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Asian Newspaper Expo, Singapore

Speaker: Claus Bolza-Schünemann
Executive Vice-President of Engineering and Development,
Koenig & Bauer-Albert AG, Würzburg, Germany

Subject: New developments by KBA in newspaper printing

Ladies and Gentlemen,

It is both a great honour and a pleasure for me to be here in Singapore today to give this speech on "New developments by KBA in newspaper printing" before an audience of such prominent trade experts.

Those of you who attended Drupa 95 in Düsseldorf may have seen live demonstrations of these innovations. Some of the ones I would like to mention today are:

- our new RC-Paster reelstand

- printing-unit concepts

- automated plate mounting on four-high newspaper web presses as KBA's contribution towards reducing makereadies

- the current state of the art in anilox keyless inking and the advantages we see for standardised, economical multicolour newspaper printing

and, lastly,

- the electronic shaft, which was demonstrated in a Comet newspaper web offset press on the KBA Drupa stand and is now in operation at several sites.

Less complex press configurations with a high degree of colour flexibility and fast set-ups
Publishers' demands for less complex press technology are already being addressed. For example, more than 80% of the double-width newspaper web presses sold by KBA in 1995 were configured as four-high towers of H- or arch-type printing units for four-colour printing on both sides of the web. Four years before, in 1991, only 33% of the presses we sold had this configuration, while 67% were still satellite presses.

Since 1988 KBA has sold more than 75 double-width press sections with well over 1,000 printing couples in four-high tower configuration for multicolour newspaper and directory offset printing.

This is a KBA Journal four-high tower at IPEX '93 in Birmingham, England.

Four-high towers of H- or arch-type printing units all print blanket-to-blanket with a straightforward vertical web lead, eliminating the need for impression cylinders, complex reversing options and web deflectors. Here, for example, is a 3D drawing of a KBA Colora four-high tower.

This diagram shows a giant, 93-unit KBA Express web offset installation ordered by Dong-A Ilbo in Seoul, one of the world's top dailies.
And here you see a diagram of four 64-page KBA Commander web offset presses — incorporating a total of 94 printing couples — for Malaysia’s biggest newspaper, The New Straits Times Press.

The complicated web leads of reversible nine- or ten-cylinder satellites with colour decks — the dominant configuration in the eighties — are a thing of the past. Changeover times have been cut dramatically. Above all, press presetting and webbing-up have been made easier and faster. A further advantage is the minimal number of guide rollers. In fact, between the stacked H- or arch-type units on a KBA four-high tower there are no guide rollers at all.

(Slide 6: KBA Colora compact four-low tower for The Han Kyoreh Shinmun in Seoul)

For newspaper houses with a limited presshall height we offer a compact version of the KBA Colora with two operating levels. We call this a "four-low" tower because it is just 5.6 m high. Here is a diagram of a four-low KBA Colora for Han Kyoreh Shinmun in Seoul, Korea.

(Slide 7: KBA Pastostar)

In most cases an automatic reelstand for a maximum web speed of 12 mps — for example the KBA Pastostar with beltless drive — is perfectly adequate. KBA was first again with a beltless reelstand for easy operation.

(Slide 8: Diagram: KBA RC-Paster)

Automation options at the press itself include automated reel change at extremely high web speeds of up to 15 metres per second, as with our new heavy-duty KBA RC-Paster with beltless drive. Here is a diagram of this new heavy-duty reelstand, a...
standard feature for individual reel widths and AC drives, with floating rollers and a minimum of web-guide rollers for a uniform web tension.

All the reelstands in our product range can be used in conjunction with automated systems (AGVs) for reel loading and butt-end removal, automatic reel stripping and splice preparation.

(Slide 9: Schematic drawing: KBA Patras)

For automatic reel loading KBA has developed the new KBA Patras.

(Slide 10: Automatic plate changer)

This is a photo of KBA's automatic plate mounting and changing system for four-high newspaper presses. It was demonstrated for the first time at DRUPA 95 on an Anilox-Express web offset press. During each demonstration two plates were changed automatically in the inside section of the newspaper, i.e.

- the used plates were unclamped and ejected automatically into a collecting bin on the printing couple;
- the new plates were guided from a central box to the printing couple via a computer-controlled transport system and clamped onto the plate cylinder;
- and after-press re-start the used plates were removed from the collecting bin by the transport system and placed in a disposal bin.

Automatic plate change on one printing unit takes approximately three to four minutes. Simultaneous changing on a four-high tower means that all 64 plates - the equivalent of 32 two-colour or 16 four-colour pages - can be changed in less than ten minutes. This is the approximate time taken by Heidelberg's new Quickmaster-DI to expose just four waterless offset plates in the small 34 x 46 cm format.

.../
KBA’s automated plate mounting is available in three levels of automation. At Drupa the highest level, with automated delivery and disposal, was demonstrated.

The best type of press configuration for automatic plate mounting is the four-high tower of arch-type printing units because it offers the necessary space and also has decentralised drive, with the one main motor per printing couple doubling as an auxiliary drive.

The plate-changing system developed by KBA is better suited to newspaper production than the robotic systems introduced by the Japanese in the eighties for full-circumference plates, because it is less complex, less expensive and more compact.

The Anilox-Express demonstrated with automated plate changing at Drupa 95 is now up and running at Tiroler Tageszeitung, Innsbruck, which already operates computer to plate and aims to use the new four-high tower — which extends an existing conventional offset satellite press — for more four-colour printing. Management is confident that automated plate changing will optimise plate logistics, reduce manning levels and shorten changeover times when printing frequent partial editions. In other words, that it will enhance production economy.

A further advantage of automated plate changing is that any number of plates — from just one to all 16 — can be changed on any one printing unit according to production requirements. The new plates are exposed off-line conventionally or computer-to-plate while production is running and placed in the correct position ready for a fast automatic plate change. This automation module
addresses the trend towards split editions for better newspaper targeting.

Modular mechanics and electronics

(Slide 13: KBA Colora with decentralised drive concept)

On modern newspaper printing presses modularised mechanics and electronics are rapidly becoming the norm. These include decentralised control and drive systems. On KBA four-high towers each printing unit has its own main motor which can double as an auxiliary drive for plate mounting and other makeready work. KBA was the first to launch this drive concept, incorporating it in the KBA Journal in 1990 to eliminate consumable parts as drive belts.

(Slide 14: Anilox offset keyless inking unit)

Anilox offset with keyless inking could soon become the established process for the economical, standardised mass production of newspapers because it accommodates virtually all the current trends in newspaper production, i.e. the digitalisation of pre-press (computer to plate), edition splitting for group targeting, more process and spot colours and improved press ecology.

During the past ten years KBA has been a global frontrunner in the development of this technology for multicolour offset printing and is now the international market leader (market share in Europe: 83%).

To date KBA has sold 17 presses of this kind to customers in Europe and the USA. Eleven of them are already in operation, printing millions of newspapers with a high colour content every day.

(Slide 15: Anilox-Colora at Magdeburger Volksstimme)
With sales of 17 anilox web offset presses totalling 415 printing couples KBA is the technological and market leader in anilox offset and has more than 10 years' experience in keyless inking for multicolour newspaper printing - more than any other manufacturer in the industry.

The photo shows an Anilox-Colora with 64 printing couples at Magdeburger Volksstimme's new high-tech printing facility in Barleben.

(Slide 16: Computer to plate at Magdeburger Volksstimme)

Magdeburger Volksstimme operates computer to plate.

(Slide 17: Automatic reel loading at Magdeburger Volksstimme)

It has also totally automated reel logistics, using AGVs plus automatic reel stripping, splice preparation, reel supply and butt-end removal. Newspaper production at Magdeburger Volksstimme is highly industrialised and standardised, with a low manning level.

(Slide 18: Comparison of RGS and KBA keyless inking units)

Not all keyless units currently offered can be described as short-train inking systems in the true sense. Here you can see the difference between Rockwell Graphic Systems' relatively complex positive feed keyless offset unit on the left and KBA's clear and simple anilox offset keyless inking unit on the right, with the key components ink trough, chambered doctor blade, screen roller and forme roller.

(Slide 19: KBA Anilox-Colora at South Bend Tribune)

KBA anilox web offset presses have been in operation for many ...
years printing millions of primarily four-colour newspapers every day in Germany, England, the USA, Finland, Belgium, Israel and Switzerland. A further anilox press is soon to be delivered to a customer in Canada. This photo shows the Anilox-Colora at the South Bend Tribune in Indiana, USA.

(Slide 20: Schematic drawing of a keyless inking unit)

This is a drawing of KBA's new-generation keyless inking unit. It is the product of seven years' optimisation in real production conditions to facilitate handling during fast changeovers, extend the service life of vital components such as the screen roller and doctor blade and improve general functioning even during long print runs. Initial problems such as excessive abrasion of the screen roller and doctor blade, or printing errors through ink emulsification caused by too high a proportion of dampening solution, have been eliminated. Anilox offset has long since proven its efficiency and reliability in day-to-day, high-quality newspaper production.

Despite rumours to the contrary anilox offset operates with standard lithos, printing plates, blankets and dampening additives. The ingredients of the printing inks are similar to those of conventional offset inks except that the viscosity is slightly different.

After carrying out detailed economic comparisons we have found that, because changeovers are shorter and there is less waste, anilox offset is generally more economical than conventional offset if the print run is split into numerous partial editions and a lot of colour is used. Some anilox customers would be unable to print to their current deadlines if they had a conventional press with the same capacity.

If job changes in multicolour printing are frequent, anilox keyless inking can enable waste to be cut to the lowest level pos-
sible in conventional offset printing (i.e. with ink keys set in advance via film or plate scanner), yet with very much less effort. Moreover, needless ink consumption and waste caused by operating errors such as flooding cannot occur.

The waste rate also depends to a great extent on the proficiency and motivation of the press crew in setting colour and cut-off register.

Experience with anilox offset installations in the USA shows that manning requirements are significantly lower than with conventional installations of a comparable size. Although regulations in Germany and other countries concerning press manning make it difficult to reduce the size of the operating crew, personnel not required for the actual printing process can often be usefully employed elsewhere.

Investigations by independent research institutes such as IFRA have shown that, with anilox offset, print density is uniform not only within each signature but also throughout each print run (irrespective of length), that tonal values deviate only minimally from the proof and remain consistent even during long print runs. Newspapers printed in anilox, e.g. "Die Woche", are evidence of this.

Anilox offset was an early step towards the economically logical standardisation of newspaper production. Increasing digitalisation in pre-press, such as computer to plate, is a further move in the same direction. In the final analysis this is where the quality of a newspaper is determined. The situation is no different in conventional printing.

Standards must be clearly defined and observed, both in in-house repro and by external creative professionals who deliver the finished printwork. In view of the continuing pressure to extend editorial deadlines it is illogical to waste valuable time cor-
recting pre-press errors by adjusting the ink keys for a better result on one page at the expense of print quality on the following one.

The applications of anilox offset newspaper printing are by no means exhausted. With legislation forcing a move towards more ecological newspaper production, waterless anilox offset, for example, offers enormous potential. Screen rollers on KBA presses are already temperature controlled to ensure a consistently high print quality even during long print runs. Improved ink chemistry and — since the expiry of the Toray patent — new-generation waterless offset printing plates with a much longer service life are paving the way from the materials point of view. Our R&D department is busy here, as well.

(Slide 21: Four-high Comet press)

One of the extras we showed at Drupa without prior announcement was an electronic shaft on our new single-width, double-circumference KBA Comet. The individual printing units and folders were driven directly via AC positional servo motors, with no vertical or main mechanical shaft. The performance was so good that an electronic shaft is now a standard feature on the KBA Comet.

(Slide 22: Drive side on a Comet with Plexiglas tube)

In this photo a Plexiglas tube indicates where the vertical mechanical shaft would run in a four-high tower.

The concept of the electronic shaft, though currently the subject of much discussion, is not, in fact, a recent innovation but was introduced some 20 years ago. The technology can also be incorporated into double-width web offset presses, and we have been supplying such presses for some years with drag rollers driven electrically via AC servo motors.
Since production safety and reliability for our newspaper customers is our top priority, however, and the electronic shaft does not, at first glance, offer any immediate advantages to the customer, we are pursuing its development step by step in order to gain the necessary experience under real production conditions.

KBA Comet presses with electronic shafts went on line several months ago in Spain and South Africa. KBA is thus the only newspaper press manufacturer worldwide with electronic shafts operating in daily production. Two more presses with this new drive concept are scheduled for delivery to customers in these two countries this year.

(Slide 23: Diagram; KBA Comet für The Print Works, Staverton)

In addition three Comet presses were sold at the end of September/early October 1995 to customers in the Netherlands, and a big 44-couple Comet installation (four four-high and three two-high towers) to a member of the Northcliffe Newspaper Group - The Print Works in Staverton, U.K.

Shaftless drive with AC servo motors offers the same advantages as decentralised drive, with a number of additions:

Advantages:

- less complex gearing, no main or vertical shafts
- reduced abrasion thanks to brushless drive
- fewer mechanical parts, with less abrasion at the drives
- fewer rotating parts reduce the risk of oil leaks
- improved register stability when starting and stopping the press
- the absence of critical mechanical drive assemblies such as bevel gears eliminates vibrational sources
- press run is smoother because there are fewer moving parts in the drive system, i.e. reduced noise emission

.../
greater flexibility when extending the press
and last, but not least,
- no production of blind current.

KBA has gradually and systematically accomplished the transition
- in practical operation - from electro-mechanical to electro-
electronic drive systems, progressing from a single large main
motor per press section on the earlier satellite presses,
through decentralised drive systems with a synchronising shaft,
electrically driven infeed units and drag rollers on four-high
towers, to the KBA Comet as the first newspaper press worldwide
to go into daily operation with an electronic shaft. Production
reliability for KBA newspaper customers has always been a top
priority. This has enabled the risks involved in using the elec-
tronic shaft for large double-width web offset presses to be
kept to a calculable level.

Thank you for listening.