Workflow Automation with CIP4 Technology

Examples & Case Studies

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Colordruck
Baiersbronn, Germany
Colordruck / Company Details

- Colordruck is a packaging print shop located in Baiersbronn, Germany (5000 people).
  - Colordruck Website
  - Colordruck Article
- Colordruck produces cardboard boxes.
- Colordruck is family owned in third generation, and has about 300 employees.
Colordruck offers sheet offset and digital printing, provides packaging design to fulfillment.

Colordruck even fills advent calendars with confectionary items fully automatically.

Colordruck produces billion packages per year, and has about 60 million euros sales.
Not so unusual, right?
Colordruck / Digital Printing

- Digital Printing department exists since 2016.
- Digital Printing is used for orders with small run-length (from 1 to 5,000).
- Digital Printing jobs are provided for example by the own Web-to-Print shop:
  - B2B and B2C
  - Focus on B2B
  - Web-to-Print Shop
  - Web-to-Print DIY
Digital Printing department uses three types of die-cutting technologies. Usage depending on substrate, run-length, requirements:

» Laser Technology;
» Polymer Plates;
» Rotary Metal Plates;
Digital Printing department uses different gluing machine for last production step.

Digital Printing department has a new Order Administration System – Management Information Systems (MIS). The MIS in fact organizes the entire production.

» Today at least.
Colordruck / Digital Printing

- Digital Printing department invested in a new digital press since April 2023
  - HP Indigo 35 K
  - fast ink-jet press with 7 colors
  - Colordruck Investment
  - Toffifee Personalization
Eure Toffifee, eure Namen!
Order Management performed using the Management Information System (MIS). The MIS has all information that is needed for printing a print job:

» Run-length,

» Substrate details,

» Colors, etc.

Order Management lacks automation. In the beginning, the operator had to manually copy this data to the press console:

» Time-consuming;

» Error-prone;

» Expertise required;
Order Management lacked automation before the project. In the beginning, the operator had to manually copy this data to the press console:

- Time-consuming, due to human decisions;
- Error-prone, due to lack of expertise or overview;
- Expertise required, and experience;
- Lack of experts, as usual in the industry.
Order Management required that the operator also had to decide certain manufacturing options, e.g.:

» Printing substrate might restrict the choice of die-cutting machine.

» Best sequence of job production (substrate change, etc.).

» Most effective way of production.

» Best color usage and separation.
Order Management without automation led to common mistakes, for example:

» Increased waste of printing substrate.
» Decreased the print job efficiency.
» Lowered the overall on-time shipment rate.
» Increased the production time for each print job.
» Reduced the number of print jobs per shift.
» Implied high production costs.
Colordruck / Automation Project

- Automation Project realized in May 2023 resulted in a new generation of order management.

- Automation Project resulted that the Management Information Systems (MIS) makes all production decisions automatically, including:
  - Rules that have been applied by the operator before.
  - Leading to less errors, higher efficiency, etc.
  - Less expertise/experience required on the press.
Automation Project is based on a network interface between the MIS and the digital press.

Automation Project expects that all necessary information is sent over the network.

- The MIS sends this information as a JDF record.
- The Press interprets the JDF.
- Information is sent from MIS to the press and the other way round using the Job Definition Format.
MIS (Management Information Systems) → JDF
"There are virtually no more errors in print production"

manager of the "Packaging Digital" department
Colordruck / Automation Project

- Automation Project realized with only 4 persons in the project team:
  - 2 from Colordruck,
  - and 2 from MIS vendor.

- Automation Project realized in 2 weeks.
  - It was so short, because the press manufacturer and the MIS manufacturer had prepared the standard JDF interface beforehand – i.e. for other customers as well
  - No extra programming was necessary.
Project Outcomes:

» The operator saves time.

» A higher utilization of the press is possible.

» Errors have been reduced along the entire process chain.

» The waste has been reduced.

» Production lead times have decreased.

» Increase of overall efficiency.
Imprimerie Rochelaise
La Rochelle, France
Imprimerie R. / Company Details

- Imprimerie R. is a commercial print shop located in La Rochelle, France (80,000 people).
- Imprimerie R. is privately owned, and has about 50 employees.
- Imprimerie R. offers different offset printing facilities (Roland, KBA).
- Imprimerie R. has about 8.35 million euros turnover.
Offset Printing department uses the Management Information System (MIS) Graphisoft:

» Estimating System;
» Production Management (e.g. shop floor data collection);
» Inventory Control;
» Customer Relationship Management;

Offset Printing department Prepress facilities:

» Prepress workflow using Agfa Apogee Prepress 6;
» 2 CTP Agfa Avalon N8;
**Offset Printing presses:**

- KBA Rapida 106: 8 colors, 74 × 106 cm;
- ROLAND 704: 4 colors, 74 × 104 cm;
- ROLAND 505: 5 colors, 52 × 74 cm;

**Offset Printing finishing facilities:**

- Folding machine MBOT800 o MBOT72, Horizon546 o Horizon746;
- Different binding, stitching machines, etc.
Order Management used different ways of communication before the integration project, e.g.:

- Customer asks for a quote via email.
- Estimators sends a quote letter via email.
- Customers posts files on ftp.
- Prepress operator reads the instructions on paper job ticket.
- Prepress operator creates job in prepress workflow.
- Customer delivers files on ftp.
Imprimerie R. / Order Management

» Customer receives soft proof via email, or paper proof via express shipping.

» Printing operator reads the instructions on paper job ticket and enters them on the press.

» Operator reports time spent on job sheet or terminal.
Automation Project had the overall objective to increase turn-over, without increasing staff.

Automation Project included the following objectives:

- Improve productivity and decrease especially fixed costs.
- Enable increase in sales.
- Make the information flow more reliable.
- Avoid mistakes across production departments.
- Shorten lead time between customer request and job delivery.
- Measure accurately actual margin per job and take consequent decisions to improve profitability.
Automation Project team identified automation using JDF as the only way to reach their objectives without increasing the number of staff:

»Since JDF is the only standard in the printing industry, it came up as a compulsory feature for all new systems, software or equipment, that would be acquired in the future.

»This way, they would become easily a part of the integrated process. Imprimerie Rochelaise studied also how existing systems could be JDF-enabled.
Imprimerie R. / Automation Project

- Automation Project included the following milestones:
  - The first goal was to automatize internally, meaning between the production systems within the printing company.
  - The second goal was to automatize externally, meaning with customers, at 2 levels: sales relationship / management and prepress.
Imprimerie R. / Automation Project

- **Step 1**: JDF connection between Graphisoft and 2 manroland printing machines.

- **Step 2**: First customer online with Agfa Apogee Portal:
  - Agfa Portal allows to Imprimerie Rochelaise’s customers to upload files, and validate proof online.

- **Step 3**: First customer online with Graphisoft Print2B:
  - Graphisoft Print2B allows Imprimerie Rochelaise’s customers to calculate instant quotes and place orders online.

- **Step 4**: New KBA offset printing press, JDF connection between Graphisoft, Apogee and KBA LogoTronic.
Imprimerie R. / Automation Project

Automation Project solved the following problems:

» Estimator reads or listens, enters data in Graphisoft, prepares the quote.

» Production Coordinator launches the job in Graphisoft and prints related job ticket.

» The physical job ticket is passed on to the prepress department

» The prepress operator creates the job and its segments / sheets in Agfa Apogee Prepress.

» The operator selects the appropriate screens. The operator checks the ftp to see if the customer has submitted pages. If not, he calls the customer.
Imprimerie Rochelaise / Project Outcome

» The proof is delivered either by email (low resolution pdf), or physically (paper proof delivered express or onsite)

» While making proofs and plates, the operator has to write on the job ticket what he has completed.

» A person from administrative department collects all job tickets at the end of the day and enters actual production information into Graphisoft.
After the implementation:

» Customers connected on Graphisoft Print2B make their quotes themselves, whenever they need.

» Customers can instantly adjust the desired printed product depending on their budget.

» Customers place their order online. The job is launched by the Production Coordinator in Graphisoft, simply by selecting the corresponding estimates.

» Instructions are sent to prepress and printing systems via JDF.
Automation Project resulted different benefits.

» Agfa Apogee Prepress, reads the JDF and creates the corresponding job: Customer info, Job structure, segments (cover, signatures...), Printing information, colors, Screen information. Indeed, for each paper grade (ISO) or even each paper category (user defined) and each grammage interval, it is possible to associate in Graphisoft settings a screen scheme.

» Printnet (manroland) and Logotronic (KBA) read the JDF sent by Graphisoft and create the corresponding job: Customer information, Job structure, sheets, Printing information, Scheduling.

» During printing, the presses inform Graphisoft back about real time status: Sheet, Operation in progress, Job phases time.
Literature / More Case Studies

- Website of CIP4.org
- CIP4 Case Studies