



# Grafitec

## Color the World

Whoever wants to be successful in the hard-fought printing press market had better to be ready to measure quality against the best. This doesn't just mean print quality. Machine productivity, operating comfort, friendly service, the ability to adapt to many different printing jobs, uncomplicated maintenance, and excellent pre-and after-sales service are just as important. Another essential factor is machine modularity. It is this skill which allows optimal machine configurations to be offered to any printing company at the best cost to performance ratio possible. In recent years, Grafitec has been able to meet these demands with their Polly printing press series in especially innovative ways.

In the areas of electrical equipment and machine automation, it was a question of making a fundamental change to the entire concept – away from the original idea of one central controller and a large number of additional electronics. Keeping in mind printing press modularity, the number of I/O points and the resulting wiring complexity, the clear advantage lay in strong efforts towards distributed control. With regard to machine dynamics and the necessity of being able to react in the millisecond range, it was also imperative to distribute the controller system's intelligence. Another demand that needed to be met was getting the majority of printing press electronics to be able to work with a common platform while still adhering to the idea of maximum machine modularity and scalability.

In addition, the ability to diagnose and maintain all of the intelligent parts on the presses, either from one central on-site interface or by performing remote diagnostics from a regional or worldwide remote service center, was also deemed an important point.

After a persistent and thorough testing phase, the solution provided by B&R was selected as the most suitable, despite competition from four other international automation companies. An essential requirement that had to be met was being able to transfer application software between product lines. This was because nobody at the time could really tell how far printing press innovations would reach and what additional demands would be placed upon control

systems. B&R hardware meets those high demands regarding to scalability and distribution while still providing sufficient computing performance and memory capacity to implement high-speed and up-to-date machine functions. Open communication interfaces are implemented whenever required to eliminate any problems which may have arisen when linking to devices from other manufacturers. A variety of these types of special devices are essential on printing presses as technologically complicated as these. Additional advantages include the ability to program in high-level languages as well as the complete development platform which can be used for all target systems. This became particularly evident that the increasingly demanded progressive machine functions, such as communication, product data archiving, and diagnostics, as well as implementing Internet technologies in conventional PLC programming languages could only be realized with great difficulty. The constant innovation practiced at B&R is very useful for the future, for example new developments in the area of industrial bus systems with ETHERNET Powerlink as well as the compatibility (and available choices) between the efficient IPC and classic PLC worlds.

The entire application project was developed by the engineers at Grafitec themselves. There were only a few especially complex procedures which had to be worked out together with engineers from the B&R subsidiary in Brno. The software engineers were especially fond of the advantages of programming and maintaining projects using high-level languages in the B&R Automation Studio development environment. It was obvious that the quality and manner of fair and constructive cooperation between



Open printing unit of the Polly Performer 66 with the complete controller system. Electronics and mechanics are integrated into a single housing.

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In the past, we were limited by the performance and capacity of the controller when we wanted to introduce innovations to the 66 press series. By adopting the B&R 2003 system, we received a high-performance printing press controller which had distributed intelligence and which still maintained high modularity and a very favorable cost to performance ratio. In our first innovation step we used custom components like operator panels and drives from other manufacturers along with a B&R controller. Over time, this proved not to be a very good solution especially from the service point of view. In the meantime, the product family from B&R had grown to the point that we were able to replace these parts with components from the B&R system family. Standardizing our hardware in dependability of our presses and, thanks to the service network from B&R, our end customers were able to receive excellent support anywhere in the world. Since all of our components can communicate with one another without any problems over B&R Automation Net, we can diagnose every important function on these complicated printing presses without even having to be on-site. This is an essential advantage for our customers.

We have been working with the B&R subsidiary in Brno since 1999. From the very beginning, we received total support from all employees, whether creating the hardware concept or developing and testing the application software. I am definitely very positive about the system and quality of training our development and service engineers received.

Thanks to the success we've had implementing B&R control systems and establishing an excellent cooperative relationship, our teamwork has become even more intensive. This led to the assimilation of B&R employees directly into the development teams at Grafitec. Regarding the cooperation we receive from B&R, we value the high-quality support of an international partner. Just as important is their customer-oriented flexibility which hasn't diminished even as the range of their product spectrum and the number of different applications have increased. All of these facts lead Grafitec to one conclusion: B&R automation systems will definitely be involved in innovating our second series of printing presses.

Grafitec and the B&R team in the Czech Republic was of great importance for the success of the entire project. By being highly responsible and always ready to help out when things got difficult, B&R convinced Grafitec that they were worthy of the trust placed in them. The engineers from Grafitec were a good, solid team who were always capable of finding ways of flexibly solving problems until the project was completed. With a short time, a pleasant and informal atmosphere of creative cooperation evolved, which resulted in fully developed technical solutions. This spirit was also the reason for the success of the product and contributed to the overall value for end customers.


Depending on the printing press configuration, "Polly Performer 66" devices are equipped with an appropriate number of B&R 2003 compact controllers. The central network system for the entire machine is the CAN bus. This bus system doesn't just connect the controller systems with the operator consoles; CAN is also used to connect a large number

of other special auxiliary equipment. For example, a B&R Power Panel PP200 device is one central operating device which is integrated in the delivery unit. From here, the entire printing press can be operated easily and clearly using just a touch screen. As an option, the machine can be delivered along with a remote color control console called "Polly Control" which is based on an IPC5000. With this remote station, the colors being used can be regulated to the individual printing devices, and all other input can be given to the machine as if it were being controlled from the console. In addition, the procedure for the printing job can be completely controlled by the open CIP4 procedure which has become a standard for the printing industry.

### Real Value for End Customers

Polly Performer 66 presses are already in serial production. A similar innovation period has also gotten underway for the Polly 74 printing press series. This has the desired effect of unifying all

machines into one system. Maintaining projects, adding innovations, and servicing printing presses thus becomes substantially easier. Last but not least, series production of universal printing press components is increased which reduces overall manufacturing costs.

Thanks to innovations achieved in recent years, Grafitec has been able to improve print quality considerably while increasing efficiency and value in many respects with regard to the presses used by printers. The automation systems from B&R alone had a great effect on reliability which in turn enabled many detailed technical improvements to be made. This concept also presents additional possibilities in the areas of comfort and ease of use. In addition, the B&R system family offers a good, open base when it comes to Internet technologies, whether integrating the machine into the print job chain or providing service and remote diagnostics. 

The Grafitec company is one of two manufacturers of sheet-fed offset printing in the Czech Republic. The Grafitec headquarters is located in the small city of Dobruška in eastern Bohemia where the machine manufacturing tradition reaches back to the end of the 19th century. The dynamic development of the past ten years, as the factory was privatized after being a formerly state-owned production concern, is an illustrative example of the complicated and turbulent restructuring process in Czech machine manufacturing after the collapse of the centrally planned socialist economy in 1989. Today, Grafitec is a successful private company which exports more than 70% of its production – primarily to markets in North America and Western Europe as well as traditional markets in Central and Eastern Europe. Grafitec has also been successful in the Latin American, South-east Asian, and Middle Eastern markets.

Grafitec produces two series of printing presses under the trade names "Polly Performer 66" and "Polly Prestige 74" for the A2 and B2 print formats. Grafitec printing presses are built with a high degree in modularity; they are delivered with 2, 4 or 5 printer units. Additional options include a variety of auxiliary equipment and functions. The entire type series is showcased at every important trade fair for printing and packaging technology: POLYGRAPHY in Kiev (Sep. 15-19), PRINT in Chicago (Sep. 28 - Oct. 1), PRINTEXPO

in Budapest (Sep. 30 - Oct. 3), DRUCK+FORM in Sinsheim (Oct 8-11), POLYGRAPH INTER in Moscow (Oct 27-31), and GRAPHICS in Toronto (Nov. 13-16). Of special significance is the DRUPA trade fair in Dusseldorf from May 6-19, 2004. Occurring only every four years, this exhibition brings together visitors from all over the world in the printing and paper industries and will be the first exhibition taking place after the enlargement of the EU.

Compact two-color printing machine. The entire machine is operated using a central operator panel with touch screen.

