IL CITTADINO DI LODI is using this possibility with extra runs of local sections of the newspaper printed on special papers to be given to the advertis-

ers,” reports de Cian. Seen from the technical point of view, the application offers the ideal combination of offset and digital printing. But in practice, a number of obstacles must be overcome.

Production Speed

The first obstacle is the necessary synchronisation of the production speeds of the two printing processes. To take a simple example: a total run of 120,000 copies must be produced within a total time frame of four hours, between 23.00 h and 3.00 h. A modern coldset rotary can manage this easily at a speed of press 45,000 copies per hour and still have a sufficient time buffer.

In the same four-hour time frame the local supplements should be produced in parallel on an inkjet press and inserted into the main product. Because no time is lost due to job change, the number of supplements would be of no significance. Let us assume that an inkjet press can print 6000 copies per hour of a local supplement consisting of 12 broadsheet pages.

In this case, five digital presses would be required for the parallel inkjet printing of the local editions, insofar as the same time frame is available. In this way the local editorial deadline coincides with the national editorial deadline.

This is much less of a problem in the case of commercial inserts or editorial pre-prints. Many inserts are available early or can be produced in pre-runs. Also limiting the page count of digitally print pages to let’s say four broadsheet pages could be an option to overcome this issue.

Finishing

Added to this is the required finishing in digital printing. Industrial inkjet web presses do not usually produce the complete newspaper, but only do the printing itself. They print from reel to reel, and usually the unwinding and winding modules originate from a supplier different from the press manufacturer. Trimming, gathering and folding to the finished newspaper product is done either online or offline in a separate machine from a specialised manufacturer.

Digital newspaper finishing is frequently done at a lower speed than digital inkjet printing. This can further reduce the hourly copy output and complicate the production process. However today there are finishing options available matching the productivity of high-speed inkjet presses.

Moreover, it is necessary to take into account the time required for inserting the local supplements in the mailroom. For the purpose of our example, we assume that inserting can be done at full production speed, and therefore that the corresponding inserting capacity is available.

Inserting of digitally-printed local pages	
CHARACTERISTICS	IMPORTANCE
Job change on the fly	High
Low start-up waste	High
Personalisation	Low
Customisation	Low
Format variability	Low
Variety of substrates	Low
Automation	High
Operation efficiency	High
Cost per copy	High
Printing speed (copies/hour)	Medium
Colour printing quality	High
Stability during print run	High
Process standardisation across print plants	Low

Our simple example shows where obstacles exist to the efficient realisation of what is a logical technical application. At the present time at least, it is the high capital costs and production complexity that make the use of digital printing as a complementary process for the production of local editions of regional newspapers viable only in special cases.

2.2.2 THE “DIGITAL WEB”

Because the production of folded local supplements cannot as yet be seen realistically as suitable for widespread application, Rodd Winscott of the Topweb printing company in Chicago developed the idea of the “Digital Web” for the integration of digitally printed variable contents into conventionally printed newspapers. With the Digital Web, the inkjet web press would produce different contents for different readers and target groups on one web.

Rodd Winscott is head of a contract printing plant that is

equipped with several coldset rotary presses and two web inkjet presses. He aims to develop the concept of one or several digitally printed webs together with potential customers.

The page count of these digitally-printed newspaper sections would be low and printing done reel-to-reel, without reducing the speed of the inkjet press. Potentially the press start-up for Digital Web would be brought forward after consultation with the news desks in order to extend the production window.

An inserting machine would not be required to integrate Digital Web into the overall production process. Instead, the digitally-printed web would be added to the main newspaper product using existing reelstands during the conventional printing process. Technically speaking, this would make Digital Web a normal part of the printed newspaper, combining with it to create the final product in the folder of the conventional newspaper press.

This proposed production method is technically similar to the “insetting” process practised in newspaper printing decades ago. However, the objective then was different. At that time, webs with high-quality ads were produced in advance by the rotogravure process for subsequent integration into the daily newspaper production. Similar applications are conceivable also for the hybrid production of offset and inkjet: advance production of geographically-variable ad data in digital printing with subsequent integration into the offset daily production.

For synchronisation a closed-loop cut-off registration system is recommended. The sometimes used method of running mixed content and print in Offset on a pre-printed digital web is questionable, because of the absence of the option to adjust the cut-off in Offset.

2.2.3. PRINTING IN ACCORDANCE WITH DISTRIBUTION REQUIREMENTS

The Belgian printing and publishing company of Halewijn is of interest due to several types of digital newspaper printing practised there. The main customer is the Flemish Catholic Church of Belgium, publisher of the weekly newspaper Kerk & Leven (Church & Life) that not only has a relatively large circulation of nearly 300,000 copies, but also the incredibly high number of 481 local editions. The newspaper reaches 855,000 readers and is subscription-only. Some 2000 citizen journalists contribute local and hyper-local contents weekly.

In addition, a web-based dynamic layout system is used that provides

The “Digital Web”	
CHARACTERISTICS	IMPORTANCE
Job change on the fly	High
Low start-up waste	Medium
Personalisation	Medium
Customisation	High
Format variability	Low
Variety of substrates	Low
Automation	High
Operation efficiency	High
Cost per copy	High
Printing speed (copies/hour)	High
Colour printing quality	High
Stability during print run	High
Process standardisation across print plants	Medium

Printing in accordance with distribution requirements	
CHARACTERISTICS	IMPORTANCE
Job change on the fly	High
Low start-up waste	High
Personalisation	High
Customisation	High
Format variability	Low
Variety of substrates	Low
Automation	High
Operation efficiency	High
Cost per copy	Medium
Printing speed (copies/hour)	Medium
Colour printing quality	High
Stability during print run	High
Process standardisation across print plants	Medium

templates for writing articles. The automated system combines national, regional and local content as well as ads. The subscriber's address is also placed directly on each copy.

Delivery is managed by the Belgian postal service that also supplies the weekly updated address data and optimal distribution routes. The production management system brings together all the data and controls the digital printing in accordance with the complex distribution requirements.

The introduction of this production management system, comprising distributed editorial offices, localisation and personalisation, combined with digital printing that supplies the copies for the carriers in exactly the correct sequence, lowered the earlier high level of complaints of incorrect delivery by 80 per cent. Moreover, the previously high rate of waste copies (due to the many edition changes) could be radically reduced.

Stefaan Vanysacker of Genscomnv in Antwerp, Belgium, explains the business model, which he helped to develop, that is used for the production of Kerk & Leven:

We facilitate the communication (print + e-paper) for political organisations, labour unions, social organisations and profit organisations through an online platform. We focus on 'many to many' communication, bottom up communication and community building.

In practice: These organisations invite their members, clients, local people and internal personnel to create their own (very) local, personal, entirely unique newspaper on a central online community platform provided by the organisation's central services.

The added value for the user is that she or he can participate in the setup of the communication. Each user can work at his own pace (without deadlines). The price is always fixed per sample independently of the total number of copies or the number of versions (starting with one copy). Delivery

is very fast (within three days and users do not need InDesign skills).

The added value for the organisation is that central services can control the layout (through templates) and the content as well. They can even check content before printing.

They can offer content (articles), photos and logos. They can act as a 'third paying' partner for local organisations. They know what it means and what is important in local life. They can even combine general information (newsletter, magazine) and very personalised information (individual prices, financial information) in one publication, which is more cost-effective in distribution and print.

This complex communication can be managed in a convenient 'one stop shop' way. We provide two formats (tabloid and A4) and two paper qualities (newsprint and white mat paper). All print orders are combined into a maximum of four print orders by an automated workflow.

This is only possible by means of inkjet printing:

- Constant print quality (no print approval needed)
- No change-over-time (only from tabloid to A4)
- Very short lead times
- Constant operating cost
- No planning, no production administration
- Integrated distribution

In this application, abundant use is made of the specific advantages of digital printing. Production without printing form and the resulting option to give each copy



A Kodak inkjet imprinting unit integrated into the conventional newspaper printing press installed at the Axel Springer printing plant in Ahrensburg, near Hamburg, Germany (Photo: Manfred Werfel)

personalised content without having to interrupt or slow down the print run, offers the possibility of integrating the entire newspaper production, from content production up to distribution, into a mutually-coordinated and uniform, digitally controlled process.

This also establishes a perspective for the future for a newspaper product that is of major interest to the readers and advertisers due to its extensive localisation. Hyper-local print products are made possible by digital newspaper printing and it remains up to the publishing houses and newspaper printers to apply the experience of Halewijn to their particular situation. Naturally, the very special situation of the Belgian weekly *Kerk & Leven* cannot simply be applied to the conditions at a typical regional newspaper. But the potential, based on such experiences, to develop creative new product concepts for newspaper printing at one's own publishing house, should not be underestimated.

2.3 PERSONALISATION, CUSTOMISATION

The above example brings us to the topic of personalisation and customisation. This undoubtedly holds decisive benefits of printing without using a solid printing form, such as only digital printing offers. Assuming a correspondingly high-speed data processing of the print pages in the Raster Image Processor (RIP), only digital printing can change the printed contents on each page without loss of time and any press stop. If such requirements are a priority, digital printing must be the (production) process of choice.

2.3.1 CODES, GAMES, ADS

At present, both Axel Springer and News UK use the system to imprint a copy-specific "passcode". The newspaper buyer can use this individually unique code to access

additional contents of the publishing house on the Internet. Because each newspaper copy is given a different code number – which therefore cannot be copied by another person – and because the code is valid for just one day (new code numbers are generated every day) this offers perfectly protected access to the digital "paid content" of the publishing house. To ensure that it is really only the buyer of the newspaper who can use the code, it is positioned on page 3 of the *BILD-Zeitung* and therefore can only be seen after the reader has bought the newspaper and turned the page.

Due to this form of combining conventional printing with digital inkjet printing, a relatively large number of mostly large-sized newspaper printers already have at their disposal a production system that offers the possibility of connecting variable and consistently reproduced content on one page. And the potential of this hybrid system opens up possibilities of many applications.

Codes, Games, Ads	
CHARACTERISTICS	IMPORTANCE
Job change on the fly	High
Low start-up waste	High
Personalisation	High
Customisation	High
Format variability	Low
Variety of substrates	Low
Automation	High
Operation efficiency	High
Cost per copy	High
Printing speed (copies/hour)	High
Colour printing quality	Medium
Stability during print run	High
Process standardisation across print plants	High

In his presentation during the WAN-IFRA Italia Conference in June 2016 in Bari, Thomas Drensek, General Manager, Axel Springer Print Management GmbH and Head of Axel Springer corporate group project Customer Retention Axel Springer SE, explained his vision for the future in this area. It is not only passcodes that can be digitally imprinted, but also images, news, graphics and more advanced codes. Ads can be connected with

games and prize draws. Micro-Zoning contents can be printed with the system and the technology can even be used in the future for Real-Time-Bidding ads in the print product. First practical tests have already been carried out successfully, with interactive ads enhanced with individual prize numbers, Advent calendars in conjunction with a prize game and variable codes to access online contents.

It is not so much the technology, which is largely available today and for which future improvements as regards resolution, printable area and colour can be expected, that is called on to extend this application of inkjet printing in the newspaper sector and use it for more purposes than is done to date. Rather, it is up to publishers and the advertising sector to use the potential of this technical innovation to develop new and innovative offerings for the market. Data integrity is of high importance for such applications.

It is a fact that customised newspaper printing, offering changed contents from one copy to another, is already established on a wide scale in the market. Additional inkjet printing units have been installed on existing coldset newspaper presses by Axel Springer in Germany and News International in the United Kingdom. Axel Springer invested in 33 units and News in 22 units. Added to this are similar installations of other publishing houses in France and South Africa.

In Germany – as an example – the coldset presses of 12 major newspaper printing plants are equipped with inkjet imprinting units. These units can at present print monocolour page elements on a limited area and with reduced resolution, but at full offset web speed of 15 m/second, that can be varied from copy to copy. The matching of the inkjet printing speed to the web speed in offset printing is possible due to the fact that inkjet printing offers the technical possibility of increasing printing speed at the expense of print resolution, and vice-versa. This is not possible in offset, but increases the flexibility in adapting to specific requirements of the applications concerned in inkjet printing.

Inkjet technology could do much more.

Today! (Green arrow) - Shows a newspaper page with a lottery advertisement: "Gewinnen Sie Geld & mehr gleichzeitig von 1 Million Euro".

Tomorrow? (Red arrow) - Shows a newspaper page with two advanced advertisements: "Micro Zoning" for "Wie gut ist Billig-Fleisch?" and "Real-Time-Bidding" for "BILD".

axel springer print management

35 2016-06-21/22 The new Axel Springer Printing Company

Graphic from a presentation by T. Drensek (2016) on the potentials of inkjet imprinting units



Finished Main-Echo copies with personalised covers (source: YouTube Video "Digital Printing - personalisation in the newspaper market" – Main-Post, KBA)

With the technical retrofitting of existing conventional printing systems, the inkjet process has arrived in a relatively un-spectacular manner, though on a widespread scale, in newspaper production. Measured in terms of the daily production run, this application of digital inkjet printing in the newspaper sector is undoubtedly the most significant. Technically, retrofitting can be carried out without a complicated intervention in the existing work processes. The required capital investment is clearly definable and the amount of training required is not excessive. Of course, the use of such a hybrid system also entails data processing of the contents to be imprinted, an aspect that should not be neglected.

2.3.2 MASS CUSTOMISATION, EXAMPLE OF TARGETED ADVERTISING

Because we are accustomed to thinking in newspaper categories, where new printing techniques are concerned we usually ask ourselves: "What can this technique do better than what we have had up to now?" However, it is worthwhile to take a look at new and unfamiliar areas of business and application.

At the German regional newspaper Main-Post in Würzburg, consideration was given as to how the newspaper's existing knowledge of customers' interests could be used more effectively than hitherto, by means of individual personal offerings. Like many other publishing houses, Main-Post has for years been offering readers tours. Consequently, the in-house customer database contains information documented over the years relating to customers' preferences for certain types of travel, destinations, transport and hotel categories. Therefore it

was relatively simple, for example, to distinguish between customers who like to travel to the Mediterranean region and those who prefer overseas destinations, and so on.

Based on this customer knowledge, a simple concept for a personalised approach was developed. For each customer, tailored travel offers were compiled bearing in mind personal preferences. These individual offers were printed with the aid of digital printing on a cover developed specifically for this application, into which the newspaper was subsequently inserted.

In this case, the advertising supplement was not inserted into the newspaper - instead, the newspaper was inserted into the personalised and individually compiled ad cover that was printed on improved paper. This digital section comprised only four pages, so that the lower speed of the inkjet press did not present any limitation. Moreover, this section could be produced in advance, as it did not contain any daily news content.

In a YouTube video (search term: “Digital Printing - personalisation in the newspaper market”), Andreas Kunzemann, Technical Manager, and Wolfgang Gunreben, Customer and Process management, Main-Post, as well as Oliver Baar, Business Development & Marketing Digital Web Presses, KBA Digital & Web Solutions, give a detailed presentation of the pilot project.

In effect, the digitally printed newspaper cover addressed newspaper customers selectively and personally based on their individual interests, in a way similar to personalised direct marketing. As a result, the response rate rose by an impressive 70 per cent.

This pilot project clearly shows that the aim of digital inkjet applications in conjunction with newspaper printing should be to develop new offerings that have not been possible up to now, that open up new business areas and that make use of the genuine benefits of digital printing. The development of such an approach facilitates the emergence of new applications and business areas for digital printing in the newspaper industry.

Publishing houses and marketing organisations are being called upon to develop new application possibilities for products and business. The technical possibilities are available. In order to explore

possibilities on the lines of the Main-Post example, it is not even necessary for the publishing house to invest in its own digital printing press. Digital printing capacities can be bought from other printing service providers.

Dario De Cian, General Manager, Centro StampaQuotidianiSpA, from Erbusco, Italy, provides an example of another application of the customisation of printed content and targeted advertising. He elaborates on the experience of one of his publisher customers with “additional sections for subscribers: the publisher of the biweekly IL PICCOLO is adding four pages of personalised content for his subscribers (about 900 copies per edition). This additional section is called IL MIO PICCOLO (My Il Piccolo). The subscriber has the option of choosing any three subjects from a list comprising Hi-Tech, Cooking, Gardening, History and Traditions, House and Furniture, Health and Medicine, Travel, Territory and Routes. And the publisher, on the other hand, has opportunity to sell targeted advertising.”

Here also the special benefits of digital printing come into play. Questions that will influence future courses of action are: What information do newspaper publishers have about their customers that allow them to test new, personalised offerings and communication channels? How can they be connected with the established newspaper business? And what role can digital printing play in this? As can be seen, the questions are less about the technical aspects and more the business aspects, and are based on the willingness to recognise the potential for innovation not only in the digital business environment, but also in the print area.



A customised copy of the publisher's supplement, IL MIO PICCOLO

Mass customisation, example of targeted advertising	
CHARACTERISTICS	IMPORTANCE
Job change on the fly	High
Low start-up waste	High
Personalisation	High
Customisation	High
Format variability	Low
Variety of substrates	Medium
Automation	High
Operation efficiency	High
Cost per copy	Low
Printing speed (copies/hour)	Low
Colour printing quality	High
Stability during print run	High
Process standardisation across print plants	Low

2.4: DEVELOPMENT OF ADDITIONAL BUSINESS FOR PRINTERS

In 2015, WAN-IFRA documented in its report “New and Emerging Business Models of Newspaper Printing Companies” how and why newspaper printing companies are developing new business models. “In times where publishers look for optimising production costs, printers are developing optimised business models to secure their survival. This process is in full swing in many countries around the globe. It has not yet come to an end. Many different concepts and print strategies are developing and there is no one and only business model that fits all needs. Most probably there will never be one master plan for newspaper printers in future, but a variety of different solutions that fit the market requirements and capabilities of printers in different geographic regions.” (WAN-IFRA Report, New and Emerging Business Models of Newspaper Printing Companies, Frankfurt am Main, Germany, 2015, Page 3)

Digital printing can play a part

also in the development of new business models for newspaper printing companies. This area concerns not just digital newspaper printing, but the digital printing technology in general that enables printers to win over new business sectors for their existing customers and attract new customers.

2.4.1 DIRECT MAILING, PERSONALISED MAILING, TRANSACTION PRINTING

One of the strengths of newspaper printing companies is that they have always organised not just print production, but also distribution of the printed products. Newspaper printing plants are equipped with mailrooms and print finishing divisions offering varying levels of operational sophistication to handle the distribution management processes. Taking this as a basis, newspaper printers can invest in new business sectors that also offer print product distribution, and proceed to add new functions and services to this area of activity.

Mailing is a widely used instrument to directly address specific customers and target groups. It is the classical means of advertising in direct marketing. Direct Mailing is usually one element of a larger advertising campaign. It is in a certain way related to the distribution of advertising supplements by inserting the material

Direct mailing, personalised mailing, transaction printing	
CHARACTERISTICS	IMPORTANCE
Job change on the fly	High
Low start-up waste	High
Personalisation	High
Customisation	High
Format variability	High
Variety of substrates	High
Automation	High
Operation efficiency	High
Cost per copy	High
Printing speed (copies/hour)	High
Colour printing quality	High
Stability during print run	High
Process standardisation across print plants	High

into the newspaper. To that extent, newspaper printers can extend their business area in this direction as they already have corresponding mailroom installations and organisational processes. What makes Direct Mailing interesting is the aspects of personalisation and customisation of content and advertising messages. Digital web inkjet constitutes an ideal instrument for the high-speed printing of personalised Direct Mailing products.

Drawing on their knowledge and skills in the area of print distribution, newspaper printers can use inkjet digital printing and its possibilities for personalisation to enter the Direct Mailing business. Of course, a precondition for this is that the economic conditions in the regional market concerned make entry into this business area a viable proposition. The competitive situation will be of importance for answering this question, but in any case the preconditions for newspaper printers are in place.

The situation for the transaction printing market is similar. Examples of transaction documents are delivery notes, invoices, reminders or periodical documents, such as notifications of bank account balances or contract developments. The term 'transaction printing' covers more than the actual printing on paper. Rather, it is taken to mean a multimedia process that can cover classical printing, including inserting and franking, distribution via fax or e-mail and archiving.

A printing company can draw on existing knowledge and process skills, if it decides to enter this business area, a move that would then include the use of digital printing. Once again, the economic environment will have a major influence on the decision. In this case as well, data integrity is very important. Also newspaper printers, whose fo-

cus has been for ages to print more or less static data have to become 'digitally savvy' to manage and print variable data.

2.4.2 SHORT-RUN PRINT PRODUCTION, CONTENT AND FORMAT VARIABILITY

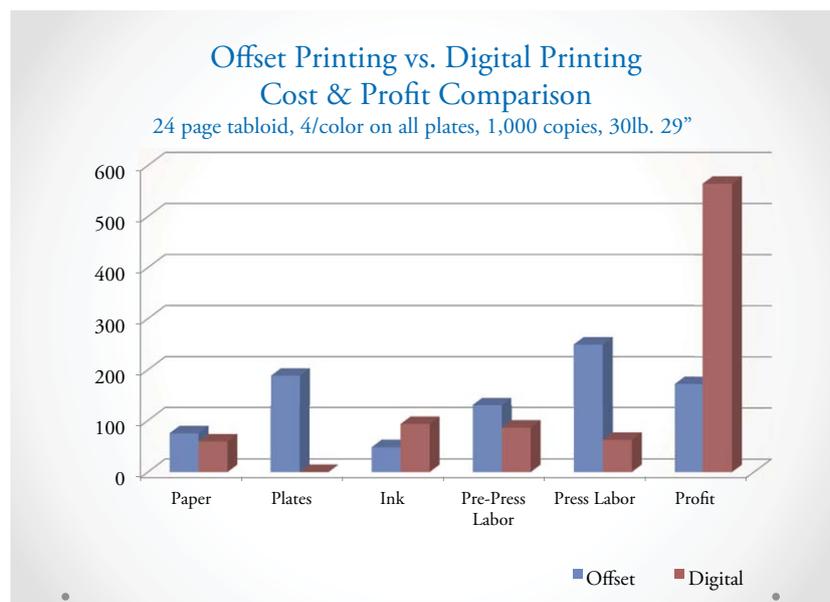
The use of digital web inkjet for short-run print production is a logical application within newspaper production.

Dario De Cian of CSQ in Erbusco, Italy, lists the following types of short print runs for which digital printing is used at his company: "We produce approximately 20 different products with circulations ranging from 500 to 2,500 copies, printed on improved newsprint or special digital paper. The products are related to local news and events. As regards remote printing of international titles, from 2013 until the end of 2015 we printed various foreign titles (KOMMER-SANT, DAILY EXPRESS, DAILY STAR, etc.)."

The Topweb printing company in Chicago specialises in short production runs for newspapers and newspaper-type print products. Its customers are mainly schools, alternative newspapers, newspapers for ethnic minorities and community newspapers.

Topweb's area of operation, with Chicago at the centre, covers a population of 9.5 million, more than 600 corporate headquarters and two international airports. The region is a transportation hub for the entire country. Many of its inhabitants were born outside of the country and it has some 40 ethnic neighbourhoods.

Rodd Winscott, President of Topweb, decides for every print job whether it should be produced by conventional coldset, offset or digital inkjet. He says: "The ideal product for the digital press has a high page count and a low circulation". In a presentation, Winscott used a graphic to show how he decides whether a print product should be produced by web offset or web inkjet.



A graphic from a presentation given by R. Winscott (2013) showing the cost/benefit comparison of offset and digital printing for a print job.



A view of the pressroom of KP Services. The two inkjet presses can be seen on the right. On the left there are folding and finishing machines that are operated in offline mode. (Photo: Hunkeler)

On 13 May 2016, the new digital newspaper printing plant KP Services (Jersey) Limited was opened on the Channel Island of Jersey. A press release issued by Kodak reported on the event as follows:

“KP Services (Jersey) Limited, a collaboration between Kodak and Guiton Group Limited, marked the grand opening of their new inkjet printing facility in Jersey, Channel Islands, with an official opening ceremony attended by customers, partners, suppliers and employees.

The ceremony was attended by KP Services (Jersey) Limited’s Managing Director, Jack Knadjian; Chairman of Guiton Group Limited, John Averty; and the Jersey Minister of Economic Development, Tourism, Sport & Culture, Senator Lyndon Farnham.

The new facility, managed by Alan Palin, General Manager for KP Services (Jersey) Limited, is home to two KODAK PROSPER 6000P Presses and four Hunkeler Combi-Solution Newspaper finishing lines

and will print the Jersey Evening Post as well as the majority of U.K. national newspapers for distribution in Jersey and Guernsey. KP Services (Jersey) Limited will print over 35,000 newspapers in total each day (made up of the combined circulations required for each separate publication). The KODAK PROSPER 6000P Press was designed specifically for publishing applications such as newspapers and books and print at speeds of up to 1,000 feet (or 300 metres) per minute on standard newsprint paper delivering close to 3,000 newspapers every hour. They are ideally suited for print sites that have to print a large number of low-volume titles. It would not have been possible to print so many titles with such a diversity of print runs (less than 300 to more than 15,000) and some with very high page counts using offset technology.” (Kodak press release, Watford, UK, Friday, May 13, 2016)

For the above output of 3000 newspaper copies per hour a page

count of 48 tabloid pages was assumed. Here also it is mainly a case of printing a large number of titles with relatively low circulations and in part high page counts. This emphasises the aforementioned philosophy of Rodd Win-scott: “The ideal product for the digital press has a high page count and a low circulation”.

Jersey has a special political status in relation to the United Kingdom. The island does not belong to the United Kingdom, nor is it dependent on the British Parliament. However, as a so-called crown dependency, it is subject to the British Crown. It has its own legislation, administration as well as its own, totally independent tax system that, with its low rates of taxation (maximum rate of income tax 20 percent), attracts many foreign investors. Jersey’s most important branch of industry, with a share of 42 percent of the gross value added, is the financial sector that benefits especially from the low tax rates for foreign capital investors and that provides employment for about one-quarter of the

Short run print production, content and format variability	
CHARACTERISTICS	IMPORTANCE
Job change on the fly	High
Low start-up waste	High
Personalisation	Low
Customisation	High
Format variability	High
Variety of substrates	Medium
Automation	High
Operation efficiency	High
Cost per copy	High
Printing speed (copies/hour)	High
Colour printing quality	Medium
Stability during print run	High
Process standardisation across print plants	High

workforce on the neighbouring island of Guernsey.

Therefore many of the inhabitants understandably have a strong interest in the latest editions of newspapers from the financial metropolis of London. Previously, however, the fact that both Jersey and Guernsey are islands made the delivery of newspapers printed in London both difficult and costly. The copies had to be flown early in the morning to the Channel Islands. The year-round typical morning fog can hinder transport by air, as can heavy storms in spring and in autumn.

Therefore establishing a digital printing plant in Jersey was a logical step. Now the daily supply of the latest editions of the London newspapers and of the regional Jersey Evening Post by a local printing plant is guaranteed and no longer dependent on transport by air. This provides a typical example of a “short-run printing” application that makes sense for reasons of efficiency and holds promise of positive results for a stable market supply.

The new inkjet newspaper printing plant replaces an old coldset offset press that did not have the capacity to print in colour throughout and was used only to produce the Jersey Evening Post.

2.5 ALTERNATIVE PRODUCTION SYSTEM, INKJET REPLACING OFFSET

Editor’s note: As we were going to press with this report, the Swiss Mengis Group announced that it was outsourcing the printing of the Walliser Bote from 2017 onwards. See story on page 54

In the summer of 2015, the first digital printing newspaper production system was put into operation that completely replaced offset by web inkjet for a daily newspaper. The newspaper concerned was the local Swiss title “Walliser Bote”, published and produced by the Mengis Group in Visp in the canton of Valais.

The Walliser Bote serves the German-speaking region of the Upper Valais Valley in Switzerland which is bounded by high mountains to the south, east and north. To the west it borders the French-speaking region of Switzerland. Upper Valais has 81,850 inhabitants; with its circulation of 22,213.

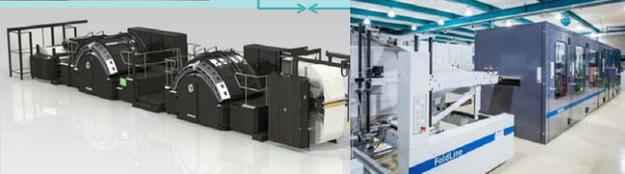
Investments: Compensation for Newspaper & Commercial Printing

Wifag OF7 (newspaper offset)



Heidelberg XL 105 (sheetfed)





- Digital printing for newspaper and commercial products.
- Smaller volume (shrinking subscription) can be compensated by commercial printing.
- Market coverage beyond core business.
- Motivation for employees (innovative company).

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The digital print production system at Walliser Bote will replace both the existing conventional offset for the newspaper as well as commercial offset printing: Citation from a presentation given by Nicolas Mengis on 26 November 2015.



The HP inkjet press at Mengis (Photo: Manfred Werfel)

theWalliser Bote reaches 44,000 of these inhabitants.

Beat Lauber, delegate of the Board of Directors at Mengis Druck und Verlag AG, spoke at the World Printers Forum Conference held on the occasion of the World Publishing Expo 2015 in Hamburg, Germany. Lauber is also president of the Board of Zürichsee Medien AG.

The company's existing press was more than 30 years old, and needed replacing. Lauber noted that like many other publishers, Walliser Bote, which is printed Monday through Saturday, found itself faced with two key challenges: First, print circulation was dropping 3 per cent on an annual basis, and second, ad revenue was declining.

"We operate with a very tight margin, and margins are decreasing,"

Lauber said. However, Mengis Druck also saw a real need to retain the print edition of Walliser Bote: "Sixty per cent of our readers read the print version, not the online version," he added.

A new press needed to be an investment in the future, which would also allow the company to do more commercial jobs as well as offer more opportunities for the newspaper. In the case of Mengis Druck, they decided that the HP T400 colour inkjet web press offered them a good opportunity to move to digital and toward more personalised printing. In summer 2016 the digital press was upgraded to a T490 HD.

"Let me warn you, the point is not that we want to produce a personalised newspaper for each and every reader, but we might say that we segment our pages into four

and offer different ads for each of the valleys," Lauber said. "This is something we started thinking about, but first we need to start changing the mindset of both our sales staff and our advertising customers."

"We have to adapt to sales as well – this is something we initially underestimated," he said.

In addition to the HP inkjet press, at the same time, the company also invested in a FoldLinefolder from manroland web systems and an AlphaLiner inserting system for the mailroom from Müller Martini, and Lauber reported there was "excellent cooperation among all three companies."

"At first we had a few problems to get the colours right," but he said things have improved and Mengis has already started printing



The Manroland Web Systems FoldLine folding and finishing aggregate that is operated in online mode. (Photo: Manfred Werfel)

outside jobs as well. “We now print a French newspaper for betting on horse races – a low circulation paper,” he said.

“We’re also printing complete magazines on a thick offset paper. For our anniversary, we printed a kids’ newspaper and all the children who were there received a personalised newspaper with their picture in it. Each child could also choose their own poster for the centre-spread – such as a photo of an elephant.” The papers were later sent to the homes of the children, and Lauber said “their parents were exuberant, and these children are also our future readers.”

As a side benefit, all the new machines now take up less space than the older machines needed in the past. “We have two other buildings

that we no longer need for printing, so we are looking into using them commercially, such as a hall for events,” Lauber said.

During the question and answer session after his presentation, Lauber said he expects Mengis Druck to achieve Return on Investment (ROI) in five to six years, provided they get the commercial jobs they are expecting.

In an interview on 10 February 2015, Martin Seematter, then Director of Mengis Druck AG, answered several questions from WAN-IFRA on the switch to inkjet newspaper printing that was imminent at that time.

As a publishing and printing group, what were the reasons for your decision to replace

web offset by inkjet?

To begin with, we had to make a decision regarding the replacement of a rather old Wifag/Ferag installation. Our newspaper press is more than 30 years old. Secondly, we wanted to make a future-oriented investment that would be able to set new standards in the commercial printing business. By doing so, we aimed to achieve a greater independence for the publishing house.

Besides newspaper printing, for what other print products do you want to use the new inkjet installation? Do you have to make special investments for this, e.g. to enable book production?

From the start we deliberately configured the installation to be



The Müller Martini mailroom installation completes the inkjet digital printing system at Mengis Druck (Photo: Manfred Werfel)

able to print, fold and stitch products with a maximum page count of 96. Moreover, our production system will have the capacity to print and selectively glue diverse book blocks.

The circulation of the Walliser Bote, with 22,000 copies, is not exactly what is generally considered to be economically efficient for web inkjet printing. Up to now, the limit was regarded as 5000 copies. How do you see it?

The variable costs of web inkjet printing continue to be higher than in the offset process. It is essential to make a distinction between multiplying and personalising. For us it was important to acquire future-oriented equipment in order to realise the envisaged possibilities.

Of course, we did our calculations before deciding to go ahead with this investment. And a look at the estimated total production of the new system, not just of the newspaper production on its own, shows that our calculations are right.

Do you expect inkjet newspaper printing to bring benefits in relation to editorial deadlines? Or will it be necessary to bring forward the editorial deadline because digital printing cannot match the speed of web offset?

We were able to retain the present editorial deadline for the daily newspaper in our plans for the new production system. However, it was necessary to make some adjustments for the early distribution. All in all, no changes to the

time schedule for the newspaper will be necessary.

One of the specific benefits of digital printing is the possibility of personalisation or changing contents without stopping the press. Do you plan to take advantage of these benefits in newspaper printing?

As mentioned before, we would like to put into practice some possibilities of personalisation in the future. But that would be as a second step. Our first priority is certainly ensuring the continuous output of the newspaper without any major interruptions.

What share of production costs is envisaged for inkjet ink?

According to our calculations, ink and primer together will account for about 46 per cent of the total production costs.

How do you judge the colour printing quality that can be achieved in newspaper inkjet compared to coldset offset?

Undoubtedly a great potential continues to exist. But the development is making major strides. The combination of printing process, ink and substrate always plays a part in obtaining a high standard of printing quality. If poor-quality paper with a poor surface is used, then the quality in inkjet will certainly always be poor.

Do you consider that the end has come for conventional specialised newspaper presses that cannot be used for much more than newspaper production?

No, digital printing should be seen as complementary to offset

printing. For large-circulation newspapers, the variable costs of conventional newspaper presses will undoubtedly continue to be more favourable in the medium term. Digital printing should be turned towards for customisation and personalisation.

Although in this case offset was replaced by inkjet digital printing, the statements of representatives of Mengis Druck make it very clear that they do not regard their decision as an example to be followed by the industry as a whole. In this concrete example, it was the conditions of a clearly regionally delimited market as well as the company objectives that led to the decision in favour of a production system offering the capacity to both satisfy the special requirements of newspaper production as well as manage the tasks of commercial printing.

Alternative production system, inkjet replacing offset	
CHARACTERISTICS	IMPORTANCE
Job change on the fly	High
Low start-up waste	High
Personalisation	Medium
Customisation	Medium
Format variability	High
Variety of substrates	Medium
Automation	High
Operation efficiency	High
Cost per copy	High
Printing speed (copies/hour)	High
Colour printing quality	Medium
Stability during print run	High
Process standardisation across print plants	High

3. VIEWS OF USERS AND SUPPLIERS

APPLICATIONS, TECHNOLOGIES AND PERSPECTIVES OF DIGITAL INKJET PRINTING

We asked a number of questions about applications, technologies and perspectives of digital inkjet printing to suppliers of digital production systems (presses, finishing systems, mailroom systems) and inkjet newspaper printers as well. The questions are listed in Appendix 2 of this report.

The following companies and representatives submitted their views:

Suppliers

Canon, represented by Josef Simmerl
Manroland web systems, represented by Dieter Betzmeier
Hunkeler, represented by Hans Gut
KBA Digital & Web Solutions, represented by Oliver Baar

Users

Axel Springer, represented by Thomas Drensek
Miller Distributions, represented by Malcolm Miller
Centro Stampa Quotidiani (CSQ), represented by Dario De Cian
Topweb LLC, represented by Rodd Win-scott
Halewijn (Genscom), represented by Stefaan Vanysacker

3.1. INSTALLED BASE DETAILS

Canon is a supplier of inkjet presses and, with 41percent of the worldwide market placements in 2014, it remains the market leader in the continuous feed inkjet market. Canon has currently six inkjet installations that produce newspapers. Two are in Belgium and one each in the UK, France and the Czech Republic. One undisclosed installation is in Asia.

Manroland web systems markets digital folding systems in an online or offline connection to inkjet presses up to 300 m/min and integrated inkjet print heads as part of conventional offset presses. The required integrated production workflow is available in their portfolio as well. They have three installations of their FoldLine systems – in Germany, France and Switzerland.

Hunkeler offers digital print finishing solutions. It has installed over 25 newspaper systems worldwide. They are in Belgium, Dubai, France, Finland, Germany, Greece, Italy, Japan, La Reunion, Malta, New Zealand, Spain, Turkey and UK.

CSQ has an HP T230 that started production in January 2013. Inkjet accounts for approximately 2per cent of their turnover and is one of the services they offer to their customers. Their core business is offset printing of newspapers.

Miller Distributions uses Kodak Versamark 4200 with Hunkeler Finishing.

Halewijn uses Canon Océ Colorstream 3900 in conjunction with a Hunkeler finishing system. The installation was done in 2013.

Axel Springer uses Manroland coldset presses in combination with Kodak Prosper S30inkjet heads (continuous inkjet). They were installed in 2012.

In addition 11 KBA press sections are also equipped with Kodak Prosper S30 inkjet heads – supported by KBA Digital & Web Solutions.

3.2. MAIN APPLICATIONS FOR INKJET PRINTING

Micro editions of newspapers, customisation, personalisation, remote distribution of international newspaper titles, adding value and alternative production systems are the areas in which inkjet is most readily accepted as useful technology.

Manroland lists small print runs – regionalised, complete newspapers in tabloid format / small “Berliner” size, as the main applications for its inkjet technology. Offset and inkjet can also be used in combination in the following areas.

Imprinting of regional and personalised data

Decoupled half webs, regionalised by inkjet process, and again inserted into the offset process

INIGRAPH, FRANCE

INIGraph, a service for the French printing industry, is driven by Hubert Pédurand at UNIIC, the French national printing union, in partnership with the French Ministry of Industry (DGE). Hubert Pédurand is considering the fragmentation of the market as a threat for the printing business model but also as an opportunity to return to the core mission and values of the newspaper publishers: “empowering free citizens, by providing them with the news and information necessary to make information-based decisions in society”. UNIIC’s role here is to facilitate the rethinking process of the value chain.

INIGraph is a re-engineering supply-chain program for the French printing industry, based on the use of digital printing & finishing solutions. According to Pédurand the key questions asked by Sogemedia project in 2015 (see story on page 35) were: Will offset presses remain the best tools for newspaper publishers, readers and advertisers, considering that a newspaper is a media? Will digital mobile and tablet versions replace the printed newspapers? Will the printed newspapers survive? How to create value on paper again?

The answers were:

- You can only fight if you create a network.
- The keyword for print is distribution.
- Create new local business opportunities that can’t be “Googled” or “Amazoned”
- We need an industrial way to “link Gutenberg to Zuckerberg” at an increasing inkjet speed and at lower cost.
- You should consider paper as a true content portal.
- You should look forward to merging the flexibility of digital with the power of offset to call for the audience.
- Digital algorithms developments should be used for digital printing.

- Digital printing converts static pages into dynamic pages.
- With digital printing you will sell the same advertising space more than once.
- Create new amazing personalised print products such as catalogues, inserts, coupons, manuals, dedicated newspapers etc. on the same machine. This is now possible.

Based on a large study/benchmark managed by INIGraph regarding the availability of high-speed inkjet and finishing solutions and the help of the French cultural ministry through the public fund FSDP (Fonds Stratégique pour le Développement de la Presse) publishers can decide to switch from cold-set to an inline inkjet/finishing solution that focuses on these points:

- With inkjet the sales value is much higher than the increased costs. Publishers can sell a page at much higher price than the 36% of the additional cost on the whole new process.
- Stop focusing on cost cutting. Only distribution will determine production, organisation and cost.
- Think about added value per page for the readers and the advertisers.
- Think local with news, ads and distribution on demand (personalised newspapers for subscribers available in local kiosks).

Hubert Pédurand

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Canon machines are used for remote editions of international newspapers and special interest titles (for example, religious newspapers). Beyond newspapers, the majority of Canon inkjet presses are used for transaction, direct mail and book printing applications.

Halewijn uses Canon and Hunkeler. The applications listed are newspaper (tabloid and A4) accounting for 90 per cent of production, book-printing and document and advertising folders.

Hunkeler machines in the newspaper business are also mainly used for printing of international titles, weekly newspapers (partially personalised), regional and section inserts for daily newspapers.

CSQ's De Cian, an HP user, says: "Our ink-jet applications are the following.

- Short-run productions of foreign titles,
- Short-run Italian weeklies and monthlies,
- Hyper-local sections to be inserted into offset printed daily newspaper
- Posters for points of sale
- Covers for offset printed magazines

While Topweb is a newspaper printer and applies the process to any uncoated publication type product, Axel Springer uses inkjet for imprints of daily codes for access to the paid content of BILD.de (Passcode). The use for special advertisements is still at a basic level, they say.

Apart from the above-mentioned models like short-run or decentralised printing, KBA sees a

major potential in hybrid models. It might be quite hard to generate personalised or even local content to fill 32 pages every day. However, this will be possible for 4–8 pages. Therefore, it makes sense to print static content highly efficiently with newspaper offset presses and to enrich them with super-localised or personalised content by using up to date finishing systems. The beauty of hybrid production is that static content can be produced very cost efficiently on offset equipment – and the printed product gets more customer relevance by enriching it with digitally printed tailor-made content.

Miller Distributions uses inkjet for both, local and international newspapers.

3.3. BUSINESS DEVELOPMENT PROSPECTS FOR INKJET

Manroland web systems see the possibility of dynamic business development and realisation of ideas via inkjet. Their target is increased variability of formats and products, supported by manroland web systems digital folding solutions and integration (software) solutions. They regard inkjet as a supplement to the existing newspaper production equipment. It is used to produce print products with shrinking circulation in a variable way. At the same time, the utilisation of existing presses is improved by inkjet imprinting and by the combination of print jobs of the same format (size) to create high-volume print runs.

Axel Springer, on the other hand, feels there is a need to develop innovative business models for newspaper individualisation. Because of the high investment in

inkjet technology (they invested in 33 inkjet units) there has to be a commercial business case to justify the move, they feel. At the same time, they have assessed that today's readers and advertising customers demand added value in a printed newspaper. Therefore their focus is on producing new special effects, for example, gluing, super posters and perforation. "With inkjet we can offer an innovative added value like individualisation which is unique in the mass production of newspapers," is their learning.

Miller of Miller Distributions is confident of the growth prospects of inkjet printing.

With improvement of print quality (in combination with paper quality), reduction of ink- and click costs, there can be growth, feels Stefaan Vanysacker. A mixed offering of printed paper and e-paper would be a viable product, in his opinion.

Josef Simmerl of Canon seconds this view. With improvements in print quality, substrates and production speed inkjet could, over time, replace offset printing for short runs up to 5,000 copies and for mass customisation and industrial print on demand, he feels.

KBA agrees basically that increased inkjet press speed as well as lower running cost will propel inkjet volume and investments in the newspaper industry. However, it is essential that the business models are modified to suit digital printing. It is easy to talk about localised content and advertising – but if the newspaper publishers and advertising sales departments are not actively working to gather the local content or invest in appropriate software tools, it will be very hard to leverage the power of localisation and customised content.

THE SOGEMEDIA STORY

Sogemedia is the first independent group of weekly local newspapers in France, publishing 20 titles. Innovation is the core concept in the group's DNA and the 200 employees. After launching the first websites for local news in 2008, Sogemedia is now leaping forward and attempting a new challenge, the dream of any press publisher: to print a unique copy for each reader.

The printing company Imprimerie de l'Avesnois in northern France has inaugurated a digital workflow that is the first of its kind in Europe. Multiple weekly newspapers are in digital print production since January 2016. In total, six million Euros were invested. The investment pursues a major goal: a gradual transition to personalised newspaper printing. They use Kodak Prosper presses. The FoldLine of manroland web systems is responsible for inline finishing.

The Sogemedia publishing group and three project partners (La Semaine de L'Allier, LibertéHebdo, and Le Journal de la Haute-Marne) are using the new printing line to produce their editions, according to manroland web systems.

"What is so great and unique about it is that the newspaper now addresses readers individually in their everyday reality and covers their personal reading interests!" says Jean-Pierre de Kerraoul, President of the Sogemedia Group, about the new digital printing line at the Sogemedia subsidiary Imprimerie de l'Avesnois in Avesnes-sur-Helpe. The workflow with the Kodak Prosper 6000C and the FoldLine from manroland web systems will produce 265,000 newspapers a week, divided into 18 weekly titles with print runs between 3,000 to 40,000 copies.

Sogemedia is confident in its vision of offering hyper-local editorial content and advertising tailored to its target groups. Managing director Gilles Mevel says: "Sure, being a pioneer in digital newspaper printing that produces its entire print run digitally also involves a bit of adventure. But we will prove that digital print opens up promising publishing and commercial outlooks on the shrinking print media market."

"From a technical perspective, it is possible to print a custom copy for every user," explains Oriane de Kerraoul, who is responsible for communications at Sogemedia. Local and regional information form a common editorial basis for the different editions of the same newspaper. With changeable content, this basis can be tailored to readers' environments and their thematic preferences, such as sports, gastronomy and leisure. This allows readers to play a part in personalising content, just like they do online. The advertising model for local weekly newspapers will also change with digital production, mainly because the areas of distribution overlap much better with advertising customers' trading areas. As a result, small businesses and dealers can advertise at a lower cost.

At the same time, the newspaper can expect significant increase in advertising customers. Digital printing enables larger advertisers to adapt the content of their message at no further cost. This opens up new options for addressing target groups individually and effectively.

From an editorial and marketing point of view, Sogemedia is pioneering the use of digital media to incorporate customers into newspaper development based on variable data. The new online platform promotes exchanges between editorial staff and readers and is built on three pillars:

- A blog where readers can track the creation and completion of the personalized newspapers
- A forum where readers can share their thoughts, topic suggestions and ideas
- A space that invites readers to test "Mon journal" (My Newspaper)

Source: Kodak press release, 6 October 2015, manroland web systems press release, 4 February 2016.

3.4. TARGET MARKETS FOR INKJET IN NEWSPAPER PRODUCTION

The various suppliers target different markets for different products. Manroland web systems approaches Europe with combined business models – newspaper and commercial - while in Asia they are looking at specialised products and applications of variability as this market is at an early stage. Currently the focus of this market is more on “book on demand”, they find.

Canon has two major target markets for inkjet – transaction / direct mail and graphic arts. Within graphic arts, book printing is the most important application but newspaper printing plays a growing role.

Hunkeler focuses on catering to decentralised printing of daily newspapers with small to medium circulations and weekly newspapers.

Among the users, Topweb finds niche markets opening up and very receptive to short-run high-quality products. “We target

short-run national and global daily newspapers, as well as local community newspapers,” says Rodd Winscott.

Axel Springer reaches out to subscribers and readers of newspapers, advertisers (product marketing for special advertisements) for its inkjet applications, and CSQ looks at applications both in the newspaper and in general products printed on newsprint. For its part, Miller Distributions targets UK and European tourists and remotely distributed international titles. It expects to see return on investment in six years.

STEEFAAN VANYSACKER'S LIST OF ADVANTAGES OF DIGITAL PRINTING

Stefaan Vanysacker of Halewijn mentions a number of advantages of inkjet compared to coldset today. The added value you can create for the customer and the reader are:

Personalisation

Newspapers can be printed with a particular name and tailored content. For instance, papers can be printed for congresses and other events like travel expositions with specially-chosen content. Such newspapers can also be brought out for fundraising projects, with optimisation of databases and content on projects of readers' interest.

Micro-zoning

These include newspapers with a high number of editions or very local content. Kerk & Leven, a weekly of the Catholic Church in Flanders is an example. “BonteBuurt”, a neighbourhood newspaper made by local people and sponsored by a national political party, is another example, he says.

Co-creation / community building

Working in unison, sharing a common vision, creating a sense of belonging, all demand a fine balance between what is of common interest and what is personally relevant. Local people creating their own newspaper sup-

ported by regional and national organisations are examples of this. The platform allows and invites bottom-up communication. “Combined with the multi-editorial possibilities we provide the technology and the tools to manage bi-directional, ‘conversational’ communication,” Stefaan Vanysacker says.

Mix of digital printing and digital mobile distribution

Readers can choose how they want to read the news: on paper or in digital mode (digital mobile). For papers published in smaller quantities this can be a cost saving model. You can offer both (paper or mobile) and the cost of distribution saved in the mobile mode can be used to compensate the cost in digital printing.

Other advantages

Constant quality: All controls and settings are controlled within the software; no intervention of press operators is needed.

Automation: Automated workflow with automated controlling is possible, fewer operators are needed.

Constant cost per copy: Within an automated workflow, the cost per copy for a circulation of 1 or 1,000 copies is the same.

A HYPOTHETICAL SITUATION

Let us imagine a nationwide professional organisation (i.e., a federation) that needs to communicate on at least three levels. Inkjet is ideal in such a situation. Depending on the number of pages or editorial space you allocate to each of the three levels,

you get a different newspaper. With digital continuous printing, in principle one can envision an infinite number of different editions – even a single copy edition.

– Stefan Vanysacker

Micro-zoning (very local, neighbourhood newspapers), newspapers from membership organisations, personal newspapers and personalised publications are what interests Stefaan Vanysacker. His Halewijn estimates return on investment in five years.

3.5 RELATIONSHIP BETWEEN OFFSET AND INKJET

Regarding the aspect of print quality, both worlds are growing together, feels manroland web systems. This is based on the permanent development of inks. The requirements regarding circulation (print volumes) and speed, of the two, however, are not comparable, they say. They attribute this to the frequent decentralisation, regionalisation or individualisation of products that are printed with the help of inkjet systems. For Canon digital printing on newspapers will become a more viable option when run lengths continue to show a declining trend and the attractiveness of newspapers needs to be increased by delivering more targeted content, be it editorial or in advertising.

Topweb sees offset and digital as a symbiotic relationship, each competent on its own but with

the potential to complement each other's abilities, offering the client the best of both worlds.

To Miller, the connection between the offset and digital is that inkjet ensures continuity once levels fall below offset volumes.

At the other end of the spectrum is Vanysacker, who says: "We stopped offset production." Halewijn is now into 100% inkjet production. "The focus is only on new products which are not possible to produce (or too expensive) in offset," he explains.

3.5.1. ADVANTAGES OF INKJET COMPARED TO COLDSET OFFSET

"Inkjet is an add-on that allows us to bring individualisation into our papers," according to Drensek of Axel Springer. For example, with every purchase of a BILD copy the reader gets a 24-hour access to digital premium content. Thus, the paying reader stays a premium reader, no matter which platform he chooses to access BILD products.

Hans Gut of Hunkeler points out that the system allows the finishing of short-to-medium circulation with different formats and page counts and manroland web systems lists variability in products,

content and circulation structures as inkjet's advantages.

KBA highlights two aspects: First – the ability of an inkjet press to open up the newspaper publishers' business model. An inkjet web press can print newspapers but it is also able to serve other applications. Up to date high volume inkjet presses support a wide range of different substrates like uncoated or coated offset stock. This press generation is able to address fully flexible cut-off lengths and supports quite high print quality. Therefore inkjet systems provide the ability to break out of the given production schemes and serve other horizontal markets. Second – apart from new business inkjet presses include the ability to streamline the existing offset production. By addressing short-run newspaper production existing offset presses are liberated from ineffective and cost intensive short-run printing.

3.5.2. DISADVANTAGES AND SHORTCOMINGS OF INKJET COMPARED TO COLDSET OFFSET

The top speed and circulation of conventional offset will never be met by inkjet printing processes, is what Dieter Betzmeier of manroland web systems feels. He, however clarifies that though this is often seen as a disadvantage, taking into consideration the variability, the application possibilities and the fact that a true comparison should be done on a net output level and TCC basis (Total Copy Cost), the minus points become a relative issue.

On the technical front, the company is of the view that very thin and open-pored substrates are more difficult to print if untreated

CHALLENGES OF INKJET NEWSPAPER PRINTING

Company	Technical	Logistic	Business
Axel Springer	To enable the inkjet systems to run at the full speed of the coldset offset	Tracking personalised copies through each production step and the whole distribution process until it is finally delivered to the customer.	Data integrity
Hunkeler	There are finishing challenges in regard to different coverage from page to page and front to back, when paper is not completely dry on one page to over-dried on the next page.		
Topweb	Ink formulations require the use of UV, IR or heat to dry. If new formulations are developed, which don't need these aids to dry, it should be ensured that they do not clog the nozzles of print heads.		
Miller Distributions	Speed is an issue, affecting workflow and creating peak slot time bottlenecks.		Convincing publishers digital inkjet would work on the business side.
Halewijn			Persuading customers of the added value of the products that can be created, which justifies the price and print quality. Keeping the focus on added value in the products being developed and printed.
CSQ	The inkjet production line is not as reliable as an offset press.		Limiting production costs.
Canon			Meeting stringent price per copy requirements from newspaper printers and publishers.
KBA		"Last Mile" and distribution challenges. How to get a personalised newspaper cost effectively and with 0% tolerance to your client at 6 am in the morning?	Potential additional distribution cost shall be recognised in the business case.

and primers add cost to the business case.

When it comes to personalisation, further technical steps will be necessary, especially in the mailroom and in the delivery network, in the opinion of Axel Springer's Thomas Drensek. He lists the high cost of inks, low speed in general, low

quality in high-speed inkjet printing and high investments needed for the technology as some other disadvantages.

"The limitations of this technology in our specific sector are the speed and the cost of the consumables," says Dario De Cian of CSQ. "When either circulation or pagination

is quite big, we move production to the offset presses; this is possible because we standardised the printing sizes and we can produce the same size both in offset and in digital," he explains, talking of the way his printing plant handles this challenge.

Print quality, colour strength and saturation, speed and production cost are some of the disadvantages of inkjet in comparison with coldset offset, according to Stefaan Vanysacker.

Elaborating on the challenges, Drensek (Axel Springer) reports that when it started to think about using inkjet for its nationwide circulation, the challenge was to find solutions to integrate the Kodak systems into coldest web presses of different generations and manufacturers at several different printing plants.

There was a countrywide rollout at several print locations. Heterogeneous machine configurations (KBA, Goss, manroland web systems) were included. All in all, more than 30 inkjet imprinting systems were installed and more than 150 operators had to be trained. There was zero to minimal production experience, but the outfits became production-ready in June 2013.

3.6 PAPER FOR INKJET NEWSPAPER PRODUCTION

Josef Simmerl says on Canon web-fed inkjet presses, customers can use any newsprint down to 45 g/m² (after testing).

Axel Springer uses standard offset newsprint quality and Hunkeler recommends standard newsprint stock, which is no different to coldset offset paper. Miller uses standard 52 g/m² newsprint to avoid creasing and strike through.

According to Dario De Cian, newspaper production in CSQ is done on standard 45 and 48.8 g/m² newsprint. “We also use improved

newsprint (52 and 60 g/m²) and special paper for inkjet printing,” he says, and clarifies that “the newsprint we use – standard and improved – is the same we use on the offset presses.”

Halewijn uses Holmen Plus 72, Exopress 72 with 49 g/m² for standard newspapers, Holmen TRND 80 g/m² and 60 g/m² for smaller newspapers of 4 to 16 pages and BO Everjet premium 90 g/m² where better print quality is called for.

Rodd Winscott says at Topweb they use the same inventory stock as their offset presses – 48.8 g/m² to 113 g/m². The only difference is that they do not use 45 g/m² on the digital press. “We have found that the show-through detrimentally affects the product and 48.8 g/m² works fine,” he explains, adding, “We do not use digitally enhanced paper due the severe pricing shift and our desire to maintain a single level of inventory.”

Manroland web systems reports very positive experience with 48 g/m² UPM News. Its digital folding solution can process the offset paper grades that are released and accepted by the digital press suppliers. However, “for papers below 45 g/m² you have to expect restrictions in printing,” they caution.

KBA is quite open regarding different newsprint substrates. The KBA RotaJET achieves acceptable quality on untreated offset newsprint stock. KBA tested successfully 45 g/m² paper – obviously, slightly thicker paper like 52 g/m² provides lower shine-through and a wider colour gamut. To increase the colour gamut and to eliminate shine-through, an additional pre-coating solution is available as an option.

3.7 INK FOR DIGITAL NEWSPAPER PRINTING

In most cases the printing press supplier sells a press in conjunction with a maintenance contract. This contract requires the exclusive use of inks that are delivered by the press supplier and creates a single source situation. For instance, “We use HP ink, that is the only possibility we have”, says Dario De Cian. Canon supplies the inks to be used with Canon presses. They are developed specifically for Canon presses and they provide a perfect fit with the ink heads used, according to Josef Simmerl. A primer is not needed for Canon’s inkjet presses.

Axel Springer uses Kodak monochrome black ink in their imprint units. Again, there is no primer needed. Miller Distributions too uses Kodak. The difference with inkjet ink, Miller says, comes from the sensitivity of the heads and the fact that it is water based.

Stefaan Vanysacker says at Halewijn they use dye ink to reduce production cost – the quality is acceptable and the cost is reasonable. He feels primer ink is not required for newspapers with regard to print quality, and Miller doesn’t recommend a primer either.

As far as HP goes, there is the possibility to use a primer (the so-called Bonding Agent). In fact, Dario De Cian says this was one of the main reasons why CSQ chose HP.

“We use Toyo ink,” says Rodd Winscott who prints with TKS JetLeader presses. “We can source the ink from up to three vendors but use Toyo because it gives us the best results and is competitive in cost. The primary difference be-

TECHNICAL DETAILS OF CURRENT INKJET SYSTEM

Company	Speed of inkjet newspaper printing (web speed and copies per hour, CPH)	Printing width
Manroland	FoldLine can process a web speed of 300 metres per minute (5 metres per second). CPH example Walliser Bote (HP press and Manroland FoldLine): 24 pages Berliner size (320 x 470 mm, additional "Mail"-fold to 320 x 235 mm), 9,000 newspaper copies per hour. The CPH depends on the size and the page count of the newspaper.	Digital folding solution: up to 1067 mm (42 inches)
Canon	Canon supplies 15 models of inkjet presses suitable for newspaper production with speed ranging from 75 to 254 meters per minute. This results in an output of 1,800 to more than 8,000 tabloid newspaper copies of 24 pages per hour (CPH based on 85% productivity).	Inkjet presses are available with three paper widths: 520 mm (20.5 inches) 560 mm (22 inches) 762 mm (30 inches)
Hunkeler	A Hunkeler finishing system can process a web speed of 150 m per minute. Fully automated change over from Tabloid to Broadsheet with variable cut-off length and pagination change in 4-page steps. Tabloid and broadsheet newspapers can have up to 140 pages with multiple sections.	Up to 660.4 mm (26 inches)
Halewijn	Halewijn uses a Canon press at 127 meters per minute, and Hunkeler finishing equipment with mailroom optimisation.	540 mm (21.3 inches)
Axel Springer	Axel Springer uses Kodak inkjet imprinting units at a speed of 792 meters per minute (13.2 meters per second) running at the same speed as their coldset web presses.	Print width of imprint units is about 4 inches. There is one inkjet head installed on each equipped web press.
Topweb	Topweb uses TKS inkjet presses at 150 meters per minute.	TKS JetLeader presses have a maximum web width of 558.8 mm (22 inches) and a variable cut-off from 558.8 mm (22 inches) to 812.8 mm (32 inches). Roll width is the top to bottom measure of the page and cut-off is the left to right measure of the page. Minimum page size is 279.4 x 279.4 mm (11 x 11 inches).
Miller Distributions	Miller uses presses at 120 metres per minute producing circa 840 x 64 page newspaper copies per hour (CPH), and Hunkeler finishing.	Berliner size, 315 x 470 mm
CSQ	CSQ uses a HP press and a Hunkeler finishing system at 122 meters per minute. Reaching this target depends on the kind of paper and the ink coverage. The speed in CPH is a function of page size and pagination.	520 mm (20.47 inches)
KBA	KBA introduced the new RotaJET L-Series at Drupa 2016. A fully modular press concept, providing an output speed of up to 300 m/min and a web width up to 1,380 mm (54 inches)	RotaJET L-Series models support: Web width from 800 to 1,380mm (54 inches)

tween the offset and digital press is consumption and cost. On the digital press, ink cost is significant and needs to be accurately estimated in the initial pricing quotation.”

On the issue of using a primer, he says, their system does not have such a provision, and, furthermore, they do not feel that it is required to achieve a high-quality newspaper.

KBA supplies environmentally save water-based polymer pigment ink. The KBA RotaColor Ink is fully de-inkable (certified by INGEDE) and optimised for maximum print quality as well as high press performance and stability. One of the major goals during the ink development was to achieve print results that are close to offset. In addition KBA provides an optional pre-coating to push colour gamut and sharpness to outstanding high-quality printing results on newsprint paper stock.

Manroland web systems elaborate on the requirement of primer ink (or similar technology) for printing on newsprint: “We got positive experience with and without primer regarding print quality. A primer is helpful if you are using thin, open-pored paper grades in conjunction with a high area ink coverage. In this case the primer helps to reduce the print-through of the ink. The primer is also used to improve the optical properties,” says Dieter Betzmeier

3.8 PRINT QUALITY

The printing quality of inkjet presses is a fast developing parameter. It has improved continuously in recent years. Inkjet even made the liquid toner process almost redundant, which was developed to compete

with the heatset quality level and its high area ink coverage. To illustrate this contention, manroland web systems refer to the HP Indigo press technology with its liquid toner technology. “If you reduce the question to the parameters ‘resolution’ and ‘screening,’ you will detect a still healthy difference between 600 dpi of inkjet and 2,400 dpi of offset printing,” explains Betzmeier. Drop size and ink penetration behaviour (depending on the print substrate and production speed) also restrict the radius of operation in the area of inkjet printing. Counter-steering is possible through the use of a primer that improves the optical properties of the substrate and also reduces the dot gain by sealing the surface of the substrate.

Another possibility is the use of ‘light inks’, which allow a finer gradation of colour shades since they have a lower pigmentation. The use of semi-transparent micro-pigmented inks, which create a larger colour gamut in multi-colour-printing by an improved ability to overlay colours, similar to sheetfed-offset, is yet another option to improve colour space.

Josef Simmerl of Canon feels the print quality with the latest generation pigment inks is on par with offset, while Hans Gut of Hunkeler says that the overall receipted print quality from inkjet is good enough for a daily newspaper.

As a user, Drensek (Axel Springer) says “for us, inkjet is an add-on to offset. We use hybrid printing. That means inkjet and offset work together in one process. The quality of inkjet depends on the speed, which is set by the offset printing press: the higher the speed of inkjet the lower the quality.”

For Vanysacker, constant quality, more contrast in inkjet printing but less colour strength and small-

er colour space, are the points of comparison.

In Dario De Cian’s opinion, the printing quality is good enough for CSQ’s specific applications. “We insert inkjet sections into offset printed newspapers without any complaint from the advertisers,” he explains.

Talking of quality in comparison to offset, Rodd Winscott feels in most cases, inkjet and offset are on par, and in some cases the quality of the former may not be as good. But in many cases inkjet is actually far superior to offset, due to the fact that there is no rub-off, marking or ghosting, he adds.

Colours are slightly flatter but otherwise very clean with strong black, says Malcom Miller.

3.9 PERSONNEL AND TRAINING REQUIREMENTS FOR INKJET SYSTEMS

Inkjet systems are normally manned by two operators who need to be trained with regard to workflow and hardware, says Josef Simmerl.

Axel Springer runs the systems with their usual staff of offset printers. They have felt no need to take on extra staff, nor do they feel that special training is required for existing employees.

At De Cian’s organisation, the inkjet line is handled by one operator belonging to the mailroom crew. While the printer is running the press he also takes care of the finishing line.

Vanysacker reports that at Halewijn they do not depute any specific

FIRST USA NEWSPAPER PRODUCED ON INKJET PRESS

In the summer of 2016, Pacific Daily News became the first newspaper in the USA to be printed on an inkjet press. Published in Guam, a Pacific island that is part of the USA, the paper is produced with the help of a Kodak Prosper 5000 XLI.

When Rindraty Celes Limtiaco, publisher of the "Pacific Daily News", informed her readers at the end of July that their daily newspaper would henceforth be printed on an inkjet press, and would be shorter by two inches, reader Nick Prelosky asked: "If the newspaper is going to be two inches shorter, why should I still pay one dollar every day?"

There are no answers to some questions!

But there is an answer to the question why the Pacific Daily News belonging to the Gannett publishing group is now produced on a Kodak Prosper 5000 XLI.

Hitherto, the newspaper, catering to people on the small island that is part of the Micronesia archipelago and thousands of miles away from the continent of North America, was printed on a Goss Urbanite. The pressmen called it "Bessie". Old Bessie was built in 1968,

and although retrofitted many times, was reaching the end of her technical lifetime.

The publisher decided to go in for a new inkjet press. The Pacific Daily News thus became the first daily newspaper in the USA to be printed digitally.

Guam, with only around 160,000 inhabitants, is probably not the most dynamic newspaper market. But the installation is important for Kodak. The ultimate aim of the publisher is to produce new and different printed products on Guam. The Gannett group publishes dozens of regional newspapers in the USA and one of the large national newspapers - USA Today.

By the way, the folding and finishing system for the Pacific newspaper is from Augsburg, Germany: manroland web systems delivered a FoldLine engine to the Pacific Daily News.

Source: <http://www.4-c.at>

You will find this article in German language on the WAN-IFRA website:

<http://tinyurl.com/jbtwb5g>

operator for the inkjet systems. Graphic skills are not required for the inkjet operator, since the function is not that of a printer, he clarifies.

At Topweb, the pre-press operators became digital press operators. Winscott says they work the files, then they run the press. They transitioned easily to the digital press because the job is mostly handled from the job management station. Talking of training, he said it was smooth. Within six months most operators were completely trained and in the next six months they became proficient in all the maintenance aspects.

Miller deploys two operators per shift, and they proved able

to handle the procedure after a month of training.

Manroland web systems estimate that two operators and one helper are needed. The operators have to be trained or be experienced in the areas of prepress and in printing and folding techniques. Intensive training is required for the digital printer in the areas of data technology, classroom training as well as training at the machine, also training on the job regarding the folding systems.

For the finishing systems, Hunkeler feels experience in paper processing is beneficial, but not necessary. Inkjet presses and digital print finishing systems are easier to run than an offset press, they say.

3.10 MAINTENANCE

For the Canon machines, Simmerl says, the newspaper application falls into the regular maintenance intervals, nothing specific needs to be done. Easy to maintain design, well-trained technical staff, spare parts onsite and frequent maintenance are all listed as important by Hunkeler. They provide remote service support for technical engineers onsite.

HP provides a list of specific maintenance activities to be done on a regular basis.

As a user, Axel Springer stresses the importance of sticking to the cleaning instructions of the manufacturer and of regularly

changing paper dust filters. At Miller Distributions too, the given maintenance schedule is followed, and there's a kit of most spare parts kept onsite.

The environment is very important (temperature, dust, humidity), Vanysacker points out. Cleaning is important, he stresses. The supplier takes care of the maintenance. "They expect the lifetime of the equipment to be eight years at least," he adds.

Rodd Winscott elaborates: "Our digital manager is also the head technician and handles all the non-regular maintenance, such as head replacement, colour profiling, and electronic troubleshooting. He skypes with Japan when necessary and they track and solve issues together.

For manroland web systems, mechanical maintenance of the folding system is comparable to the offset world (annual revision, ribbon service, etc.). In addition, software maintenance is required of all connections and automation systems. This should ideally be handled via a software service contract or a service and maintenance contract that includes the supply of spare parts and parts that can wear out, they say.

Maintenance requirements of the digital printing system will vary depending on the chosen supplier and will usually be taken care of by the manufacturer of the printing system. The company puts the expected technical lifetime of an industrial inkjet system at seven to ten years.

3.11 INTEGRATION OF FUTURE TECHNICAL DEVELOPMENTS WITH EXISTING PRINTING SYSTEMS

Canon provides various inkjet product families that have different design properties, which cannot be upgraded (Océ ColorStream 3000 series, JetStream series and ImageStream series, for example). However, within specific product families, upgrades are in principle feasible. This is decided on a case-by-case basis, Josef Simmerl explains. Axel Springer feels that integration of new (upgraded) systems with existing ones is technically possible. Decisions about acquiring new equipment in the future will however have to depend on new business models, they add.

Manroland web systems feels integration is possible via chargeable upgrades or exchange of systems in the framework of a service contract.

3.12 BUSINESS CONDITIONS

For Canon's Commercial Printing Division, inkjet is the main revenue and margin contributor. In its maintenance contracts Canon normally, uses a click-charge system for maintenance and repair. Inks are charged separately according to the actual ink consumption. It is also open to using alternative models depending on customer situation.

Miller Distribution reports that a typical option is to pay for clicks per a specified number of meters, which covers all spare parts and print head changes. An alternative is self-service without click charge.

In this case the printer pays for all spare parts and head changes or refurbishments.

Halewijn too pays by the click-charge system. This includes changing of print heads when they are failing. The advantage of the click-charge system is that you have your production cost down to an exact figure – both the current amount and the future cost, Stefaan Vanysacker says.

Axel Springer and CSQ are exceptions. Both do not use the click-charge payment system. "With three million individualised newspaper copies of our newspaper BILD per day it would not be necessary to use a click-charge system," Axel Springer explains. "On the other hand we only use the inkjet system in combination with offset printing. Therefore it is not useful to separate the production costs." Dario De Cian says that CSQ pays for the consumables and the assistance.

Topweb purchased their machines outright. Therefore, there are no click-charges or on-going charges related to the running of the equipment. "We can purchase our paper and ink from vendors that are approved and have met the quality requirements of TKS," says Rodd Winscott.

Hunkeler sells its finishing equipment outright. "For best availability of the finishing system and fixed service costs we recommend a full service contract," they say.

Manroland web systems too recommends service contracts for both software and hardware of their finishing systems.

3.13 FUTURE PERSPECTIVES

Today, the business models are still at the stage of infancy, since products and data design options still have to be discovered.

Speaking for CSQ, Dario De Cian says, in the specific market of newspaper printing, “I don’t see big possibilities unless the suppliers are able to increase the speed and reduce the ink prices.”

Stefaan Vanysacker is of the view that lower ink and click-charge cost and better print quality (combination ink and paper) must lead to a better production cost. Speed and capacity are linear to the investment. Double speed or width will be double price or double click-cost.

Winscott recommends building a business model on short-run work that would prove to be profitable and make the best use of the machine time available, as well as the training of technicians and development of a maintenance team with a depth of understanding of both nuts and bolts and file structures.

Looking into the crystal ball, Vanysacker sees a mix of print and e-paper. Digital distribution will not stay for free in the future, he feels, and adds that there will be more personalised newspapers.

Manroland web systems is confident that new data pools will open, which will result in the development of the possibilities of inkjet printing in terms of variability, content and product.

The speed will adjust to that of the lowest level of offset printing, the company feels. In fact, it says that this point has almost been reached. This can be achieved even now if the print quality is

adjusted suitably. The economy of newspaper printing will develop positively with the combination of commercial and book production based on digital solutions. To get there, current business models have to be widened and made flexible, it feels.

Betzmeier (manroland web systems) thinks that viable business models can be developed if you look at business cases holistically, taking into consideration all cost factors, like transport, total logistics costs, HR costs, materials, energy, etc. He also sees the advantage of creating topical products even in remote regions. This will hold true if certain regional framework conditions are a given and if the players are ready to view printing as a trans-regional service. Conditional aspects are island situations, missing infrastructure, international readership, colourful target group portfolio, to name a few.

In addition, intelligent hybrid applications can shift the break-even point to an area that equals today’s circulation levels, they feel. This, however, requires that publishers and production managers work closely together and agree on guidelines regarding the variable and non-variable components of a newspaper.

Inkjet continues to get faster and better in quality, but the main issue is to reduce the running cost with lower cost inks, feels Hunkeler.

Canon foresees further growth in inkjet markets. Monochrome toner based systems are increasingly being replaced by full-colour inkjet presses, Simmerl notes. With increase in speed, print quality and substrates, substantial growth can be expected in graphic arts markets, i.e. in magazine printing, commercial and advertising markets, he reckons.

KBA believes that inkjet is a growing market and is convinced that the transformation from offset to digital printing still is at a very early stage. Inkjet systems will be faster and running cost will be more attractive – so these systems are able to address high volume already. To make digital printing a reality in the newspaper industry the development of business models and the optimisation of processes are of high importance. Without new models of distribution, production and sales offset might be always more cost effective above a certain breakeven point. In the mainstream newspaper world, KBA sees a lot of potential in hybrid models where offset and digital are combined and combine the best of both worlds: cost effective production and higher customer relevance.

Topweb too is optimistic about a strong future for digital inkjet printing. Being a relatively new technology for newspapers, there is, however, a need for the client to be educated and continually shown the strength of digital printing. The newness of the technology also means that learning curves are somewhat longer, Rodd Winscott cautions.

4. CONCLUSION

INKJET HAS ARRIVED IN
NEWSPAPER PRINTING

Digital newspaper inkjet printing has become established in certain niche applications. One such application is the printing of leading international newspapers in regions far distant from their country of origin, such as vacation destinations or travel hubs. The higher per copy costs of inkjet printing are more than compensated for by the elimination of transport costs. But even more important: The newspaper is available on its day of publication, thus making it considerably more attractive to customers.

For economic reasons, digital printing of local editions is to date not widespread, although from the technical point of view this would be a logical application. But if it is important that the sequence of editions in the production of short-run newspapers should follow the requirements of a complex distribution system, then digital newspaper printing can prove successful here also.

The possibility of the hybrid integration of conventional printing and inkjet imprinting units has opened up a highly promising area for the use of digital printing in the newspaper sector. A significant number of printing units is in use already in Europe. The range of applications has so far only partly been developed. New and additional applications can be expected especially in the area of direct customer approach and innovative ad formats.

Inkjet is of interest to many newspaper printers also because it permits a diversification of their offerings and can be a key for winning over new customers for print outside the newspaper sector (direct mailing, personalised mailing, transaction printing).

In cases where printing many newspaper titles in short print runs corresponds to the requirements of a regional market, inkjet can be the process of choice. The advantages of digital printing here is that it permits a high degree of flexibility in relation to variable content, formats and page counts.

In some few cases, industrial inkjet printing can even replace conventional coldset newspaper printing. This concerns newspaper publishers and newspaper printers who must deal with special geographical mar-

ket conditions (small, delimited markets, islands) and who aim to achieve specific company objectives with the aid of digital printing.

Inkjet has arrived in newspaper printing. It represents an enrichment. It is important that publishers and printers recognise the genuine potential of digital printing and use it in a meaningful way for new products and applications. It is not the technology that is decisive, but the innovative business concepts for which digital printing technology is used.

5. ANNEXES

I. COMPARISON OF
COLDSET OFFSET &
INDUSTRIAL WEB INKJET

II. QUESTIONS TO
SUPPLIERS AND PRINTERS

III. LATEST NEWS FROM
WALLISER BOTE

In this section, we discuss basic differences between conventional newspaper production using the dominant coldset offset printing process and the relatively new industrial inkjet process. The aim is not to focus on technical details but to underline major differences between both production processes that make them appropriate for different applications and business targets in the newspaper production environment. We are aware that technical specifications are changing quickly with technical development and so we concentrate here on fundamental process characteristics.

Coldset offset is a mature print process that has been optimised for newspaper production. Based on this development specialised printing systems have been designed for the specific requirements of newspaper production. Coldset offset is a classic printing method that enables creating thousands of identical copies from one physical master. The newspaper press typically uses multiple paper webs to enable a fast and straightforward print production process. With this production process, a complete newspaper product with all pages and sections required can be produced in one pass.

This is why before investing in a newspaper press, specifications of the envisaged products need to be defined. A number of questions have to be answered: What is the format of the product? How many pages have to be produced? Which colour capacity (how many colour pages) are required? How many newspaper sections are needed? What is the required speed of production in terms of copies per hour? Do you need to choose between straight production (double the speed) and double production (double the page count)? Do you need to stitch the products?

There are more questions that have to be answered before an investment is planned, but these are the most important ones; some decisions based on the answers cannot be revised. So, careful planning is highly important.

A coldset offset newspaper press is a highly optimised production system. Provided

decisions are made carefully, the newspaper printing system will fit the production requirements optimally. But it will not be flexible enough to accept changes after the press is installed.

When you compare such a system with a digital inkjet printing system, it is no surprise that there are a number of elementary differences between them.

5.1 PRINTING SPEED

The maximum web speed of an inkjet press is about three times lower than the web speed of a coldset offset newspaper press. Also, the web width of current industrial inkjet web presses can exceed one metre, whereas a coldset newspaper press can be even wider than two metres. These parameters are changing and there will be improvements in future. However, the relevant measure is the number of copies per hour that can be produced by a newspaper printing press.

In this respect the comparison is more complex. A specific coldset offset press allows a defined maximum speed of copies per hour. But for a web inkjet press the number of produced copies per hour depends on the size of the page and the page count of the product. The inkjet press will print all pages of the one product in sequence and will make best use of the paper web width. In general, we can say that an optimally specified offset press will print a much larger number of identical products in a given time than an industrial inkjet web press.

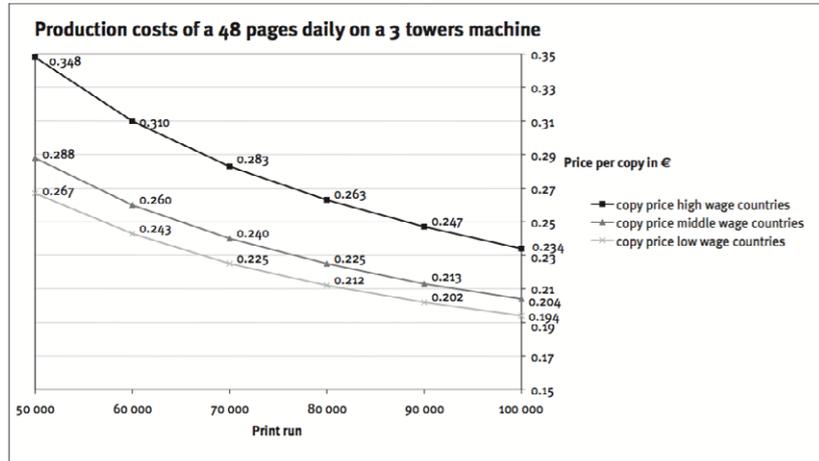
But there is another interesting aspect that is specific to inkjet and not available in offset print production. With inkjet you can balance higher speed and higher quality. If you reduce the image resolution you can speed-up the printing process. Using this unique feature of inkjet you can bring the speed of inkjet print heads up to the level of a modern newspaper offset press, which is a web speed of 15 m/sec or 900 m/min. This is the basis of digital inkjet imprinting units, used by a large number of newspaper printers and commercial printers.

5.2 COST PER COPY

All printing processes that are based on using a physical master – such as the offset printing plate – to print many identical copies show a dynamic development of cost per copy with growing circulation. The reason is that the cost of master creation – or plate making and plate changing in case of offset – is divided by the number of copies produced. The higher the number of copies, the lower the cost per copy.

This is not the case for all non-impact printing processes, where there is no physical master to print from. For such digital printing processes the cost per copy is almost the same from the first to the last copy regardless of the printed circulation. If you need to produce a large number of identical copies, the production cost per copy is critical. This is a factor that has been optimised over many years in the case of coldset offset printing. Coldset uses the most affordable graphic paper available, uncoated standard newsprint of low weight, like for example 42,5 g/m². Also, low-cost ink is used. Drying with heatset equipment is possible but in most cases not used, which reduces the production cost as well. Instead drying, the ink penetrates to a certain extent into the porous newsprint surface. All this creates a fairly low cost per copy, mainly determined by labour cost and cost of paper.

In inkjet printing, the ink is a major cost factor. In most cases, inkjet presses and ink are tightly connected, so that there is only one source of ink that can be used with each type of press. Often the press supplier also sells the ink that has to be used with the specific press.



Example of cost per copy in coldset offset newspaper production (WAN-IFRA Report 3.37, "Newspaper Cost Calculation Model", Darmstadt 2001, page 9)

To reduce printing cost and cost per copy, some newspaper inkjet printers try to minimise the amount of ink, especially colour ink, in various ways.

5.3 NEWSPRINT PAPER TYPES

Typical inkjet ink is based on water instead of oil. This increases the penetration behaviour of the ink into the paper substrate. To avoid or reduce show-through or print-through some newspaper inkjet printers are using higher grammage newsprint than usual, e.g. 50 or 56 g/m². There are other methods as well to improve the printability of newsprint in the inkjet process, like pre-treating the paper before printing with a so-called "primer coat" liquid.

In other words, newsprint is not the optimal substrate for inkjet printing, which is why paper or pre-treating cost may be higher compared to offset coldset printing. However this is a moving target, with new pigment based inks available today that provide an even better print quality compared to what has been on the market some years ago. This still

is on ongoing process with further improvements to be expected in the next five years.

5.4 JOB CHANGE

One of the great advantages of inkjet printing is the absence of a physical print master. This enables the change of the printed content basically on-the-fly without having to stop the press. Instead the print image is processed by a Raster Image Processor (RIP) and transferred digitally to the inkjet press. According to the digital image information the press "jets" the required colour ink drops via thin nozzles in the print head from a small distance onto the substrate, in the right size and the right amount to the right positions. Depending on the computing speed of the RIP and the press controller, this process can be very fast so that a change of the print image takes only fractions of a second. The time consuming classic job change via plate change is not a problem for an inkjet press. This opens completely new production opportunities. A circulation of a single copy is not only technical possible but also economically feasible. Jobs with many pages

can be printed in any sequence and individualised print jobs with changing content on each page can be produced. Since job change does not create a delay in production, you may consider printing only a few copies of Job 1, continuing with Job 2 and printing the rest of Job 1 at the end, and other variations as well.

Production and process control are gaining importance in inkjet printing, but many restrictions of a master-based conventional print process are no longer a handicap.

5.5 START-UP WASTE AND TIME

A major problem with all conventional printing processes is start-up waste. All master-based print processes need a certain time to ink the master (plate), to stabilise the ink-water balance (offset) before good copies can be produced. This process may cause a start-up waste of some hundred copies. Especially when print runs are getting shorter and job changes become more frequent, start-up waste becomes a dominant factor.

Inkjet does not have the problem of improperly printed start-up copies. In industrial web inkjet presses there will be a certain amount of white waste when you start the press. This is due to the press design and the web-lead. But there will not be the typical start-up (and shut-down) waste that conventional printing produces.

5.6 PERSONALISATION

Printing personalised content that varies from page to page is only possible with the help of a printing process that does not require a physical master. So, this is one of the major domains of digital printing. As a consequence, digital presses are used mainly in areas like transactional printing and personalised direct mailing.

5.7 STABILITY DURING PRINT RUN

Variations in inking and in quality in general during the printing process are known from conventional offset. They occur especially at the start of the printing run due to the fact that a number of parameters must be controlled and mutually attuned to one another, such as the ink/water balance. In contrast, inkjet technology provides a consistently high level of printing stability, as long as the nozzles are kept in good condition. Once inking values are preset, these will be retained automatically throughout the printing process. That is one reason why inkjet has already prevailed over electrophotography for proof printing.

5.8 FORMAT VARIABILITY

Format variability is one of the present demands of newspaper printers on modern printing systems. Over the last few years, some advancement has been achieved in this area in coldset offset. But digital printing clearly has the advantage here, as it does not use physical printing forms that, in conventional printing, are always bound by the circumference of the plate cylinders and the

cut-off length of the folding unit. Generally speaking, the size of a printed page in digital printing is dependent solely on the web width and the storage capacity of the digital control system. Moreover, the printing format and page orientation can be changed from one page to the next.

5.9 OPERATION EFFORTS

Because control of a digital printing system, as mentioned above, is comparatively simple and an inkjet system runs largely automatically, the training requirements of the operating crew are much less than for conventional offset production. Printers are now more often referred to as press operators. In addition, usually fewer personnel are required per printing unit. There are even examples where one operator controls two or more digital printing presses simultaneously. However, the demand on the technical support team, maintenance and environment is higher than with conventional printing.

5.10 COLOUR PRINT QUALITY

A much discussed topic is the inking and printing quality that can be achieved in inkjet production. A printing plant manager recently made the following statement: "I can supply any desired printing quality, provided that I am paid for it". The costs for inkjet ink and possibly an additional primer are a major consideration. For this reason, it can be observed in practice that inkjet printers try to cut ink consumption by means of reduced inking, which can lead to a lower printing quality. The use of low-grammage newsprint can

also prompt the printer to reduce inking in order to help prevent show-through. But the question of the possible level of printing quality in inkjet depends above all on economic aspects.

5.11 DEGREE OF AUTOMATION

In inkjet production, printing parameters are not changed during printing. That distinguishes it from conventional offset printing. To this extent it is possible to call inkjet a highly automated printing process. Automatic systems are also generally used for finishing (gathering, folding, cutting) that work with markers or small QR codes to independently recognise when a circumference or format change takes place and react automatically to the change.

On the other hand, it must be taken into account that an industrial web inkjet press is not in itself a production system that supplies finished newspaper products. Servers for system control, reel stands, folding machines and finishing systems as well as mailroom installations are also required. All these installations must be integrated and mutually coordinated. To this extent, the complexity of an inkjet production system can be compared to that of conventional newspaper production.

5.12 PRINT STANDARDISATION

The ISO 12647-3 coldset newspaper printing standard was first published in 1998, i.e., many years after that process had become established in newspaper production. Inkjet newspaper printing is still at the beginning of its development. Therefore it is not surprising that as yet no generally binding printing standard exists for this process. But an industry-wide inkjet standardisation can emerge in the future. It can be assumed that the first objective is to reliably achieve the present coldset standard in inkjet too. Going forward, the aim might be to discover the limits of inkjet printing in daily practice in order to set new standards that can be achieved only by the inkjet process.

A significant portion of this report was put together on the basis of answers to a questionnaire sent to suppliers and users in various parts of the world. The questions they answered were:

- Q1. What are interesting and economically viable applications of digital inkjet printing in the newspaper environment? Please describe your applications or those you think will be of importance in future.
- Short run newspaper printing
 - Remote printing of international newspaper titles
 - Creating new hyper-local print editions
 - Personalised printing – addressing personal preferences in advertising or providing personal information
 - Printing according to distribution requirements – for example pre-sorted newspapers making it easy for distributors
 - Digital printing to develop additional print business outside the newspaper market
 - Inkjet printing as complementary production system to offset; if this is the case, what are the advantages of inkjet?
 - Inkjet replacing offset; if this is the case, what are the reasons?
- Q2. In what ways can inkjet printing be an improvement on conventional printing? (For example in terms of operating cost, change-over time, format flexibility, colour quality control, start-up waste, footprint of machines, investment cost, etc.)
- Q3. Which inkjet press do you use (make and model), when was it installed?
- Q4. How many installed inkjet presses do you have in the newspaper market? Where do you have them (countries)?
- Q5. What are the applications for inkjet printing for you?
- Q6. How do you see the business development for inkjet?
- Q7. What are your target markets?
- Q8. What was (is your expected) the ROI of your inkjet investment?
- Q9. How do you see the relationship of offset and inkjet? What is the role of inkjet for you?
- Q10. What are the challenges of inkjet for you?
- Q11. Which problems/hurdles did you have to overcome when introducing inkjet? (business-wise and technology-wise)
- Q12. How do you process the printing data for inkjet? What are the complications/changes?
- Q12. What is the speed of your inkjet system (web speed and CPH)?
- Q13. What is the printing width of your inkjet press?
- Q14. Which paper do you use and why? What are the differences to offset?
- Q15. Which ink do you use and why? What are the differences to offset?
- Q16. Do you use/recommend a primer ink for printing on newsprint?
- Q17. How does the print quality compare to offset? (resolution, colour space, screening)
- Q18. How are you manning the inkjet systems? What kind of training is required?
- Q19. What are the maintenance measures you have to take care of?
- Q20. How can future technical developments be integrated into existing printing systems? (e.g. print heads, faster printing speed)
- Q21. Do you pay according to a “click-charge” system or a similar structure?
- Q22. Do you charge according to a “click-charge” system or a similar structure?
- Q23. What is the expected lifetime of your inkjet press?
- Q24. What are the future perspectives in your view? (speed, width, quality, economy)
- Q25. How do you view the relevance of inkjet for newspaper production now and in future?

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www.wan-ifra.org/rmtc

On the website “1815.ch” the Swiss Mengis Group published the following statement on 3 November 2016. WAN-IFRA will research the background and inform members and readers of this report later.

Printing of the “Walliser Bote” is being outsourced

The Mengis Group has decided to outsource the printing of the “Walliser Bote” from 2017 onwards. For subscribers, however, everything will remain the same.

Since mid-June 2015, the “Walliser Bote” has been printed on a digital system used for the first time in the world for this purpose. The investment in the new system was necessary because the old web-offset press had to be replaced.

The Board of Directors had examined various options at the time. Three years ago, outsourcing the newspaper printing was considered, but at that time the tightness of the deadlines and the high price weighed against the option.

The Board then decided to use the digital printing solution. It was seen as a sustainable investment in the future. With the versatile production facility, capacity utilisation in the customer’s print business,

it was felt, would also be boosted beyond the normal newspaper pressure. Unfortunately, the expectations in this business area have not been fulfilled within a useful period of time. In addition, the digital printing press is not available in the important and attractive time window for customers due to the production of the “Walliser Bote”. This is now being optimised.

Initial situation has changed massively

The Board of Directors has therefore decided to outsource the production of the “Walliser Bote” from January 2017 onwards. Due to the overcapacity at almost all newspaper printing houses in Switzerland, the deadlines and financial conditions are now also much better. Appropriate clarifications and negotiations are currently in progress.

For you, esteemed subscribers, nothing will change regarding delivery (post and private delivery).

The editors as well as the publisher look forward to serving you daily with much knowledge from our region. We would like to thank you for your loyalty and wish you a lot of reading pleasure.

Mengis Group, 03 November 2016, 18:35 h

[<http://www.1815.ch/news/wallis/aktuell/der-druck-des-walliser-bote-wird-ausgelagert/>]

The screenshot shows the 1815.ch website interface. At the top, there is a navigation bar with categories like NEWS, WAHLEN 2016, WB, RZ, RV, 1815.tv, 1815.club, 1815.märt, SERVICE, and TRAUER. Below this is a sub-navigation bar with WALLIS, SCHWEIZ, AUSLAND, SPORT, and VERMISCHTES. The main content area features a large green and purple graphic with the text "Top: Kinderprämien bleiben niedrig! Ihnen so nah" and the sodalis logo. Below the graphic is a news article titled "Der Druck des «Walliser Bote» wird ausgelagert" with a sub-headline "MEDIEN | In eigener Sache". The article includes a photo of several Walliser Bote newspapers. To the right of the article is a video player titled "Aktuell auf 1815.tv" showing a discussion with the text "WB Stammtisch" and "Sendung vom 11. November 2016". Below the video is a section titled "Heute im WB" with a thumbnail of the Walliser Bote newspaper.

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