Jürgen Schönhut Memorial
CIP4 International Print Production Innovation Award

Ten Brink/Hooiberg Haasbeek

2010 Winner

Most innovative use of process automation technology in an implementation

and

2010 Winner

Best Process Automation Implementation — Europe

Executive Summary — Ten Brink/Hooiberg Haasbeek in The Netherlands is part of the Euradius group. Euradius is an international graphical group, specialized in the field of print, digital print and automation solutions of books and magazines for the scientific, educational and general publishing market and the documentation market. We service clients worldwide and have subsidiaries in The Netherlands and Germany, a salesoffice in the UK and partners in Asia. Euradius has 800 employees worldwide.

As partner in print and digital print we work together with our clients at innovative solutions. Euradius offers a unique combination in Print, Digital print, Workflow automation and efficient logistic processes and makes structural cost savings possible.

Ten Brink/Hooiberg Haasbeek in figures:

- 270 employees
- 15.000 tons of paper used (sheet fed offset only)
- Aprox. 250.000 plates used per year
- 5 shifts in production
- Based in Meppel (North East part of Holland)

The plant in Meppel of Ten Brink/Hooiberg Haasbeek

Ten Brink Hooiberg Haasbeek equipment:

Netherlands - Offset machines

	Brand	Type	Kind of machine	Size	Units
1	Heidelberg	SM 74-5	Printer	52 x 72 cm	5 + varnish
4	KBA	106-4sw2	Printer	72 x 105 cm	1/1 or 2/2
2	Heidelberg	XL 105-4	Printer	74 x 105 cm	4
2	KBA	105-8	Printer	72 x 105 cm	8
1	KBA	105-5	Printer	72 x 105 cm	5 + varnish

Netherlands - Bindery / Finishing

	Brand	Type	Kind of machine	Size	Units
1	MBO	K880/4	Folding machine	78 x 120 cm	3
2	MBO	K820	Folding machine	80 x 120 cm	4
2	MBO	K79	Folding machine	76 x 120 cm	4
1	MBO	T49	Folding machine	47 x 70 cm	4
1	MBO	T50	Folding machine	47 x 80 cm	
1	Muller Martini	Primera	Saddle-stitch machine	32 x 48,5 cm	8 stations
1	Muller Martini	Primera	Saddle-stitch machine	30 x 47,9 cm	5 stations
1	Muller Martini	Acoro	Binding machine	30,4 x 30,5 cm	24 stations
1	Muller Martini	Bolero	Binding machine	30,4 x 30,5 cm	27 stations
1	Muller Martini	Iventa Plus	Stitching machine	30,4 x 30,5 cm	
2	Perfecta	TV	Cutting machine	130 x 130 cm	
1	Wohlenberg	137	Cutting machine	130 x 130 cm	
1	Sitma		Wrapping machine	33 x 30 cm	5 stations
1	Palamides		Bundle machine	23,5x33,5 cm	
2	Bell & Howell			14,8 x 21 cm	6 stations

Before the implementation of the JDF/JMF driven workflow Ten Brink used Kodak's Prinergy as stand-alone workflow solution for impositioning. The Xgram MIS was used for estimating and job preparation. Job tickets were printed on paper and 'moved' with the job through the company during the production process. Impositioning was done in Prinergy without any integration with the Xgram data. Interpretation from ordermanagement on requirements for the impositioning (e.g. demands or required specs of binding companies) had to be communicated on the printed job ticket and could be interpreted wrong or could be changed without consideration by the Prepress department. There was no control mechanism for matching the correct plates with the correct jobs. Regularly pressruns were stopped because of the fact that the wrong plates for another job were used. Besides that, often press operators had to wait for plates because they were not ready yet. All of the data collection for job analysis and order status was depending on input of the operators and not based on direct machine or workflow data.

Everybody was aware of the fact that a complete JDF/JMF integrated workflow could only be achieved by a good and solid implementation of the Xgram MIS. As soon as the estimation, job costing, planning and logistics software modules of Xgram were implemented, the JDF phase 1 started. In this first, often seen as level1 JDF, jobs were automatically created in Prinergy from the Xgram MIS using the Xgram JDF/JMF Link and the Kodak Prinergy Business Link. Shortly after the JMF from Prinergy was send back to Xgram for job costing and order status update. Together with KBA, Kodak, Wifac (the KBA distributor in The Netherlands) and Compri a project team worked on the complete integration. In Xgram the estimation created the necessary stripping parameters to automate the impositioning in Prinergy. Prinergy sends the PPf files to KBA's Logotronic for the presetting of the presses. Prinergy also puts a data-matrix code on the plate based on the Xgram MIS data (job number, sheet info, press etc.). The plates are scanned

on the KBA presses using KBA Plate Ident technology, this prevents the use of wrong plates for a job. The pre-press department has four 70/100 ctp platesetters. These are needed to maintain an uninterrupted supply of plates to the fleet of nine KBA presses, which have a total of 45 units. With so many plates being changed at such frequent intervals, mistakes can easily occur. To eliminate this risk each plate is automatically furnished with its own individual data matrix code prior to leaving pre-press. With the aid of this code – KBA calls the module it has developed internally Plate-Ident – the system recognizes whether the plate is new or used and to which printing unit it has been assigned. The module also checks whether the correct language version is being loaded. After the JDF/JMF project the Xgram MIS, Kodak Prinergy prepress workflow, KBA Presses using Logotronic and Plate-Ident were completely integrated using JDF/JMF.

The main results of this integration were:

- Tremendous increase in press output
- Decrease in faults due to using integrated data and plate ident
- Decrease in using wrong plates
- Decrease in order management costs
- Decrease in time from delivery to invoicing

Section I. Background — Before the implementation of the JDF/JMF driven workflow Ten Brink used Kodak's Prinergy as stand-alone workflow solution for impositioning. The Xgram MIS and another MIS were used for estimating and job preparation. Job tickets were printed on paper and 'moved' with the job through the company during the production process. Impositioning was done in Prinergy without any integration with the MIS data. Interpretation from order management on requirements for the impositioning (e.g. demands or required specs of binding companies) had to be communicated on the printed job ticket and could be interpreted wrong or could be changed without consideration by the Prepress department. There was no control mechanism for matching the correct plates with the correct jobs. Regularly pressruns were stopped because of the fact that the wrong plates for another job were used. Besides that, often press operators had to wait for plates because they were not ready yet. All of the data collection for job analysis and order status was depending on input of the operators and not based on direct machine or workflow data.

In the difficult market situations a printing company is in nowadays, we need to address the inefficiency in our company to be able to survive. Extra effort was necessary due to the fact we were also in the middle of merging four companies together in one plant. We decided to take advantage of the situation, procedures and processes were changing because of this merger. Project management was the most important key factor for success. Therefore a project manager of Ten Brink and of Compri were appointed for this project.

Section II. Objectives — Facing the facts of 'struggling for life' in the printing/graphical art industries, Ten Brink needed to cut down costs by an increase of productivity and efficiency (eg. Cut down indirect and direct costs). The management of Ten Brink realized the way to achieve this was to create a completely integrated workflow based on JDF/JMF as well as a better use of the Xgram MIS.

Goals for the project were:

- Decrease of faults in printing the wrong jobs due to using the wrong plates. Goal was to decrease this with at least 50%.
- Improvement of using accurate data during all stages of the production process.
- Increase of production output by making full use of the possibilities of the KBA 'on the fly' Rapida 106-4 SW2 presses. The goal was an improvement in output of at least 25%.
- Decrease in order management costs: the goal was a decrease of at least 4-5%.
- Faster invoicing after delivery of the jobs: the goal was an average of invoicing 2-3 days after delivery. (Before time was 5-10 days.)

Section III. Methodology — In the summer of 2009 the Euradius group was challenged by overtaking the Giethoorn Media Group that had gone bankrupt. The decision was made to merge 4 printing companies in to one based in the plant of the former Giethoorn group in Meppel in the North East part of The Netherlands. The Euradius Group is active in many sectors of the graphic arts market. Ten Brink and Hooiberg Haasbeek, one of the companies that relocated to Ten Brink, print books, magazines and business stationery under a single roof in Meppel, while Printforce in Alphen aan den Rijn delivers a range of other printed products. Euradius also has operations outside the Netherlands, for example Cross Media Solutions and Stürtz in Germany and Eurasia in the Middle East.

This major capital investment was the final component in an ambitious project that united four printing plants under a single roof. On 2 December 2009 the headline on the title page of the Meppeler Courant read "All systems go at Ten Brink printing plant!" For Meppel, which was once the graphic arts capital of the Netherlands, this was a major event, safeguarding as it did around 260 jobs.

For the process of the integration of these 4 companies, Euradius decided to re-implement one of the two MIS systems that were used. Implementing a complete new MIS was not an option because of the huge costs and the longer implementation time. After several demonstrations and case studies, the decision was made to re-implement Xgram that was already used at the Giethoorn Group. The most important reasons for choosing Xgram were:

- Proven ability to implement JDF/JMF Link with the Kodak Prinergy workflow.
- Experience of Compri to link Xgram through XML with customers and suppliers.
- Project management skills of Compri.
- Project plan that made a bootcamp like implementation possible in a short time (3-6 months).
- Experience of Compri in implementing Xgram at comparable sites (eg. Competitors of Ten Brink)

At the same time Euradius decided to invest in new presses in order to increase the productivity of the new plant in combination with the Xgram MIS and the Prinergy workflow. Managing director René de Heij says: "Our press fleet has enabled us to corner some twenty per cent of the market. The Rapidas' cutting-edge technology is a major advantage, since it allows us to address a market shift towards shorter print runs and faster turnaround. Thanks to the new flying job change capability we can match output to demand. Our press downtimes are virtually zero."

In the months preceding the press installation De Heij and his team had to resolve a number of knotty issues. How do you integrate four disparate companies, each with its own culture, into one healthy enterprise? How should the new logistics system be organized? How can disruption to the production routine be kept at a minimum? The solutions were eventually found after some long and strenuous working days.

Section IV. Implementation Story — The project started by creating a project team. The project team consisted of:

- Ten Brink: ICT Project manager, Manager Prepress/CTP, Manager Production, Chief Order management
- Systeemhuis Compri: Project Manager, JDF expert / Software developer, Consultant / trainer
- Kodak: Project manager, JDF consultant
- KBA / Wifac (distributor KBA in Holland): Project manager, JDF consultant, Software Engineer

The project started in October 2009. Because the completion of the installation of the four new KBA presses was initially planned in Januari 2010, the deadline of the project was also set by 1st of February 2010. The primary goal was to create an integrated JDF workflow with Xgram, Prinergy an KBA Logotronic to enable on-the-fly plate change on the KBA106 presses. The implementation plan included the following main steps and according timeline:

1. **Off-line exchanging JDF files and testing (November 2009):**

1.1 Create: Xgram JDF → Prinergy (jobticket + print sheet information)

1.2 Create: Xgram JDF → Logotronic (jobticket + print sheet information)

1.3 Create: Prinergy → DataMatrix Code (based on Xgram job info)

When Step 1 was successfully finished, Xgram JDF files could be imported by Prinergy and Logotronic, the next step could be taken.

2. **On-line test environment at location Ten Bink Meppel (December 2009):**

2.1 Test Xgram JDF → Prinergy (jobticket + print sheet information)

2.2 Test: Xgram JDF → Logotronic (jobticket + print sheet information)

2.3 Test: Prinergy → DataMatrix Code (based on Xgram job info)

2.4 Create and test: Prinergy PPF → Logotronic

When this step was finished two major obstacles were risen: 1. The sequence of the sheet numbers in Prinergy was built different than in Logotronic and therefore a match between Logotronic and Prinergy, via the DataMatrixCode, could not be made. 2. The used Paper type from the Xgram JDF was not matched correctly with the sheet information in Logotronic. Because of that Logotronic could not verify if the paper used for the next sheet would be the same as the current sheet and therefore on-the-fly plate changing could not take place. To overcome the obstacles extra steps were taken (January 2010):

2.5 Solution was build in Xgram that enabled Prinergy to built sheet sequence in same way as Logotronic

2.6 Software improvement and update was done in Logotronic to match the paper types

At the same time training was given to staff and personnel. Also procedures were changed or added to be ready to use the new integrated workflow.

3. Training and procedures

3.1 Training sessions with Ordermanagement, Pre-press and Production about new working methods and procedures.

3.2 Procedure manuals and (short) work instructions were made and distributed.

With the pressure of the new four KBA presses build up, testing and in production, the system was set live.

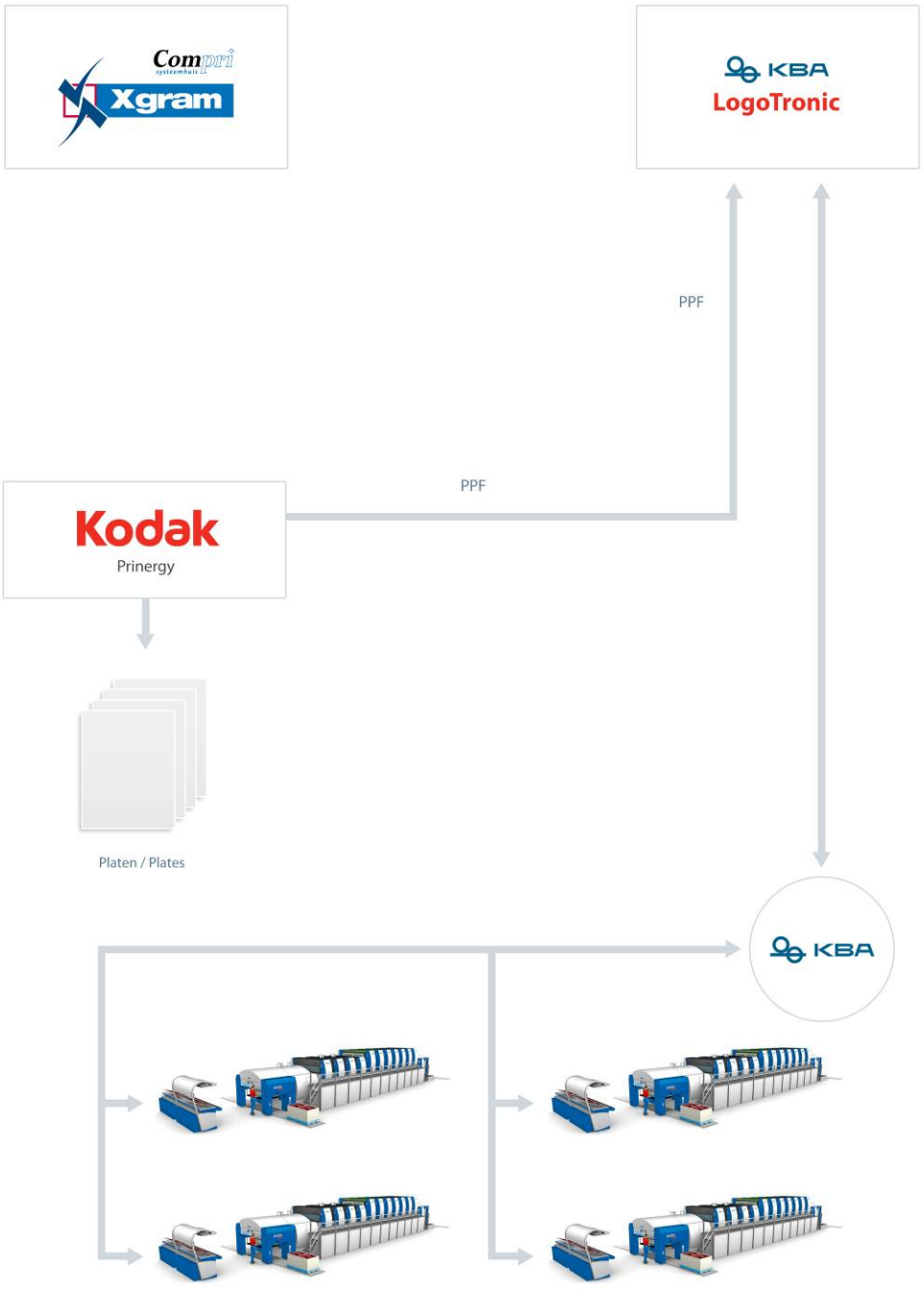
4. LIVE (28 January 2010)

Due to the intensive period of testing, there were no major issues to be addressed at going live. All employees were instructed properly and technically everything worked well.

Section V. Resulting Workflow/Processes —

Situation prior to the implementation

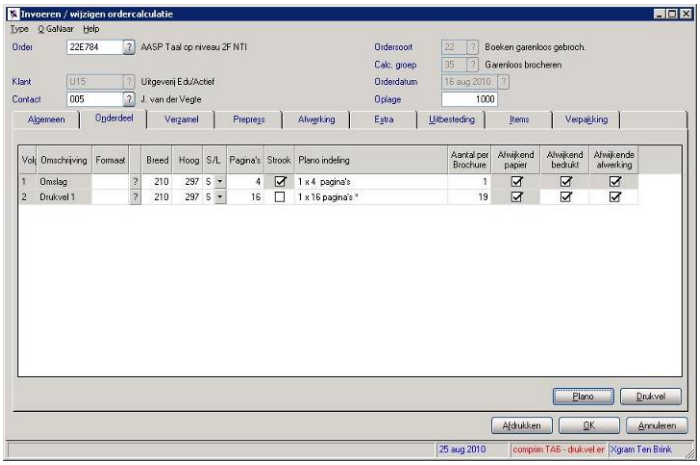
Before the implementation of the JDF/JMF driven workflow Ten Brink used Kodak's Prinergy as stand-alone workflow solution for impositioning. The Xgram MIS and another MIS were used for estimating and job preparation. Job tickets were printed on paper and 'moved' with the job through the company during the production process. Impositioning was done in Prinergy without any integration with the MIS data. Interpretation from ordermanagement on requirements for the impositioning (e.g. demands or required specs of binding companies) had to be communicated on the printed job ticket and could be interpreted wrong or could be changed without consideration by the Prepress department. There was no control mechanism for matching the correct plates with the correct jobs. Regularly pressruns were stopped because of the fact that the wrong plates for another job were used. Besides that, often press operators had to wait for plates because they were not ready yet. All of the data collection for job analysis and order status was depending on input of the operators and not based on direct machine or workflow data.

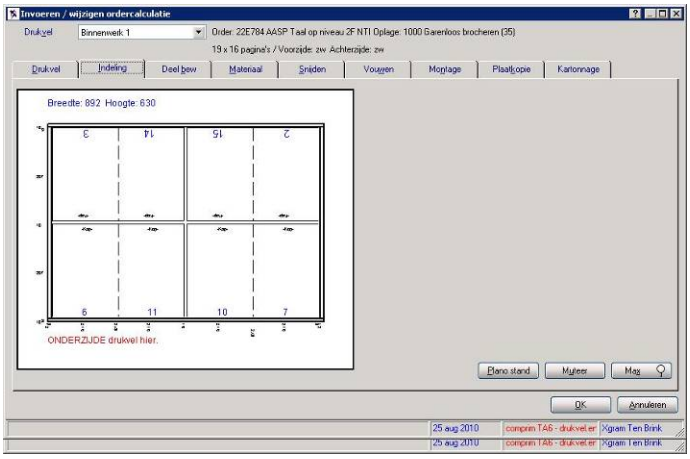


Situation before JDF/JMF integration.

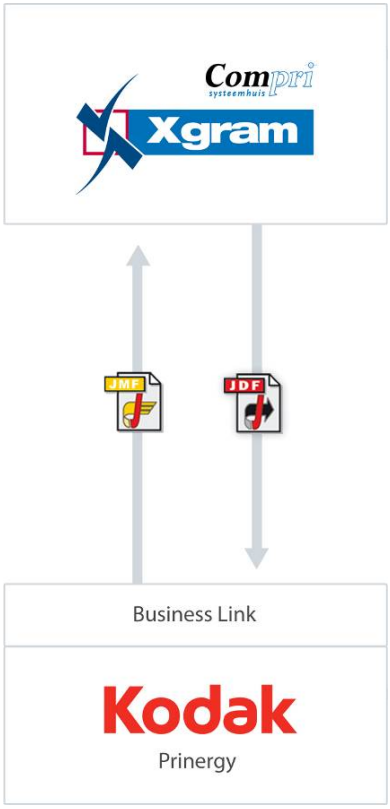
Step 1: Integrating Xgram MIS and Kodak Prinergy prepress workflow

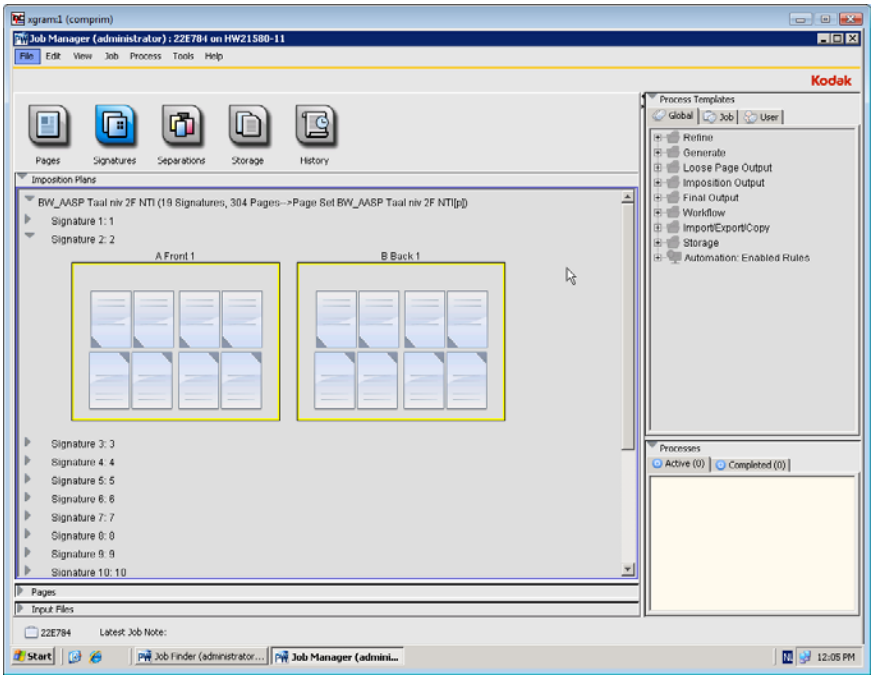
In Xgram the estimation module was updated with a version that includes features to use the Cip4 Folding catalogue. Order management was trained to use this software. Xgram creates stripping parameters to be used in a JDF prepress workflow. At the moment a job was planned in Xgram, a JDF for job creation is send to Prinergy. This is a complete JDF file that includes job ticket information like job number, job description, paper type as well as stripping parameters for each sheet.





In Prinergy the imposition is done based on the Xgram MIS data. From Prinergy data is send back to Xgram in JMF files for order status updates (eg. plate ready) and job costing (materials and working hours).



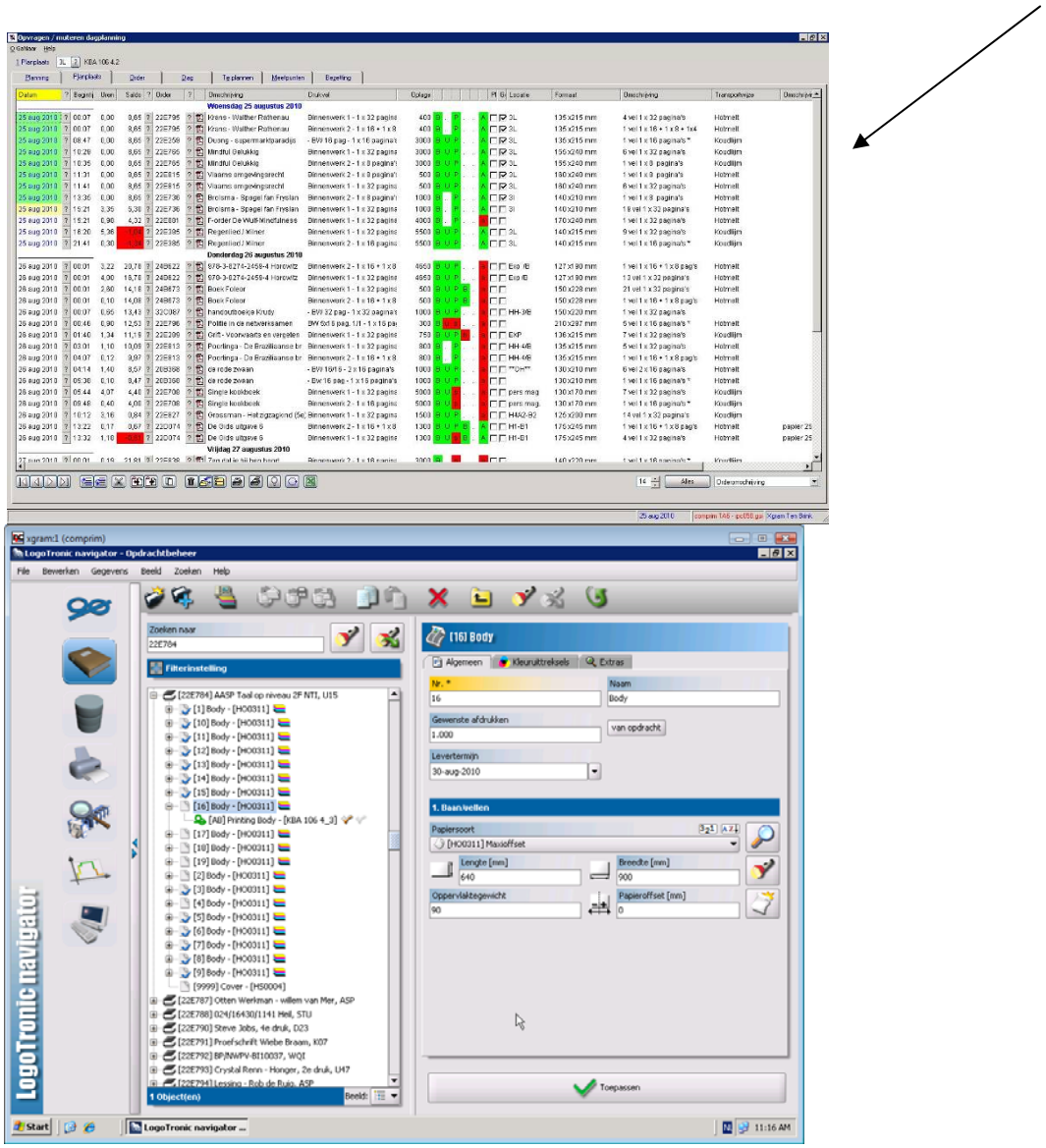


Prinergy Job created based upon Xgram stripping parameters and job ticket information.

After this step was completed, the order management and the prepress department used the same data. Faults due to re-entering data were no longer an issue. Time was saved because the prepress department didn't have to create jobs in Prinergy. Job costing was easier because of the JMF data from Prinergy to Xgram. Order management gain time due to the fact the order status on pre-press work was available online anytime. We calculated this saves us 2 hours per week on labour in order management en 6½ hours per week in the prepress department.

Step 2: Integrating Xgram MIS, Kodak Prinergy prepress workflow and KBA Logotronic including Plate Ident.

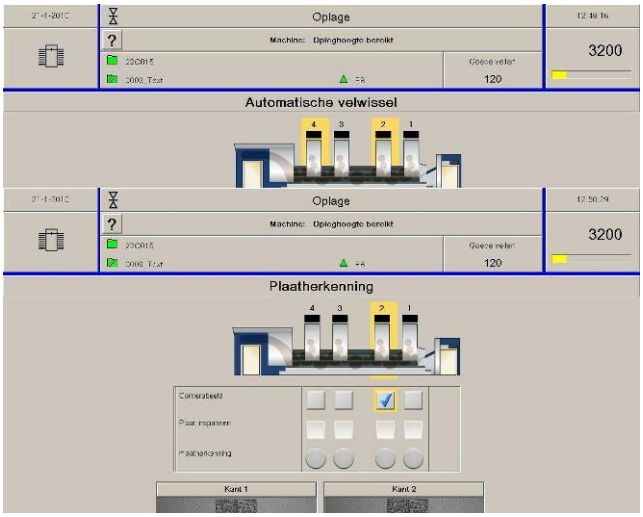
The Xgram JDF is send to KBA Logotronic including jobticket information and print sheet information like number of sheets, colors, papertype etc. The JDF is send as soon as the job is scheduled in the Xgram planning system.



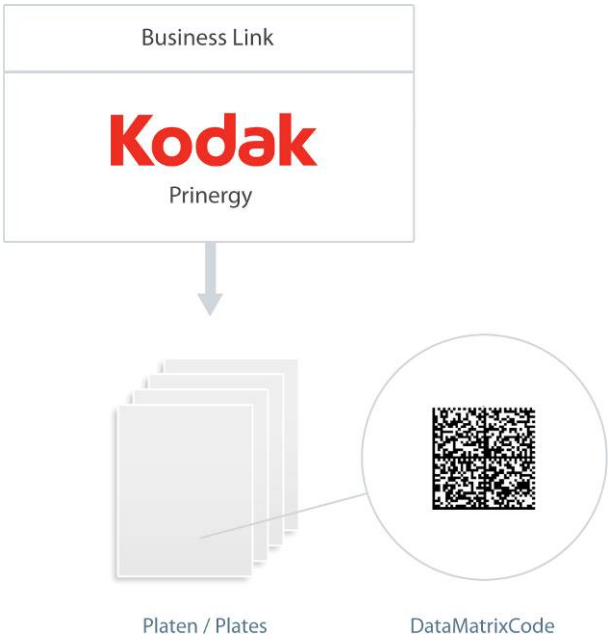
KBA Logotronic job created through JDF using Xgram stripping parameters + job ticket information.

In Prinergy a data-matrix code based on the Xgram MIS info (job ticket and print sheet information) was put on the plate. The Prinergy PPF was send to KBA Logotronic to be able to match the plates using Plate-Ident and the Xgram MIS data on the KBA Rapida 106 presses. The press will only start a run if the plate match is correct. If the match is correct the press (KBA Logotronic) will automatically use the Xgram MIS data:

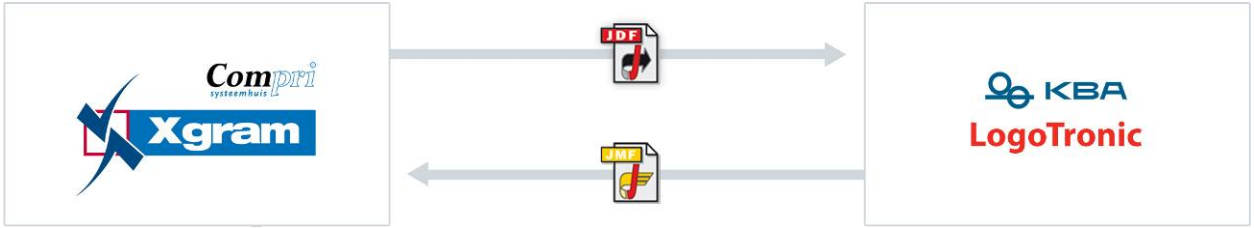
- Number of sheets to print
- Paperformat
- Papertype
- Paperclass
- Paperweight (gm/m2)
- Paperthickness (µm)



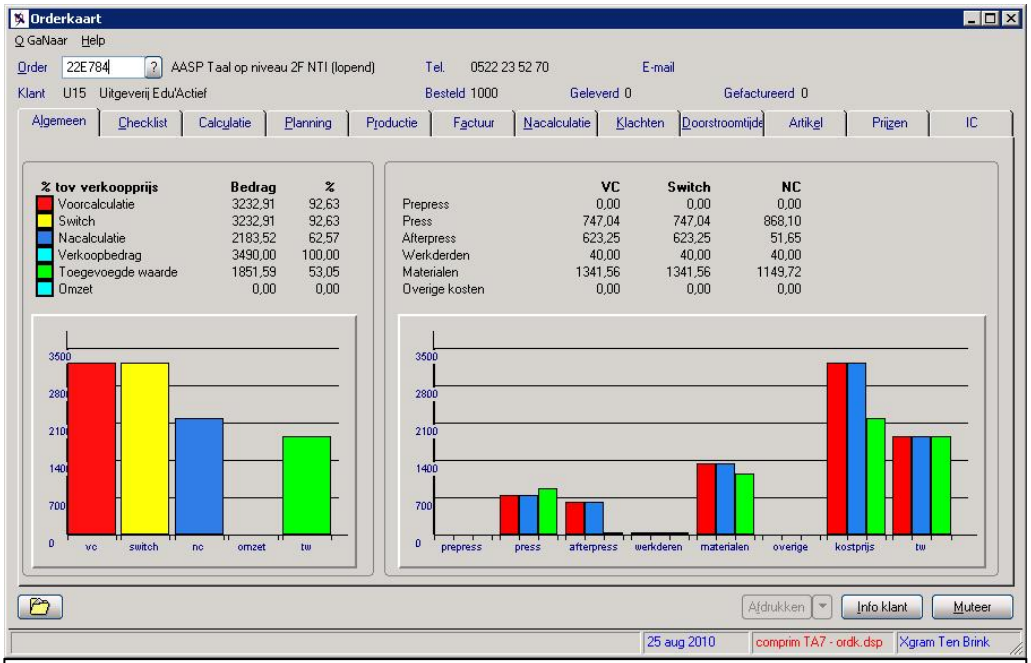
Matching of the plates on the Rapida 106 press.



The last step in the JDF/JMF integration was sending an JMF back to Xgram from KBA Logotronic for purposes of job costing an updating order status.

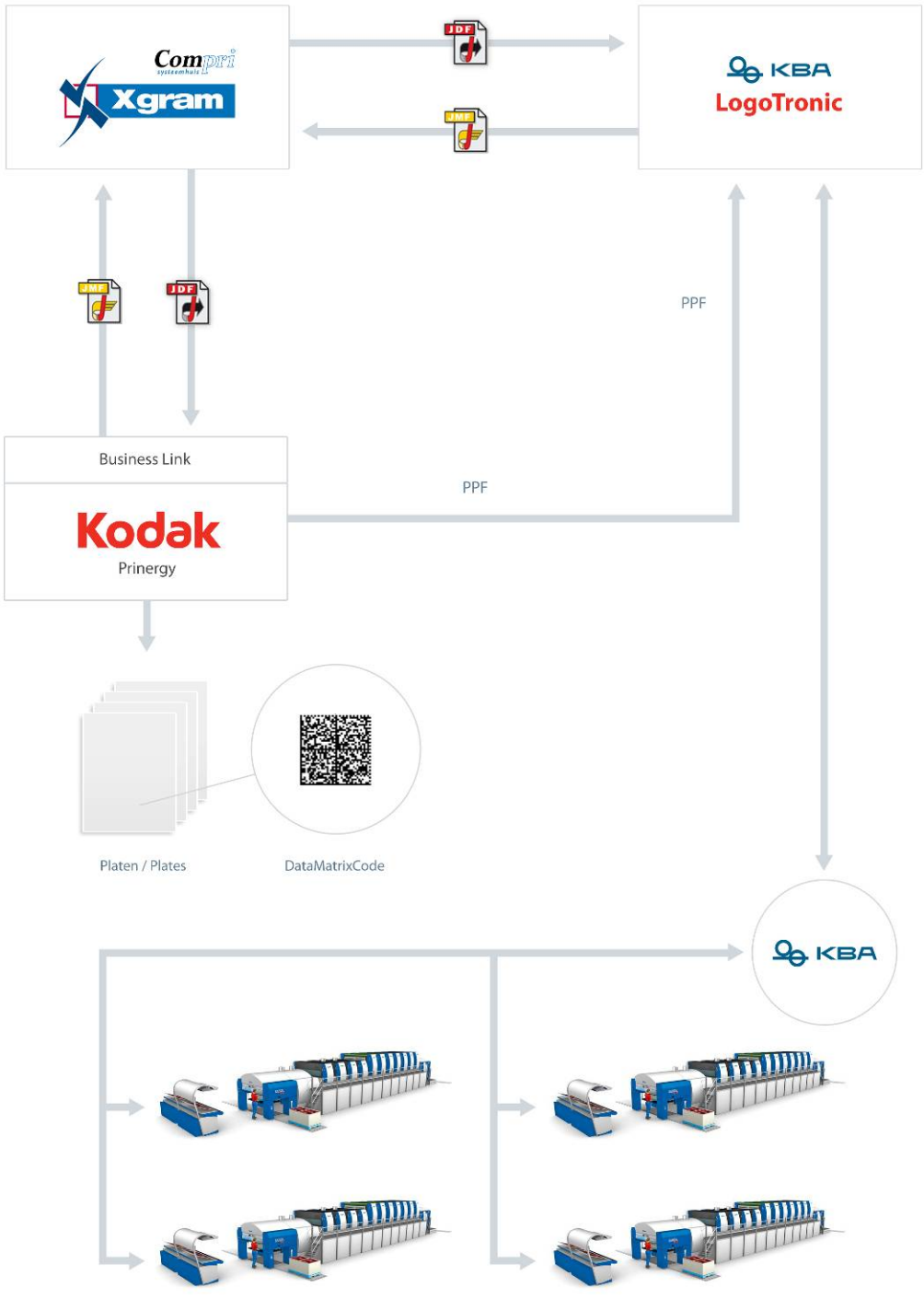


KBA Logotronic management screen with live production data.



Xgram job costing based on JMF data from Prinergy and KBA Logotronic.

The final result is a completely integrated workflow based on JDF/JMF:



Section VI. Optional Detail — ROI —

- The output of the KBA Rapida 106 presses was increased with 50% and more, more than 28% of this 50% was achieved by the JDF/JMF integration.
- The number of faults based on using the wrong plates for the wrong jobs was decreased to 0%.
- The order management costs were cut by >5%
- The average number of days between delivery and invoicing is now 2½ days.

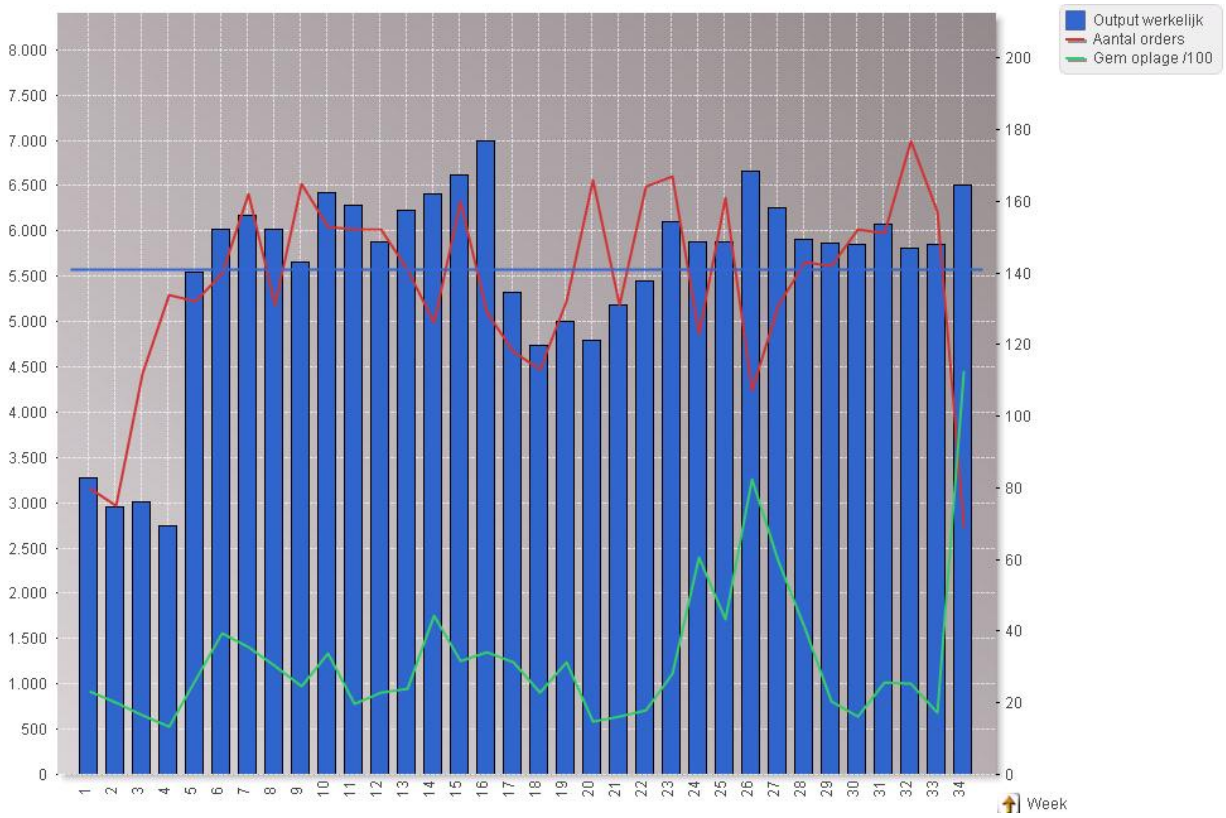
Present Value Ten Brink, HooibergHaasbeek

		Periods		
		2010	**2011**	**2012**
Discout factor		99,00	98,00	97,00
Benefits (in savings)				
JDF Integration (fase1)	Pringergy	€ 71.400	€ 70.000	€ 68.600
(Xgram/Link/Pringery/Logotronic)	Press	€ 1.486.300	€ 1.478.600	€ 1.470.900
JDF Integration (fase 2)	After-press		€ 385.000	€ 377.300
(Xgram/Muller Martini, Wohlenberg)				
JDF Integration (fase 3)	Press			€ 107.800
(Xgram/Link/Pringery/Pressroom)				
JMF Intergration (fase 4)	CSR	€ 7.072	€ 7.072	€ 7.072
Total annual savings		**€ 1.564.772**	**€ 1.940.672**	**€ 2.031.672**
Cumulative savings		€ 1.564.772	€ 3.505.444	€ 5.537.116
Discounted annual savings		€ 1.549.124	€ 1.901.859	€ 1.970.722
External investment				
Update Pressroom manager				€ 30.000
Software KBA 8 colour			€ 30.000	
Update and service costs Xgram/JDF		€ 5.000	€ 5.000	€ 5.000
Update and service costs Link/Pringery		€ 2.000	€ 2.000	€ 2.000
Extra costs programs for after-press			€ 50.000	
Total annual costs		**€ 7.000**	**€ 87.000**	**€ 37.000**
Cumulative costs		€ 7.000	€ 94.000	€ 131.000
Net Present Value (6%)	€ 4.415.123			
ROI Return on Investment	4014%			

- Improvement in Quality and Customer Service — The improvement in quality consists of:

= output sheets/hour | = number of jobs | = average job amount/100

  - Increase in output on the presses:



This is a print of the output per hour on a weekly basis per KBA Rapida 106 press. It shows that after the new JDF/JMF workflow was live (from week 5 and onwards), the output per hour raised from 2750 sheets per hour to over 5500 sheets even up to 7000 sheets per hour. The graph above also shows that production reporting is now based on live data and is available at any time and much more accurate than data keyed in manually by production personnel. The graph shows the output per hour including time for setup, the pure production (runtime) output per hour is therefore much higher.

- Better customer service due to the fact that order management is able to answer questions of customers on order status directly from Xgram based on the direct JMF input of Prinergy and KBA Logotronic. Before the implementation order management needed to 'run in to the production' to see what the exact order status was.
- Innovation — Please Provide a description of the innovative aspect of the process and an argument for why this is unique and new, with a comparison to traditional alternatives and a description of the primary benefit the innovative aspect of the new process.

The innovation aspect is best addressed by the use of the data-matrix code based on JDF information of the Xgram MIS and of Prinergy information combined with the Plate-Ident technology of KBA Logotronic. Using the same 'master JDF data' throughout the entire production process

the output of the presses was increased tremendously by making full-use of the ‘on-the fly’ plate change possibilities of the KBA Rapida 106 presses.

In a traditional way this could never have been done.

Next steps:

After the successful JDF/JMF project Ten Brink and Compri already have plans, some of which are already started as a project, for the following:

- Wireless controlled stock, by using WiFi handhelds to book movements of stock of paper, the right paper will be at the right press at the right time and better stock data is available to the paper merchants for just in time delivery. (project started an live in November 2010)
- XML communication with (larger) customers like publishers. Orders from these customers will automatically create orders in Xgram.
- JDF/JMF integration with afterpress.
- Webshop for customers. (project started an live in November 2010)