



The Magic Behind our Favorite Books

The latest Harry Potter mania has proven once again that books and reading in general will never go out of style. Although the Internet has taken over a big part of our daily lives, research shows that it will not be completely replacing print media anytime soon.

This is, of course, good news for the Swiss-based company Muller Martini, a worldwide leader in the manufacturing of a full range of post-press finishing equipment for commercial printers, binderies, digital book manufacturers and newspaper plants, as well as web offset presses. With its manufacturing plants in Switzerland, Germany, the United States of America and several other countries and its vast network of service, sales and marketing offices in all the major markets across the globe, Muller Martini is capable of serving all its customers around the world.

For over a decade B&R and Muller Martini have been working closely together as a team on new developments and improvements on Muller Martini's machine control systems worldwide and also in the USA. "Developing a new piece of equipment for a certain market, the performance to price ratio has to improve in order to stay competitive. When developing the most recent equipment, we opted to change the control hardware architecture substantially. With the release of the B&R X67 I/O family, Muller Martini decided to take full advantage of its benefits," says Ferdinand

Prantl, Manager Electrical Engineering of Muller Martini, USA describing the company's philosophy with regards to the new machine development.

High-Tech for efficient machine manufacturing

Keeping state-of-the-art book binding technologies in mind, it is very important for Muller Martini to use the latest technology for all its machine developments. During the design phase of the new equipment a decision was made to reduce the cables and wiring of the machine to a minimum. This was only possible by applying the B&R X67 I/O system with IP67 protection, allowing for the I/O to be mounted directly on the machine where sensor clusters are located. The result of the new control concept using the X2X Link (a distributed backplane) as the backbone of the control system was the elimination of an extensive amount of wiring to the control cabinet. Additionally, labor savings due to the elimination of the trunk connections are substantial, and the large decrease in connection points has reduced the probability of wrong wiring. Besides the increased ef-

ficiency in the assembly process, this has also led to an increased reliability of the machine that can be demonstrated in the field. Now a service technician or engineer can easily check and change the I/Os or the sensor if necessary without having to deal with intermediate connections, thus greatly reducing troubleshooting and machine downtime.

Mr. Prantl notes the advantages of utilizing the X67 I/O concept for the machine as follows: "The X67 is a true distributed I/O and not a central remote rack. One can bring the I/O to the device. This facilitates many steps in the design, assembly and later in the servicing aspect of the equipment. It connects all the parts of the machine with the central processor instead of the traditional trunk cables with intermediate connections, resulting in hundreds of wires running all over the machine. The increase in the hardware cost is offset by the substantial decrease in the labor cost, which results in overall net savings."

In addition to the X67 I/O system the machine has been developed with a B&R Power Panel PP200 as the operator in-



interface with integrated control functions, as well as ACOPOS servo drives communicating via CAN to the central control system. B&R's programming software Automation Studio, a single tool for motion, control and visualization, has been used for the programming of the entire machine application. "Muller Martini is one of the companies that started using Automation Studio in its infancy, when it was newly developed. Over the years it has matured to a stable, versatile and easy-to-use tool. It helps the developer of a control system integrate the various aspects of a system with ease, as the various components, such as motion, HMI, etc. are on the same platform. The unification of different control components in a single platform shortens the development time. The result is excellent performance by eliminating interface and software driver issues", says Ferdinand Prantl.

Muller Martini also developed tools that facilitate taking the 3D drawings from the CAD system into the screen images. This enhances the friendliness, as an inexperienced operator does not have to second-guess symbols shown on the screen, but sees the actual parts of the machine. This cuts down on developing time of the screen images.

From the signature to the book

The magic behind our favorite books may be described in the following main machine processes: After the different pages (signatures) are printed and folded, the signatures (each consisting of several pages) are placed in a gathering line, where they are dropped and collected into a single book-block. This book-block is transferred into a binder where the spine (the back of the book) is prepared, glue is applied and a cover is nipped to each book-block and hence it becomes a book. This book is then conveyed to a three-knife trimmer, where it is

cut to the right size. From this point on, a book goes to the market for sale.

To sum it all up, the advantages experienced by Muller Martini in the USA are also shared within the Muller Martini Group worldwide. The company cooperates closely in all their machine developments and shares all the pitfalls and successes. Additionally, these improvements are ultimately passed on to their customers: user friendliness, short changeover times, serviceability and increased functionality. These contribute to a higher performance to downtime ratio, which in return increases the productivity per unit. For customers these gains are essential in today's market environment. In general, the industry sees a trend of reduced lot sizes, which results in more frequent changeover of the machine parameters. A machine application that offers a high degree of modularity and flexibility is a must in order to meet the market requirements now and in the future.





The customized Power Panel allows Muller Martini to create an optimal control, operation and visualization for the Pantera.

Digital technology, digital workflow

To increase the machine capabilities even further Muller Martini is including in its current planning the “digital workflow” concept as an additional feature to its machines. The digital workflow refers to the orderly handling of daily work and encompasses the flow of goods and orderly data flow. The two standards developed are JDF (Job Definition Format) and JMF (Job Messaging Format), which are the key technologies for efficient data exchange in graphic arts operations.

Emphasizing the prosperous and long-lasting relationship between B&R and Muller Martini Mr. Prantl says, “For an equipment manufacturer, the control system is the heart and soul of the machines being built. It is imperative for a company such as Muller Martini to team up with a company that is flexible, responsive to market trends, on the cutting edge of technology and has superb technical support. The technical support is especially important, as the products evolve constantly. Good support eliminates the issue delays due to technical difficulties and helps keep Muller Martini’s equipment on the cutting edge of performance and productivity. We have never questioned B&R’s support during development or during the solving of any problem we ever had. The high flexibility and fast reaction time is impressive. The

office in Atlanta has often proven that ‘A friend in need is a friend indeed’. In addition, the flexibility of the B&R hardware and software provide us with the foundation to be able to design and create control systems with the highest functionality and capabilities possible. Some custom specific hardware developed for us by B&R has proven to be of high quality and with a good price-performance ratio”.



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Ferdinand Prantl
 Manager Electrical Engineering
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