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Four-Part Blog Series: Four Steps to the Smart Factory – Example 3: the Smart Factory

In my first two blogs (Blog 1 / Blog 2) in our four-part „Smart Factory" series, I introduced you to two Muller Martini customers on the topics of fully networked volume production and production cell manager on June 15 and August 17, 2021. The third episode is now about a company that has a Smart Factory with fully networked single-book and short-run production. Its goal is to produce a wide variety of production types and to intelligently dovetail the entire production cell across all lines using a uniform workflow.

A production environment that organizes itself? Bookbinderies whose production processes are completely automated – from transport to in-plant logistics and material flow? A digital book production system that produces 100 individualized book-of-ones almost as quickly as 100 copies of a single title? And without human intervention in the production process?

The magic word to answer these questions, which until a good decade ago seemed almost utopian, is Smart Factory. In the wake of Industry 4.0, the Smart Factory is now a reality in the graphic arts industry. This is because only the networking of embedded production systems and dynamic business processes makes it possible to manufacture products profitably, even with individual customer requirements.

With its development strategy Finishing 4.0, which is based on Industry 4.0, Muller Martini is a leader in the implementation of networked production processes. The biggest drivers of

this are new business models. Keywords here are Variable Data Printing (VDP), personalized print products, photo books, Web2Print and Print-on-Demand.

The customer
The customer in this blog has a Smart Factory with fully networked single book and short-run production. His goal is to produce a wide variety of production types and intelligently dovetail the entire production cell across all lines using a unified workflow.
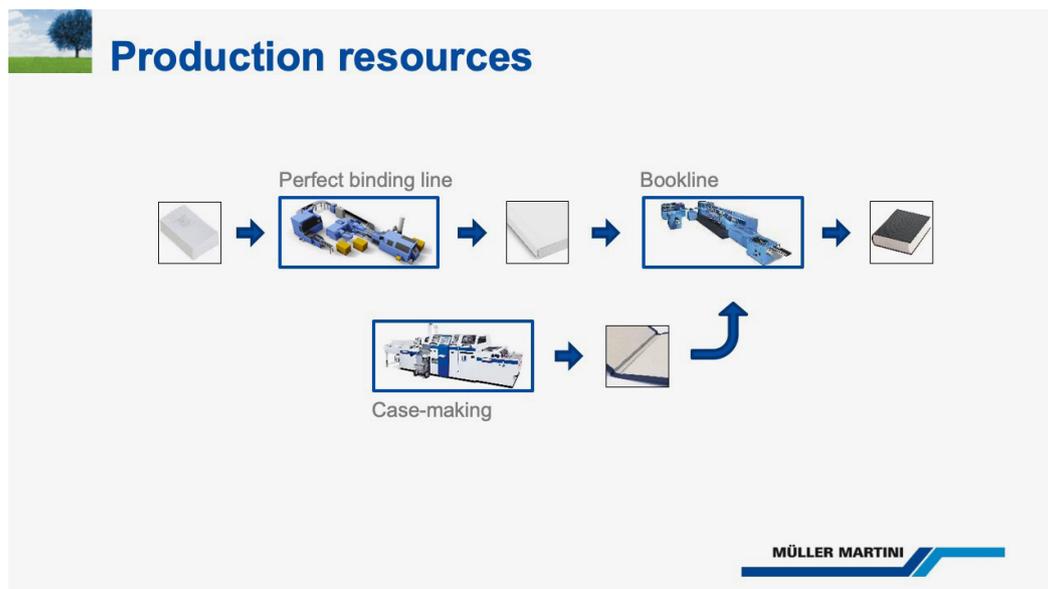
Step 1: understanding digitization
All Muller Martini machines are integrated into the Connex workflow system – mixing electronic job pockets and the barcode workflow. The HP Indigo 12,000 digital sheetfed press for content printing and the Scodix Ultra Pro print finishing system for envelopes/covers are connected by the customer itself via HP Site Flow.

Step 2: clarify company needs
On the one hand, the production forms are different for this customer: softcover and hardcover. On the other hand, the product range is very broad. Since all products come from digital printing, there is no need for additional coordination between the two printing forms. However, frequent changeovers between softcover and hardcover are required due to the short lead times.

Step 3: gain process expertise

A combination system with an end sheet feeder, Vareo PRO perfect binder and InfiniTrim three-knife trimmer „feeds" a Diamant MC 60 photo book line. In parallel, a DA 270 Digital case maker from Kolbus produces the book covers for the Diamant. The combined softcover/hardcover production requires a high level of process engineering know-how.

This (nearline) solution with a high degree of automation brings the customer great advantages in several respects. He has a highly productive and highly complex production cell with continuous production tracking via eleven barcode scanners in the system – including evaluation via Connex.Info, the monitoring and reporting tool of the Connex workflow system. A sequence check of cover against book block is integrated into the workflow. Thanks to Connex monitoring, production reliability is very high because errors during production type changes are avoided.

Step 4: shaping the digital transformation

All Muller Martini machines have a JobPreview monitor: a large-screen display shows the (current and upcoming) jobs with the respective remaining run times. VBA/Vareo, InfiniTrim and DA 270 Digital are controlled via barcode. The production sequence transmitted via JDF, together with the associated job data, undergoes an automatic sequence check for the blankets at the DA 270 and is then transferred to the Diamant for processing.

This solution enables the fully automatic production of a wide range of products: softcover, regular hardcover, hardcover with false endpapers, hardcover without endpapers with gauze, and special productions with printed endpapers or integral covers. It also allows a Web2Print application (web store with direct job pocket connection) – including integration with HP Site Flow.

The top 5 benefits of this customer example and your advantages at a glance

• **Benefit 1:** Connex networks four Muller Martini systems with a face sheet feeder, a Vareo, an InfiniTrim and a Diamant MC Digital photo book, thus ensuring a seamless production process that requires minimal manual intervention – in line with Muller Martini's Finishing 4.0 philosophy. – **Your advantage:** You have a uniform interface for integrating a wide variety of machines. This minimizes your maintenance effort for IT operations, even for software updates on the machines.

• **Benefit 2:** Connex.Info ensures seamless tracking and evaluation of production. – **Your advantage:** The current status of production orders is known at any time. Production bottlenecks can be narrowed down and optimized in a targeted manner.

• **Benefit 3:** Monitoring by means of Connex and barcodes ensures a very high level of production reliability. – **Your advantage:** Even with frequent changes of production types, a high level of operational reliability is ensured. Automatic safety monitoring prevents careless mistakes by your operators.

• **Benefit 4:** Automatic matching of cover against book block is integrated into the workflow. – **Your advantage:** even with very short runs or single copies, incorrect binding and the associated quality risks are eliminated.

• **Benefit 5:** Dedicated workstations allow manual intervention in the automatic data flow in the event of quality and sequence deviations. – **Your advantage:** With targeted intervention options, even a highly integrated workflow remains easily manageable in day-to-day business.

A valuable white paper to download

If you would like more in-depth information about digital transformation and Muller Martini's ideas on the Smart Factory, I recommend reading our detailed whitepaper on this topic. You can conveniently download it using the link below.

In the fourth and final installment of our blog series on October 12, 2021, get to know a company that – as a globally unique solution with this configuration – has a Smart Factory with individualized mass production and has set itself the goal of industrial production of edition 1 products in a free production sequence – with the option of also producing editions of 20.

Your
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