2008 First Place Winner
CIP4 International Print Production Innovation Award
for
Best cost/benefit realization and improvement in efficiency as a result of process automation implementation

Metzgerdruck GmbH
Obere Au 1
74847 Obrigheim
Germany
Detailed Application Information

**Background** — Please provide a description of the subject workflow environment and conditions prior to implementation:

Metzgerdruck is a privately-owned, family-run business established in 1956. The company’s site today encompasses office and production facilities on an area of 7,000 m². Metzgerdruck currently has a workforce of 69 employees. Its production facilities include prepress, offset printing, postpress, dispatch, lettershop services, digital photography and digital printing. The main product groups are brochures, flyers, and postcards for regional, national and international customers from the cosmetic, pharmaceutical, and trade sectors.

**Historical background**

1956 – Willi Metzger establishes a book printshop bearing his name on October 1 in Maichingen. Total workforce: 3

1961 – The Metzers move to a new site on Friedhofstrasse in Obrigheim with a production building that covers an area of around 600 m². Metzgerdruck now has a workforce of 12.

1984 – After Willi Metzger’s sudden death, Wolfgang Metzger takes on sole responsibility for the company management.

1993 – Infolog Lettershop und Sonderkonfektionierungen is founded, with Elly Metzger as Managing Director. Infolog has 13 permanent employees and up to 150 temporary staff.

2008 – Metzgerdruck has a site that covers 7,000 m² and a total workforce of 69 permanent employees.

**Situation before integration**

We recognized many years ago that we had to gear our production processes more towards the future through standardization, particularly because of the technical developments underway in prepress. The aim was to boost productivity, improve quality significantly and increase process reliability. As a result, we started to gather practical experience of CtP in 1995. We had a SignaStation (impositioning application) and the Celebra RIP from Fuji in operation in the prepress stage. In this form, the workflow was no longer suited to our job structure and requirements. Consequently, we dedicated a lot of time to finding solutions and workarounds that would allow us to continue producing with this workflow. The workflow was inflexible and prone to error. The SignaStation
was the only parser in production and the operator was responsible for all the processes, including page checking and impositioning. This quickly led to a capacity overload. The SignaStation was the bottleneck in production. The RIP offered limited functionality and, despite thorough plate checking, press downtimes could not be avoided due to faulty printing plates. We built our organization around a low level of functionality, which meant that a solution had to be found as a matter of urgency.

The need for action in the prepress stage resulted from the following problems:

- Too many mistakes
- Long press downtimes
- Too much overtime

Job processing represented a further challenge. To maintain or even expand our order backlog, we must prepare an increasing number of quotations. Major companies across Europe are making inquiries, and their e-procurement platforms are placing increased demands on administration and costing processes. The internal communication workload is also on the rise.

The need for action in the in-house sales and administration departments resulted from the following problems:

- No clear structure for quotations
- Not all quotations could be sent out on time
- The pricing was not based on the latest company figures
- Inquiries were on the rise
Objectives — Please provide a description of the printer, publisher or prepress service’s goal and motivation, including any quantities criteria upon which the goals were established:

We wanted to base our decision for prepress on the following objectives:

- A faster, more reliable and more cost-effective workflow
- Fewer press downtimes
- Transparent workflow
- Faster response
- Clear view of the potential for optimization

For the administration and in-house sales departments:

- All quotations must be sent out to customers on time
- Transparent pricing process
- Standardized job costing
- Transparent materials management process
At first, we assumed that introducing new, innovative technology would bring about the required increase in productivity, as it has done in the past. However, the selection process soon made it clear that future developments were necessary that would not be covered by a one-time investment and its implementation.

Therefore, we set ourselves a quality target:

- Secure the potential for innovation in the long term
- Optimize processes across all departments
Methodology — Please provide a description of the process of selecting a solution, including alternatives and deciding factors:

In addition to the purely technical requirements, new commercial challenges also had to be factored into the project planning process. Since the introduction of Basel II, banks expect detailed figures and transparent business plans that clearly show the “return on investment” of a technology. In the same way, banks are particularly interested in having access to the long-term planning of owner-operated companies such as Metzgerdruck. Consequently, we had to take up both challenges and act accordingly.

In drupa year 2004, we started researching the workflows on offer, eventually shortlisting workflow solutions from Fuji and Heidelberg. It soon became clear that only a JDF-based system would be suitable to integrate the individual production areas and meet our requirements for in-house sales and administration. We understood that these types of systems are not only used to transport simple, technical job descriptions, but have a major impact on the transparency of the job status and operating data. Our internal communication requirements could only be met with an integrated system. We also wanted to use this new technology to extend the solution as and when required.

- Fewer mistakes
- Higher output
- Automation
- Modular scalable system
- Future-focused technology
- JDF-based

We finally opted for the Heidelberg solution because it was the only JDF-based workflow on the market that could meet all our requirements.
**Implementation Story** — Please provide a description of the implementation effort including timeline, participants, critical path/milestones, obstacles overcome (if any), training and testing:

1. **Project step**
   Q1/2005: Replacing Fuji Celebra with Prinect Printready
   Before installing the Prinect Printready workflow, we looked at the options for creating predefined process networks and flow charts. We analyzed our product portfolio to identify any processes that could be automated. As a result of these preparations, it took just 2 days to configure the system. The changeover was completed within 2 weeks.

   Employees were split into different groups, and each group attended a 3-day training course, while the others looked after the day-to-day business.

   The separation of responsibilities for page and sheet operations was a real help. The operator at the SignaStation could now concentrate on impositioning and plate control. The tasks of preflighting, trapping, and page controlling were removed from this area of responsibility and assigned to the person responsible for the layout. A very high level of automation has simplified these tasks considerably. At this point, everyone switched to the “new” system and the old workflow was no longer required. We now had a JDF-based PDF workflow up and running.

2. **Project step**
   Q3/2006: Reorganizing the departments
   In this process step, we created the basic conditions for extending the process integration across all areas via JDF. At this point, we recognized that the success of a project does not depend solely on the technical implementation – organizational measures are equally important. We recommend that any company tackling these issues appoint a project manager (internal/external).

   Changes made in the last few years to the technical requirements meant that changes in the company organization were also inevitable. These organizational changes affected job processing and planning in particular, as their offices were merged and new working groups were formed. The jobs are now processed in a team, with each member specializing in his or her own area of expertise. The reshuffles have meant that other areas have been able to benefit from the corresponding knowledge transfer.

   Q3/2006: Reorganizing MIS Prinance
   Just a few weeks after completion of the departmental reshuffle, the reorganization of MIS Prinance was concluded. Changes were necessary here, as – over time – some elements of costing and job processing had to be changed. A further step was the introduction of a system of material inventory management at item level at Metzgerdruck. All items – be they raw materials, consumables or finished products – were entered into the materials management system and posted with the current stock level. Our experience has shown that a system of paper-based, item-related management would be a great help during the integration process. The integration has increased the speed of our processes. We can check whether material is in stock at any time thanks to a transparent warehousing system. The materials management process is also a welcome tool for our purchasing department.
Q1/2007 JDF integration for job processing, prepress and press
The previous steps, which focused on setting up a structured working environment, created the prerequisites for full JDF integration. The first step was to connect our prepress production system (Prinect Printready), which already used JDF, to our MIS (Prinance) via JDF. The connection was made in 3 steps. The first step was to set up automatic job transfer from Prinance via JDF. The second step concentrated on configuring the quality of the stripping parameters. In this case, we had to make our colleagues in job control aware of the relevance of their entries from advance planning/preliminary costing. We also redefined some of the in-house standards relating to impositioning. The third step involved maintaining and managing the Master Data Store (MDS). The MDS saves all master data centrally for all production areas. All incoming information, largely on the printing stocks, is maintained and grouped here. Information on the paper characteristics from the pressroom, such as the paper thickness, is also returned here.

Q2/2007 Next, the pressroom – with three presses – was connected to the system. The goal of the project was to connect the presses to the Prinect Integration System and implement an electronic production data acquisition system. First, the press control stations were updated with the latest versions. There then followed discussions with colleagues working at the control stations to adapt the operations, auxiliary times and downtimes in line with user handling requirements. Two training courses lasting two hours each obtained very good results for the pressroom, both in terms of operating data acquisition and the production process. The number of inquiries made to prepress about the status of jobs was reduced significantly.
Today, we have an end-to-end workflow based entirely on JDF/JMF. We transfer job data, including stripping parameters, to the Prinect Integration System via JDF, thus making job-relevant information available to each area (prepress, press) via the applicable cockpits. The fact that the jobs are created automatically in the prepress stage based on the processes costed in the MIS has brought considerable savings and greater process reliability. The JDF is augmented in prepress production with a variety of additional information and – depending on the status – made available to a range of output devices (proofers, platesetters). The status is controlled automatically depending on the specific circumstances. For example, the system registers that plate output is complete after the Tiff-B output. This JMF message is displayed on all Prinect Cockpits and is output as a status message at the workstation of the in-house sales team in our MIS Prinance system. Therefore, JDF/JMF provides us with the transparency necessary to allow every employee to access the information he or she needs for the job in question. The special feature here is that this information is made available in the application that the employee usually works with.

Likewise, the print job is displayed on the press control system, giving employees access to operating and presetting data. The presetting data cuts makeready times considerably. The item-related costing process means that the JDF also contains detailed material data (sheet size, grammage, material thickness, etc.) that enables the optimal inking characteristics for this particular material class to be determined automatically.
Feedback on both the job status and operating data creates the necessary transparency and enables actual costing that is fast and accurate.

Figure 3: Process-networked integration system. This integrated workflow provides transparency for the process steps in an individual job or job section, including processes that have not yet been integrated.
Best cost/benefit realization as a result of process automation implementation —  
Please provide a quantitative analysis of the hard and soft ROI factors expected and realized, to  
include either breakeven analysis, IRR or NPV determination of hard factors and testimonial  
evidence from users or customers as to the realization of soft benefits.

**Berechnung Metzger Druck GmbH - CIPPI Awards 2008**

<table>
<thead>
<tr>
<th>Periods</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
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<tr>
<td>Discount rate (%)</td>
<td>6</td>
<td>0.9434</td>
<td>0.8900</td>
<td>0.8396</td>
<td>0.7921</td>
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**Benefits (in savings)**

<table>
<thead>
<tr>
<th>Periods</th>
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<th>2006</th>
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<th>2008</th>
<th>2009</th>
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<tr>
<td>Annual savings Milestone 1 (starting 2005) PrePress</td>
<td>242,483,44</td>
<td>484,966,88</td>
<td>484,966,88</td>
<td>484,966,88</td>
<td>484,966,88</td>
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<tr>
<td>JDF Integration and automation in Prepress PressRoom</td>
<td>42,980,00</td>
<td>85,960,00</td>
<td>85,960,00</td>
<td>85,960,00</td>
<td>85,960,00</td>
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<tr>
<td>Increased added value Milestone 1 - Increase in sold press production</td>
<td>136,675,00</td>
<td>136,675,00</td>
<td>136,675,00</td>
<td>136,675,00</td>
<td>136,675,00</td>
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<tr>
<td>Annual savings Milestone 2 (starting Q3 2006) CSR / Processing</td>
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<td>0,00</td>
<td>18,000,00</td>
<td>18,000,00</td>
<td>18,000,00</td>
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<tr>
<td>JDF based Integration of Job management and automation in Pressroom PressRoom</td>
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<td>0,00</td>
<td>83,520,00</td>
<td>83,520,00</td>
<td>83,520,00</td>
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<tr>
<td>Increased added value Milestone 2 - Increase in sold press production</td>
<td>149,362,50</td>
<td>298,725,00</td>
<td>298,725,00</td>
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<td>298,725,00</td>
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</table>

2 Total annual savings | 422,138,44 | 856,964,38 | 1,165,389,28 | 1,165,389,28 | 1,165,389,28 |

Cumulative savings | 422,138,44 | 1,279,102,81 | 2,444,492,09 | 3,609,881,36 | 4,775,270,64 |

3 Discounted annual savings | 398,243,81 | 762,695,24 | 978,483,31 | 923,097,46 | 870,846,66 |

**Total investment**

**External investment (products)**

<table>
<thead>
<tr>
<th>Periods</th>
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<th>2007</th>
<th>2008</th>
<th>2009</th>
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<tr>
<td>Prin ance</td>
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<td></td>
<td></td>
<td></td>
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<td>Printready Migration</td>
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**Internal investment (internal training)**

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<th>2008</th>
<th>2009</th>
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<tr>
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<td>29,500,00</td>
<td>59,000,00</td>
<td>59,000,00</td>
<td>29,500,00</td>
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<tr>
<td>Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance costs (recurring)**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal IT administration</td>
<td>10,000,00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Servicecosts</td>
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<td>4,200,00</td>
<td>4,200,00</td>
<td>4,200,00</td>
<td>5,460,00</td>
</tr>
<tr>
<td>Training</td>
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<td>5,650,00</td>
<td>5,650,00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Capacity CSR</td>
<td></td>
<td></td>
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</table>

4 Total annual costs | 240,300,00 | 33,700,00 | 189,350,00 | 218,850,00 | 178,460,00 | 148,960,00 |
Phase 1 – prepress

- Automating the prepress stage meant we were able to rationalize the processes considerably and save on five jobs. Three employees left the company, one took on the position of Project Manager for Integration and another switched to the in-house sales department.

- The number of faulty plates was cut from 2,000 to 1,000 plates/year.

- Costs due to errors were cut from a high 10% to an average of 3%, based on production hours in prepress.

In 2005, we applied savings in phase 1 prepress of only 50%, because the full amount could not be achieved immediately in the start-up phase.

Phase 1 – press

- In the past, 80% of errors in output plates were only noticed when they were inserted into the press. Today, only 20% of faulty plates are noticed at this late stage. Press downtimes have been cut.

- The waste resulting from faulty plates has been reduced accordingly.

In 2005, we applied savings in phase 1 press of only 50%, because the full amount could not be achieved immediately in the start-up phase.

- Productivity has been increased significantly, resulting in additional sales. We attribute 25-30% of the additional sales recorded in 2005 compared to 2004 to improved productivity in the prepress stage. The number of plates output in this period also increased by the same factor, which can also be seen as an indicator of the increased productivity.
Phase 2 – CSR

- The increased effectiveness and measures to reorganize the in-house sales department have led to a significant rise in sales. Of the actual additional sales recorded in 2006 and 2007, we only included the share of sales that did not result from the increased productivity of the new presses introduced in 2006 (a rise in productivity of around 30%). We believe that sales will continue to increase for a further two years on the basis of the actual values achieved in 2005, 2006, and 2007.

- Feedback from production results in fewer errors, less time spent looking for information, and fewer inquiries. The number of telephone calls made was reduced by around 25%.

- Less time was spent on job tracking and job accounting.

Phase 2 – prepress

- The automated transfer of JDF data from the MIS cuts the overall processing time considerably. For standard jobs, processing time was cut by 70%. Here, we only included the time for order entry, as other effects of automation were already included in phase 1.

Phase 2 – press

- Presetting data from the prepress workflow includes color presetting information, job header data, and material information on the paper format and class. This cuts the setup times compared to the CIP3 workflow by 20%.

- Entering data just a single time prevents errors and saves time.

Effects of an integrated JDF workflow for all areas (not included in the NPV calculation, or only as detailed above):

- Test reports can be drawn up in every production phase and at any time.

- The production workflow is smoother.

- Night shift is no longer required for plate production.

- More sales generated by freed-up storage capacity, which can be used – and billed – for customer storage.

- JMF feedback from production enables specific material updates in real time, which cuts warehousing costs.

- Online production data acquisition is faster and more accurate than daily job ticket entry.

- Automatic activity feedback cuts the time that operators spend entering data manually.
• Real-time reporting (e.g. annual or monthly statements) leads to improved banking terms and easier access to the capital market.

• Since the introduction of materials management at Metzgerdruck, inventories and stock inquiries can be performed much faster and with complete transparency at any time.

• Improved customer service thanks to transparency in goods availability (minimum stock level warning).

• The integration project has made production more efficient and created the basis for offering more customer services in the future.

Comments on the cost of implementation and the annual costs

• Costs for purchasing software and hardware after the implementation phase.

• The Head of Prepress responsible for technology and the workflow was appointed as the Project Manager for Integration. We created the position of Project Manager for Integration to offer optimum support for interdisciplinary technology projects. This made sure that we always focused on our goals and were able to remove any obstacles facing the implementation process. These costs were included according to the project managers workload: In 2005 and 2006, the costs were applied at 50%, in 2007 and 2008 at 100% and in 2009 at 50%.

• As a result of the rise in the number of quotations per job and the extra workload required for certain customers, we had to increase the number of administrators in the in-house sales team (CSR). This measure was introduced in 2006, and the effects (increase in sales) were applied at 50% in 2006 and in full from 2007.

<table>
<thead>
<tr>
<th>Year</th>
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<th>2006</th>
<th>2007</th>
</tr>
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<tbody>
<tr>
<td>Quotation</td>
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<td>6,475</td>
<td>8,070</td>
<td>12,309</td>
</tr>
<tr>
<td>Job</td>
<td>3,296</td>
<td>3,540</td>
<td>3,550</td>
<td>3,664</td>
</tr>
<tr>
<td>Share</td>
<td>32.55%</td>
<td>35.35%</td>
<td>30.55%</td>
<td>22.94%</td>
</tr>
</tbody>
</table>

Figure 4: The table shows the relationship between quotations and jobs
Summary:

We view our “Process integration” project as a daily task that is necessary to secure our company’s future success. Heidelberg and alphagraph team provided the technology required to support the phases described above. However, we believe that the organizational implementation of the project plays at least as big a role as the technical implementation, which is why we created the position of Project Manager for Integration. The transparent workflow made it possible for us to record key business data accurately for the first time. Unfortunately, not all growth figures could be translated into results in the same way, and this is undoubtedly due to the drop in market prices. Without fully integrating all our processes, we will not be assured of flexible and secure growth in the future.

That is why we have decided that our next project (see also the workflow sketch for 2007) will focus on integrating our customers and our postpress processes into the overall workflow.