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200 years
Koenig & Bauer

From letterpress to digital print

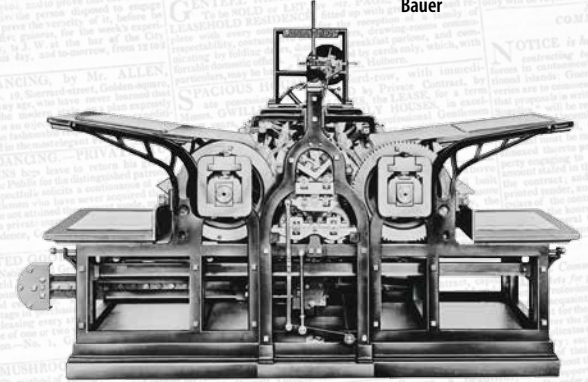
On 9th August 2017, Koenig & Bauer in Würzburg will be celebrating its 200th anniversary. In international business, such a proud age is reserved for companies which make full use of changes in technologies and markets to embark on new paths, and whose reliability, flexibility and innovations secure the loyalty of customers over successive generations. Koenig & Bauer is such a company. The Franconian workshop of 1817 has since blossomed into a globally successful press manufacturing group with a unique portfolio of print solutions. Anniversary festivities are planned for September – an ideal occasion for KBA Report to review past achievements and visions for the future.

Start-up in London

Nowadays, many start-ups head to Silicon Valley in search of venturesome investors and an optimum infrastructure for the realisation of their ideas. It was this same reason, the determination to implement his visions, which led Friedrich Koenig to travel to London some 210 years ago. In the English capital, Koenig and his partner Andreas Bauer laid the foundations for today's industry with the invention of a cylinder printing press in 1812. In November 1814, The Times became the first newspaper to be printed on their double-cylinder press. And on 9th August 1817, they signed a contract establishing Schnellpressenfabrik Koenig & Bauer in a secularised monastery in Oberzell near Würzburg.

The first years are often difficult times. Two hundred years ago, the Main-franken region lacked almost everything which is necessary to support industrial manufacturing. But gradual progress was achieved nevertheless.

29th November 1814:
A newspaper is printed mechanically for the first time – on the double-cylinder press designed by Friedrich Koenig and Andreas Bauer



Friedrich Koenig
1817-1833



Andreas Bauer
1817-1860



Fanny Koenig
1833-1860



Wilhelm Koenig
1860-1894



Friedrich Koenig Jr.
1860-1905



Luise Bolza
née Koenig



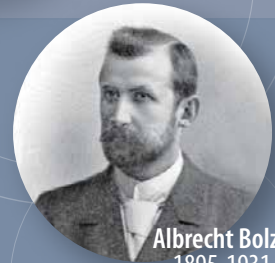
Edgar Koenig



Constantin Koenig
1905-1921



Albrecht Bolza
1895-1931



The founder and his descendants

Six generations of printing press manufacture *

Dr. Hans Bolza
1931-1971



Dr. Hans-Bernhard
Bolza-Schünemann
1971-1995



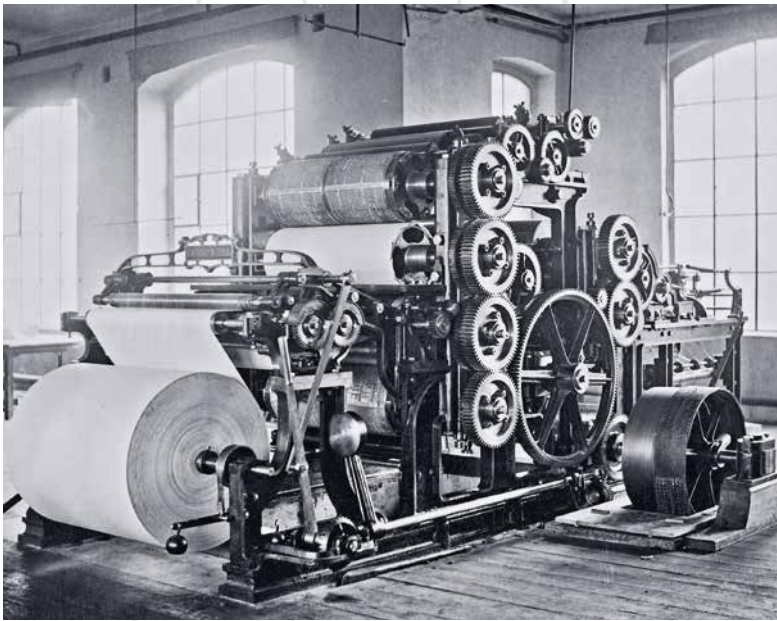
Albrecht
Bolza-Schünemann
2003-2009



Claus
Bolza-Schünemann
since 2011



* the figures indicate the years of service at the head of the company



On 25th January 1823, the *Haude und Spenersche Zeitung* in Berlin was the first newspaper on the European continent to be printed on Koenig & Bauer presses. Further German and European publications followed in the subsequent years.

Friedrich Koenig died in 1833. His widow Fanny Koenig and his former business partner Andreas Bauer continued his work. New presses were developed and the one-hundredth press was already delivered in 1838. Around this same time, a number of ambitious young workers moved away to found their own businesses. In this sense, the Oberzell monastery can be considered the cradle of German printing press manufacture. The company's foundation period came to an end with the death of Andreas Bauer in 1860.

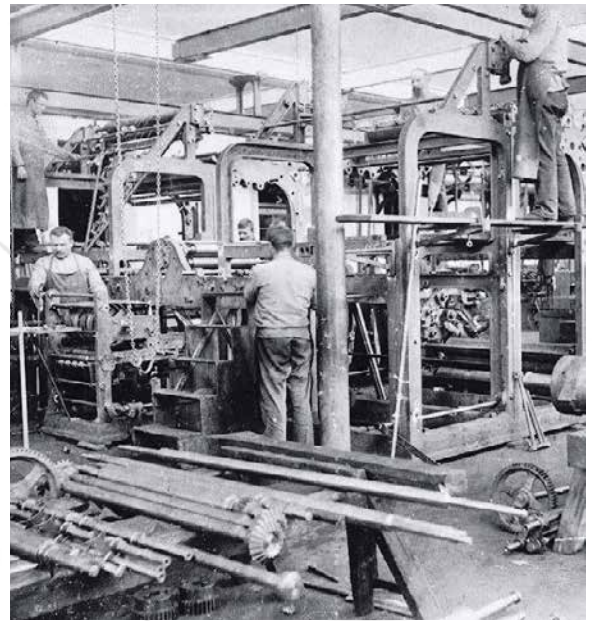
1855 – 1873: Social achievements far ahead of their time

The founder's two sons, Wilhelm Koenig and Friedrich Koenig Jr., joined the company in 1849 and 1857, respectively. Wilhelm Koenig tended to the technical side of the business, while Friedrich Koenig Jr. modernised factory routines and introduced a series of ground-breaking social reforms. The sickness benefit fund founded in 1855 – which still exists today – was followed by a factory savings bank in 1865 and by a factory training school, the precursor of today's vocational training centre in Würzburg, in 1868. A widows' and orphans' fund and a foundation to sup-

port the education of children from poor families were further early social achievements. The factory statute of 1873 defined the rights and duties of workers and managers and established a factory council – employee participation already 140 years ago.

1876: The era of web printing begins

Webfed presses were added to the manufacturing programme in 1875 and shaped technical developments, business expansion and indeed the whole image of Koenig & Bauer in decisive fashion over the following 125 years. The first webfed press was supplied to the Magdeburgische Zeitung in 1876. Wilhelm Koenig invented the variable



Above left: First web-fed rotary press designed by Wilhelm Koenig (1876)

Above right: Press assembly in the Oberzell factory in 1895

The new factory built in 1901 is today the site of the Koenig & Bauer AG headquarters in Würzburg

web press in 1886, designed the first four-colour press in 1888, and began building special machines for the printing of luxury colour products shortly thereafter. At the same time, he became very interested in securities printing, a field in which Koenig & Bauer was later to become market and technology leader. New flat-bed and chromotype presses were also produced. In 1895, the 5000th cylinder press left the factory.

Wilhelm Koenig died in 1894, and Edgar Koenig in 1897. In the meantime, Albrecht Bolza, a grandson of founder Friedrich Koenig, and Constantin Koenig, the youngest son of Friedrich Koenig Jr., had joined the company as



the third generation. Together, they shaped the course of the company through into the 1920s.

1900: Expansion and a new factory

In 1901, a new factory was built at the site today occupied by the company headquarters in Würzburg. The 225-metre long manufacturing hall was one of the largest in Germany at that time. The first webfed publication and rotogravure presses were supplied, and the development of sheetfed machines was stepped up. The four-colour Iris press, for example, prepared the stage for the later securities printing division. Alongside sheetfed and webfed presses, various matrix-moulding presses and plate-casting machines were delivered to customers all over the world.



1914 - 1945: Destruction and rebuilding

The First World War interrupted economic expansion. Dr. Hans Bolza, a great-grandson of Friedrich Koenig, made a notable contribution to the mending of severed foreign business links. He was appointed to the executive board of the company when it was transformed into a limited company in 1920 and became chairman of the board in 1931. He held this office for 40 years.

Koenig & Bauer survived the period of hyperinflation in the 1920s thanks to a newly developed collect press for coloured banknotes. After the National Socialists came to power in 1933, however, foreign business became increasingly difficult. To compensate, the production of centreless grinding machines was started in 1934. Such machines were still manufactured at the Austrian factory in Mödling into the 1990s – a prime example of how the company has constantly adapted to changing circumstances.

In March 1945, bombs and artillery shells destroyed both the main Würzburg factory and a second factory in the suburb of Grombühl. Reconstruction began in 1946. After the post-war currency reform, Koenig & Bauer resumed business in 1949 with nominal capital amounting to DM4.1 million, and set out to participate in the German economic miracle. The first new newspaper press was delivered to Darmstadt in 1950. There were now 1,147 employees back in work.

1952: Success story of security printing

The start of cooperation with securities printing expert Gualtiero Giori in 1952 and the arrival of a talented young design engineer named Dr. Hans-Bernhard Schünemann, the son of a Bremen publishing family, in 1951 were important milestones. His first of over 250 patents was granted for a modification of the so-called Maltese cross drive mechanism, which was subsequently used in

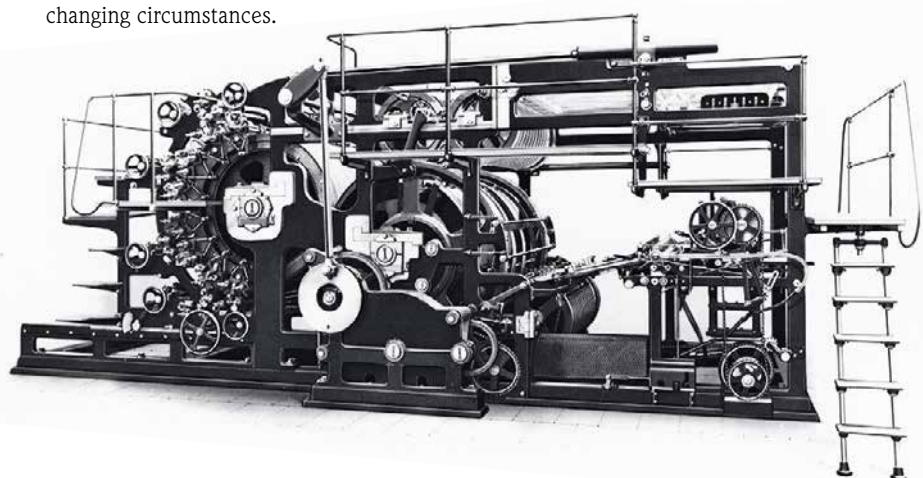
Cylinder assembly in the 1920s

another of his inventions, the sheetfed gravure press Rembrandt MT III. In 1959, Dr. Hans Bolza formally adopted Dr. Schünemann, who had already been appointed to the executive board three years earlier. From 1971 to 1995, Dr. Bolza-Schünemann was himself president of Koenig & Bauer AG for almost 25 years and initiated the formation of the KBA Group from 1990. After the turn of the century, he was succeeded by his sons Albrecht (2003-2009) and Claus (since 2011), who thus represent the sixth generation of the founding family at the helm of the company.

Successful presses Condor and Rotafolio

Despite the growing offset competition in the 1960s and 70s, Koenig & Bauer retained the proven letterpress technology for its sheetfed and webfed presses for a relatively long time. Alongside the Rembrandt sheetfed gravure press and banknote presses developed together with De La Rue Giori, the two-revolution Condor and the Rotafolio sheetfed press for wrap-around plates – manufactured at a specially built factory in Trennfeld from 1963 – were particularly successful.

Four-colour Iris press for colour illustrations and banknotes (1923): The precursor of today's securities presses



Rapida: High-performance in sheetfed offset since 1974

The offset process was nevertheless a topic for design developments in Würzburg. The first half-format sheetfed offset press, the Koebau-Rapida 0, was presented at drupa in 1967. The medium-format Koebau-Rapida III followed in 1969. Both ran at speeds up to 8,000



sheets per hour. The Koebau-Rapida SR III launched in 1974 was almost twice as fast at 15,000 sheets per hour. The presses of other major manufacturers did not achieve such performance until decades later.

In 1986, Koenig & Bauer launched the Rapida 104, a unit-type press designed for high flexibility and printing speeds up to 15,000 sheets per hour. Production was transferred to the new subsidiary KBA-Planeta AG in 1992, sowing the seed for today's high-performance sheetfed offset presses from Radebeul. The current Rapida 106, for example, has defined the benchmarks in medium format with speeds up to 20,000 sheets

64-page commercial web press Compacta 818 at drupa 2000

per hour, extremely fast job changeovers and configurations comprising up to 19 printing and finishing units.

The same can be said for today's large-format series Rapida 145 and 164. They are the successors to the Rapida 142 and 162 presses which were developed jointly by the Radebeul design engineers and their colleagues from Würzburg in the 1990s. In printshops around the world, these high-performance large-format presses took the place of presses based on the outdated five-cylinder principle from other manufacturers. The transition to a technologically superior large-format press generation and more than 20 years of continuous

The revolutionary KBA Cortina heralded the trend towards compact newspaper presses after the turn of the century



Rotogravure press TR 12 B for a web width of 4.32m, built in Frankenthal (2004)

further development have paved the way for KBA-Sheetfed's leading position in large formats. This standing was confirmed yet again in 2003, when the KBA factory in Radebeul unveiled the Rapida 205, the largest sheetfed offset press in the world.

Pioneer of new technologies

In the same way that the Würzburg engineers ventured new approaches to webfed printing, the Saxon designers have repeatedly struck out on their own in search of simpler and more efficient sheetfed solutions. Two examples are the DI offset press 74 Karat with direct on-press plate imaging, which was developed together with Scitex from Israel in 1997, and its sister press Rapida 74 G from 2000. Both were equipped with short-train inking units for waterless printing. KBA remains strongly committed to this technology, which is especially interesting from the perspectives of print quality and environmental protection.

When it comes to innovative processes for inline finishing, direct printing on corrugated board, ecological printing or – most recently – LED-UV drying, KBA Sheetfed has regularly acted as a pioneer – one of the reasons for its rise to become the second-largest sheetfed offset press manufacturer in the world. The entry into the post-press market and announcement of the digital sheetfed press KBA VariJET 106 at drupa 2016 open up further prospects.



Not just mainstream also in webfed printing

In the 1960s, the focus in Würzburg soon returned to webfed presses for newspapers, books and illustration printing. The letterpress machine Koebau-Courier, which was introduced in 1962, was a best-seller through to the late 1970s. A particular stir was caused by the Koebau-Jumbo-Courier in 1974 – with its web width of 2.52m, it is still the widest newspaper press ever produced.

The Courier was followed in the 1980s by the Anilox-Courier and the Flexo-Courier with keyless short-train inking units. Koenig & Bauer supplied large-scale Anilox-Courier lines to the Guardian in London and to the Neue Zürcher Zeitung. The largest flexo installation in the world to date was commissioned in London in 1989.

The era of web offset newspaper presses began with the Commander in 1969, and this name still stands for front-line



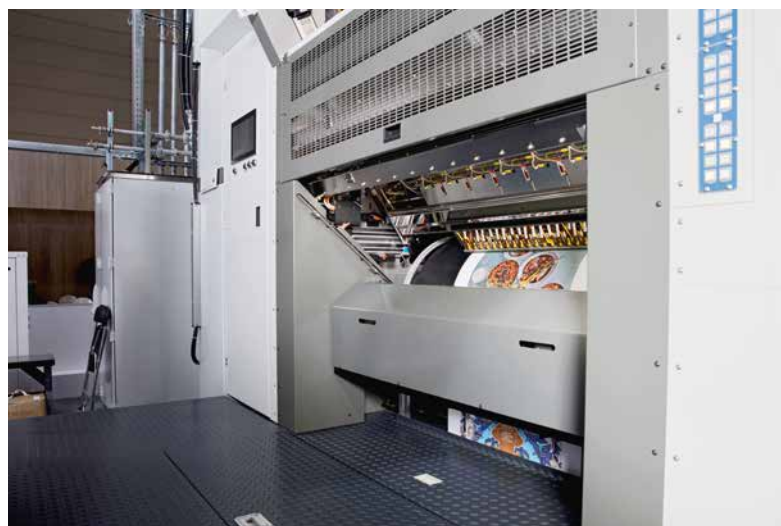
newspaper printing technology today. Over time, the still dominant satellite design principle was becoming increasingly complex. In Würzburg, this trend was answered with the four-high tower presses Journal and Colora at the beginning of the 1990s. Later, they were joined by the single-width four-high tower series Comet and Continent. The less expensive four-high tower design appealed to many new international customers and markets, and helped to

drupa 2012: New dimensions of performance in large format

establish the company as the number one in newspaper printing.

Many world firsts

Despite the strong market position for conventional webfed presses, KBA has never shied the pursuit of new ideas. Already at drupa 1995, for example, an Anilox-Express was to be seen with automatic plate changing. An imprinter with Scitex inkjet heads in the superstructure added a variable digital caricature to each offset copy. In practice, it was then almost 18 years before the inkjet technology was used in webfed offset. At drupa 2000, a new trend towards compact newspaper presses for variable production runs was heralded by the KBA Cortina, which stood less than 4 metres high. Further features new to newspaper offset were the elimination of dampening units, four-high towers which glided apart for easy access, dedicated drives for each cylinder and the ease of operation with automatic plate changing and lifts to the upper couples. The same concept was implemented by the wet offset counterpart Commander CT in 2007. Both presses have remained unique on the international newspaper market to this day.



Digital inkjet printing with the RotaJET L at drupa 2016

With extremely fast job changeovers, speeds up to 20,000 sheets per hour and the longest presses on the market, the RapiDa 106 has defined the benchmarks in medium format for many years



Media upheavals and realignment

The first signs of pending change in the print and media industry already appeared in the early 1990s. The World Wide Web was taking its first tentative steps and new digital competitors entered the print arena. Faced with growing online competition, and especially in the course of the world financial crisis, the market for new commercial web and newspaper presses collapsed dramatically in 2008. Once it became clear that this traditional core segment for Koenig & Bauer would never regain

Print technologies for everything



the volumes of former years, the company turned attention to the digital process together with American partners. KBA presented its first inkjet web press, the RotaJET 76, at drupa 2012. Today, with the RotaJET VL series and the T1100 S manufactured on behalf of HP, the largest digital web presses in the world are assembled in Würzburg, catering for web widths up to 2.8m. With this young, future-oriented technology, Koenig & Bauer is able to replace shrinking markets with new opportunities, for example in decor printing.

Early diversification

To finance the planned growth course, the company went public in 1985. The

acquisition of Albert-Frankenthal AG and of a majority stake in Planeta Druckmaschinenwerke in 1990/91 established a company group with a turnover of more than DM1.1 billion. Ten years later, the group management started a programme of diversification into market segments less affected by changes in the media landscape.

The acquisition of Swiss partner De La Rue Giori SA in Lausanne in 2001 secured KBA's pole position in banknote and securities printing. The purchase of UV and coding system specialist Metronic GmbH in 2004 opened the door to another new market with growth potential. With Czech press manufac-

turer Grafitec, a manufacturing location with a favourable cost structure joined the group in 2005. The acquisitions of Bauer + Kunzi and LTG Print Systems in 2003 and 2006, and the subsequent merger into KBA-MetalPrint GmbH established KBA as the number one in metal decorating. And through the takeovers of Kammann Maschinenbau GmbH, a global leader for the decoration of hollow containers, and flexible packaging specialist Flexotecnica S.p.A in 2013, KBA further expanded its portfolio in packaging printing.

This early diversification has helped KBA to master the structural upheavals which have rocked the branch much

Koenig & Bauer AG as a holding and service provider

Controlling, Corp. marketing, Communication, IR, IT, Group Accounting, Patents, Personnel, Legal, Compliance, Audit, Tax

Sheetfed

KBA-Sheetfed Solutions

KBA-Grafitec
KBA-Iberica Die Cutters

Development, sales,
assembly, service
sheetfed offset and finishing
Offset & Digital

Sales subsidiaries

Digital & Web

KBA-Digital & Web Solutions

KBA-Flexotecnica
KBA-FT Engineering
PrintHouseService (PHS)

Development, sales,
assembly, service
web offset
Digital & Offset
sheetfed flexo

Sales subsidiaries

Special

KBA-NotaSys
KBA-Mödling
KBA-MetalPrint
KBA-Metronic
KBA-Kammann

Development, sales,
assembly, service,
special solutions for security
printing and packaging

Sales subsidiaries

KBA-Industrial Solutions

Production service provider for KBA and external customers (foundry, large-part manufacturing, surface coating etc.)

better than its main competitors. At the turn of the century, 60 per cent of the turnover from new press sales was generated in market segments which are under pressure from the online media. Today, over 90 per cent is accounted for by the growth markets digital and packaging printing and by securities printing.

Holding structure with a focus on growth

The greatest structural changes of the past 20 years took place in 2014 and 2015, with market-oriented capacity realignment preparing the company to meet the challenges of digitisation and globalisation. Parallel to the introduction of a new group structure with Koenig & Bauer AG as a central holding and independent business divisions for the segments sheetfed, digital & web and special applications, KBA has strengthened its focus on profitable, future-oriented markets.

Print technologies for everything

Today, analogue and digital systems from the KBA Group are used to print, finish and process products such as banknotes, metal cans, books, brochures, displays, decor, labels, glass and plastic containers, board and film packaging, catalogues, laminates, magazines, tyres, cables, smart cards, advertising flyers, newspapers and many more besides. Practically all common printing and finishing technologies are involved.

KBA companies are the leaders in many market segments. This diversity creates unique know-how and drives innovations, new applications and new partnerships, such as those which KBA has successfully pursued in the future-oriented field of digital printing in recent years.

Progress by tradition

Two hundred years passed between the first cylinder press designed by our company founders in 1812 and the first digital press showcased at drupa 2012. It is here only possible to mention a few examples from the countless technical and business milestones between those years. The history of Koenig & Bauer is a story characterised by impressive people, fascinating machines and unconventional ideas. Generations of far-sighted managers, hardworking employees and ambitious customers have all contributed their share. And they encourage us to continue our exploration of previously uncharted territories.

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