Druckerei Mack GmbH
Siemensstrasse 15
D-71101 Schönaich
www.druckerei mack.de

Germany
Background

Company Profile

We are a family company and currently have around 70 employees. We have been involved in the printing and paper industry for over 30 years and generate average sales of approx. €10 million with our comprehensive and flexible range of services.

We see ourselves as a full-service provider and always put the customer first, offering a diverse range of services that includes many different media services, customized warehousing and dispatch activities:

Print:
- Prepress
- Offset printing
- Digital printing
- Postpress

Media:
- mackXpresS web-to-print solution
- Database publishing
- Individual customer solutions

Services:
- Warehousing
- Supply
- Order processing

Our products have proved a success with well-known customers from the IT and automotive industries, automation and control technology customers, advertising agencies, and publishing companies. Everything we do is guided by our corporate philosophy – “Good work should not be the exception but the rule”.

The main focus of our production is offset printing. We have two Speedmaster SM 102 presses (a five-color and a two-color), a Speedmaster SM 74 five-color press, two Speedmaster SM 52 presses (a five-color and a two-color), and a Suprasetter 105 MCL eight-up platesetter – all from Heidelberg. In 2007, we obtained PSO certification in accordance with ISO 12647-2 (PSO is the German process standard for offset printing).

We aim to find the ideal production process for every product – from luxury product brochures involving long runs with tough quality requirements to a handful of presentations.
To help us in this endeavor, we added black and white digital printing to our offset printing operations in 1991, followed by color digital printing in 2000. Our digital printing equipment currently comprises a Hewlett Packard HP Indigo Press 3050 and a Xerox DocuColor for color printing, and a Xerox Nuvera 120 and Xerox Docutech 6100 for black and white printing.

Our postpress and dispatch services extend far beyond standard cutting, folding, stitching, and delivery operations. We are used as an outsourcing partner for print products and office materials by customers in the fields of warehousing, order processing, and distribution and provide a comprehensive logistics service for printed materials.

Background

Nowadays, companies need to be willing at all times to invest and use cutting-edge technology in order to adapt to the ongoing innovation process in the print media industry. It is therefore part of our corporate philosophy to embrace new developments at an early stage. Naturally, this also applies to the digitization and networking of all processes at the company – not just since JDF came along.

We introduced SSB DISO, the ERP system from Software Service und Beratung GmbH, in 1990 to help us with job processing. Initially, we only used the system for performance measurement through terminals in production. Other areas of operation have gradually been added and the current system has become an indispensable management and planning tool. It supports sales with CRM, simplifies the procurement process, and makes a major contribution to effective, timely production. An upgrade to DISO 21 is planned shortly. This workflow-based management information system enables a JDF connection to our Prinect Printready production workflow.

In 2004, we installed our first online portal. Our web-to-print solution for intelligent processing of customized print jobs is now called “MackXpresS”. We offer promotional literature and standard print products such as business cards, business stationery, mailings, newsletters, calendars etc. Our range also includes promotional flyers and brochures with varying, customized contents. Thanks to integrated remote support, our service personnel are able to connect directly to customers’ computers and provide active assistance. An interface links the online portal to the SSB DISO ERP system. This enables jobs posted on the web to be transferred directly.

Digitization has also made advances in production, too. We have been using the computer-to-plate system in prepress since 1999. Initially, a Trendsetter 3230 from Heidelberg controlled by a Delta RIP was used for our printing format at the time – 50 x 70 cm (19.69 x 27.56 in). From 2001 onwards, the Delta RIP was networked with the presses using the Heidelberg CPC 32 (now Prinect Prepress Interface) and was able to provide color presetting data.
In prepress, data was prepared and validated manually in various stages. It was imposed digitally at Signastation and sent to the platesetter. The proportion of data supplied by customers kept on increasing, but unfortunately the same could not be said of its quality!

The Prinect prepress workflow is connected to postpress via PPF/CIP3. CompuCut and CompuFold were installed in the 4th quarter of 2007. There have been no major savings to date. The programs created from the prepress data cannot normally be used on a 1:1 basis. Manual work is still required before the data can be used at the relevant press. The approach is right but still requires some work.

Digital printing developed on an ongoing basis but was completely separate from the other departments at the company. A separate job workflow was established with its own “prepress” stage. The first Xerox digital presses at the company were still thought of as large copiers, but in 1993 the DocuPrint 6135 model was connected to prepress as a “network printer”.

Just like in offset printing, the proportion of data supplied by customers kept on growing in digital printing, too. The difference here was that the processing/editing required increased even more quickly than in the offset sector. Customer data destined for digital printing is often less well prepared than that intended for offset printing because Office applications are used instead of special graphics software. Digital printing staff were sometimes not aware of what was technically possible in prepress – and vice versa. Special tools were not always available either. For example, if Mac data was supplied to the digital printing department, a prepress colleague had to be asked to open the relevant file(s), disrupting the day-to-day work of both departments. Many different ideas were tried out. Similar tasks were solved using different programs. For instance, the internal tools of the digital front ends were used for impositioning in addition to Signastation. Because the various output devices had different RIPs, staff had to adapt to each of the new technical features. This resulted in the various departments and employees developing different expert know-how.

Objectives
In 2004, strategic considerations led us think about switching to the 70 x 100 cm (27.56 x 39.37 in) format. It was clear to us that cost-effective and reliable production could not be ensured with the existing prepress processes – even if replacing the presses did not increase the overall printing capacity.

The following prepress weaknesses were identified:

- Time-consuming data processing and a large number of manual steps in data preparation (flight check)
- Waiting times and reworking due to RIP errors
- No automatic workflow
- No transparency in production processes
- No end-to-end integration of processes
We can only succeed as a full-service provider by utilizing all potential savings in production. This is particularly important in the innovative digital printing market. The situation described makes it clear that the workflow needs to be improved in this respect.

The following weaknesses were identified in digital printing:

- Separate RIPs from different manufacturers and not integrated in a single workflow
- A large number of stand-alone solutions but no cooperation between the individual components
- Entire workflow controlled manually
- Scattered know-how that cannot be used
- Disruption caused by prepress resources being called upon

Consistently high quality can only be achieved with highly qualified and contented staff. Prior to integration, prepress and digital printing employees had reached their limits in terms of workload. Regular basic and advanced training was out of the question.

The objectives of JDF integration in prepress and digital printing were as follows:

- Greater process reliability
  - Consolidation of processes
  - No more RIP errors
  - End-to-end process integration
  - Transparency in production processes
  - All employees should be able to operate the basic functions of all systems in their relevant sections

- Workflow automation
  - Consolidation of software tools
  - Standardization and automation of production processes (e.g. data validation)
  - Automatic impositioning and use of standard templates
  - Relieving employees of all routine tasks

Methodology
At drupa 2004 in Dusseldorf, it became clear that PDF had already become the standard document format in the graphic arts industry and that JDF was likely to become a success. We felt the JDF concept was the only way to combine and build on our integration approaches (prepress networking of production data acquisition with SSB DISO, presetting with PPF/CIP3) on a single platform.

This meant we needed a PDF-based prepress workflow that integrates all production-related and production-controlling workflows centrally using JDF/JMF.
In view of the digital printing situation described above, we decided to look for a system that supports a comprehensive connection between digital presses and the prepress workflow – including color management.

This was only possible with the Prinect concept from Heidelberger Druckmaschinen.

**Implementation Story**

05.2004: Orientation phase – information at drupa 2004

08.2004: The decision was made to switch to the larger printing format with the purchase of a Speedmaster SM 102 five-color press from Heidelberg. This press was installed at the end of 2004, replacing a Speedmaster SM 74 five-color and two Speedmaster 74 two-color presses.

Prinect Printready and the Suprasetter 105 platesetter were purchased with the press.

11.2004: Installation of the Prinect Printready workflow system and the Suprasetter 105 platesetter, replacing the Delta RIP and the Trendsetter 3230.

Gradual integration of the new Prinect Metadimension RIP (from Nov. to Dec. 2004). Parallel operation of Delta and Metadimension RIP until the Delta CtP line on the Trendsetter 3230 was discontinued at the end of January 2005.

Increasing output via Prinect Printready during parallel operation of direct CtP output from SignaStation. Operation of this line was made more difficult by the persistent teething problems of Printready version 1.0.

Since it was not necessary to use Printready for output on the CtP platesetter from the outset, we were able to gradually train staff to use the new workflow. Day-to-day operations could be carried out by the remaining members of staff using the “old” line.

08.2005: Prinect Printready 3.0 and Digital Print Manager 1.0 were installed as part of a Heidelberger Druckmaschinen AG field test. It emerged very quickly that Prinect Printready 3.0 and the associated Prinect Signa version 2.0 resulted in major improvements. The introduction of Printready in digital printing with connections to both digital presses (during the field test only – Indigo and Xerox) ran smoothly except for a few JDF-specific fine adjustments that needed to be made by the manufacturers (HP, Xerox, and Heidelberg). In digital printing, the possibility of automation or semi-automation is even greater than in offset printing.

The systems were released following a test phase. The Hewlett Packard HP
Indigo is not being connected, but we are using all possible JDF workflow options right up to the imposed PDF sheet, which is forwarded to the HP RIP by hot folder.

**Resulting Workflow/Processes**

We receive customer inquiries either via the mackXpresS web portal or from our offset printing, digital printing, and service sales teams. Job details are entered centrally in SSB DISO and the jobs are assigned to offset or digital printing for production. Jobs are forwarded to production in the form of a printed job ticket. A JDF connection to the Printready workflow is planned with the introduction of DISO 21.

![Resulting workflow diagram](image)

*Fig.1: Resulting workflow*

Job data is recorded centrally in Prinect Printready via Prinect Cockpits installed locally in the prepress and digital printing departments. The data is copied onto the Printready server. Around 90% of this data now consists of PDF files. In Printready, job processing is stored as a procedure in a series of sequences and carried out fully automatically according to the relevant presetting.
In our configuration, this is used to automate operations such as data validation and data optimization. Output sequences control the printout or platesetter output. This is where Prinect Digital Print Manager comes in, enabling workflow integration between Prinect and a digital press from a different manufacturer.

We have valid licenses for integrating the Xerox FreeFlow Print Manager. The front ends (RIPs) of our Xerox digital presses are connected to this.

Prinect Digital Print Manager offers the following special functions:
- Presetting of digital print parameters within Prinect (via Digital Print Manager Cockpit and existing Printready Cockpits), for example
  - selecting available print materials
  - determining the number of copies/page area
  - setting finishing options.
- Transferring print jobs to the digital printing system as PDF sheets or PDF pages.
- Feedback from the Xerox digital printing system to Prinect (Cockpit).
  - status
  - quantities and consumption.

The number and type of digital print parameters that can be preset in Prinect varies according to the relevant Xerox configuration.

![Figure 2](image)

*Fig. 2: Users are able to preset all parameters available on the digital press in the Prinect Cockpit*
Fig. 3: The jobs prepared for Xerox digital presses are put into queues in the FreeFlow Manager.

Fig. 4: FreeFlow Manager adopts the job and material settings defined in the Prinect workflow.
The same functions would be possible for HP with the HP Production Manager software add-on, but we do not currently use this. Such an add-on will only make economic sense once we have replaced our current HP Indigo Press 3050. This press is currently linked to Printready via a hot folder for PDF sheets, enabling us to make full use of the JDF workflow right up to the imposed PDF sheet.

When preparing for the Printready configuration, we needed to ensure that the hardware and software have sufficient capacity to cope with the additional digital print job throughput.

The HP Indigo is supplied with fully imposed PDF sheets from Printready.

This integrated prepress workflow makes it easy to process “mixed” jobs – e.g. four-color cover in offset printing and black and white inside pages in digital printing – but our current job makeup does not require us to use this option. What is of interest to us, however, is the consideration of products created using both offset and digital printing in print product logistics.

With a JDF link between SSB DISO and Prinect, job data relating to status, time required, and material consumption on the Xerox digital printing system can be forwarded to DISO as JMF feedback via Printready.

**Innovation**

JDF-based prepress integration provided a significant boost to productivity thanks to automatic PDF processing and automatic impositioning. The JDF-integrated Prinect Printready prepress workflow from Heidelberg has thus fully lived up to our expectations!

- **Approx. 40% higher prepress throughput**
- **Reduction in prepress costs of approx. 15% (1 employee)**
- **40% shorter turnaround times for digital print jobs**

- JDF workflow integration results in a more efficient workflow, lower costs, and less waste.
- The risk of error resulting from different screening processes for proof and final printout has been eliminated (output error rate approx. 0%)
- Simplified job setting through the use of identical processes for all JDF-compatible output devices
- Standard or reprinting jobs require few or no job profile changes
- Using a simple, uniform, and adaptable user interface (Prinect Cockpit) simplifies staff training.

We can demonstrate the savings made possible by Printready using three typical sample products:
Processing times in minutes

<table>
<thead>
<tr>
<th>Activity</th>
<th>Product 1</th>
<th>Product 2</th>
<th>Product 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating instructions</td>
<td>Manual</td>
<td>Advertising brochure</td>
<td></td>
</tr>
<tr>
<td>Cover – 1 sheet layout</td>
<td>Cover – 1 sheet layout</td>
<td>Cover – 1 sheet layout</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>Contents – 1 sheet layout</td>
<td>Contents – diff. sheet layouts</td>
<td>Contents – several sheet layouts</td>
</tr>
<tr>
<td>2004 = without Printready</td>
<td>With PR</td>
<td>With PR</td>
<td>Without PR</td>
</tr>
<tr>
<td>2007 = with Printready</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading job instructions, entering job in database</td>
<td>5 5 5 5 5 5 5 5</td>
<td>10 10</td>
<td>12 26 35</td>
</tr>
<tr>
<td>Possible data check outside Printready</td>
<td>8 8 8 8 10 10</td>
<td>8 8 8 8 10 10</td>
<td>8 8 8 8 10 10</td>
</tr>
<tr>
<td>(Comparing job/quote – color, format, page count)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transferring data to Printready</td>
<td>12 26 35</td>
<td>12 26 35</td>
<td>12 26 35</td>
</tr>
<tr>
<td>Preflight check, color conversion, GCR, spot color monitoring</td>
<td>20 35 55</td>
<td>20 35 55</td>
<td>20 35 55</td>
</tr>
<tr>
<td>Impositioning (creating layout)</td>
<td>30 12 38 15 48 20</td>
<td>30 12 38 15 48 20</td>
<td>30 12 38 15 48 20</td>
</tr>
<tr>
<td>Opening job and sending for output</td>
<td>5 3 8 3 8 5</td>
<td>5 3 8 3 8 5</td>
<td>5 3 8 3 8 5</td>
</tr>
<tr>
<td>Total time in minutes</td>
<td>68 40 94 57 126 75</td>
<td>68 40 94 57 126 75</td>
<td>68 40 94 57 126 75</td>
</tr>
</tbody>
</table>

The innovative aspect of the integration is the JDF connection to digital printing. This enables us to make full use of new technologies and the increased efficiency achieved in prepress in digital printing, too. One of the reasons for the improved data preparation in digital printing is the structured way of working with Printready and the availability of all the necessary tools (preflight, corrections, impositioning) using a single software interface. This means that just one software package is required for all the various steps instead of numerous small tools at different workstations.

The crucial module for JDF integration of digital printing is the Digital Print Manager. The fact that this is being developed as an option of the Prinect system from Heidelberger Druckmaschinen means we can work with the reliable partner we have come to know and trust over the years. We could not have chosen a better partner than Heidelberg for full integration.

The Prinect Printready workflow has laid the foundation for our JDF networking. This opens up the way for consolidating our production processes through JDF integration.
We have taken the first step to this end with Prinect Digital Print Manager and the creation of a joint prepress workflow for offset and digital printing.

What we now need to do is complement and replace the existing proprietary sub-networks with JDF solutions and to implement new lines using JDF.

**Step 1: Extension of the prepress-press connection**
The potential saving is very high. The Prinect prepress workflow is currently connected to the presses via PPF. Following extension of the connection to JDF, all job data would be delivered to the presses along with the presetting information. Automatic JMF feedback in the form of status and consumption messages could replace manual, error-prone entry at the DISO terminals.

**Step 2: New job management-prepress connection**
The potential saving is very high. Following connection of SSB DISO to the Prinect prepress workflow, manual job entry at the prepress stage is no longer required. It still needs to be determined to what extent impositioning information can be stored in the job management context. Feedback of status and consumption messages via JMF provides information about prepress, the digital printing systems, and (after step 1) the pressroom to the Prinect Cockpit and SSB DISO.

**Step 3: Extension of the prepress-postpress connection**
Potential savings can be made. The Prinect prepress workflow is currently connected to the postpress equipment via PPF. Heidelberg has announced new JDF solutions for drupa 2008. Following extension of the connection to JDF, all job data would be delivered to the equipment along with the presetting information.