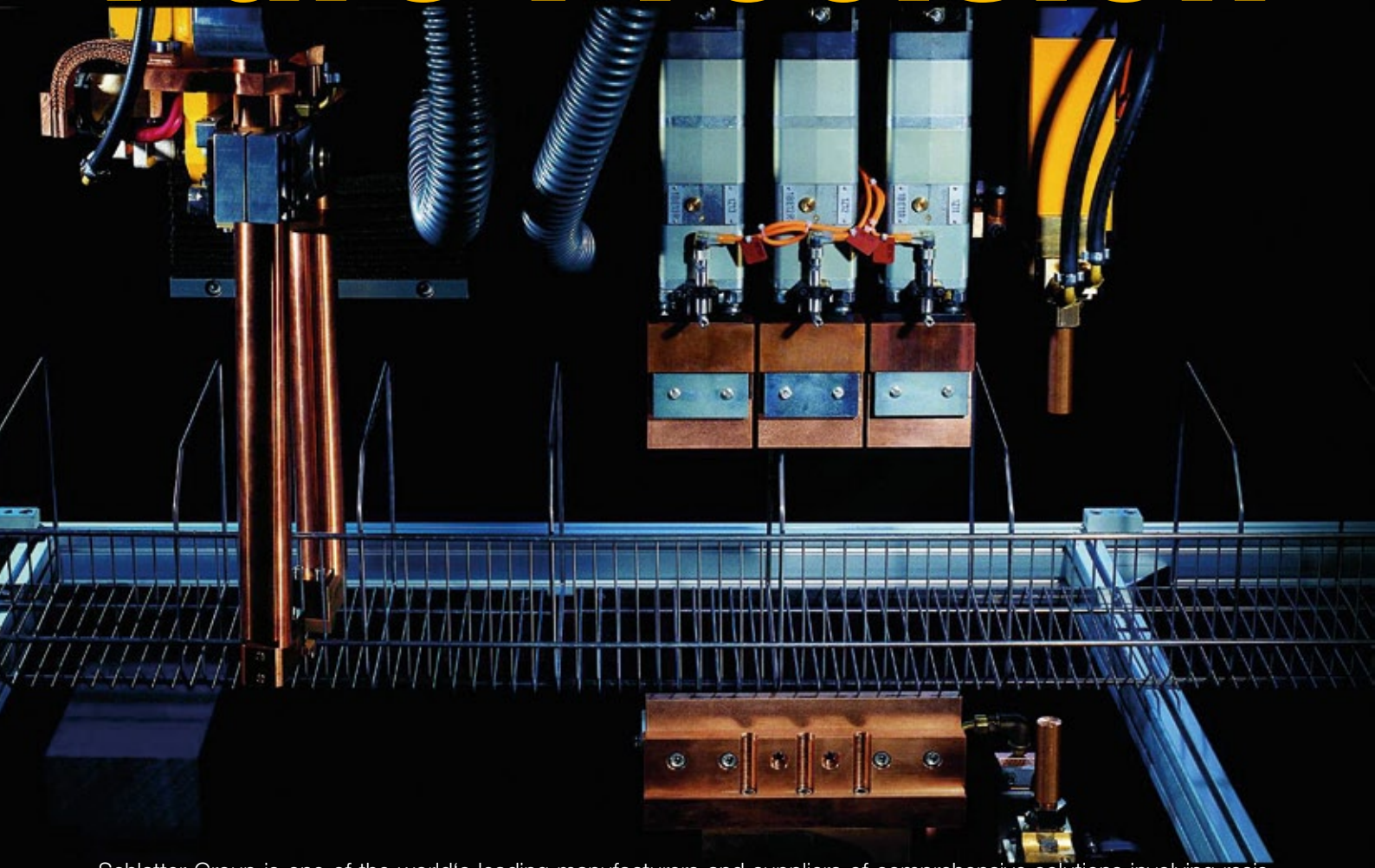


Pure Precision



Schlatter Group is one of the world's leading manufacturers and suppliers of comprehensive solutions involving resistance welding and wire weaving. Among others, a few target markets include manufacturers of reinforcement mesh and industrial mesh as well as wire products, sheet metal working, heating elements, railway construction and automotive component supplies.

Many fencing systems, shop and storeroom fittings, transport containers and items of steel furniture are made up of wires which have been joined together by welding. Countless design options are possible depending on the type of wire used, their arrangement and the incorporation of further components such as profiles and sheet metal parts. Therefore, mesh producers demand mesh welding machines to not only work at a very high level of precision and quality but to also be reset both easily and quickly.

These are exactly the strengths of the internationally proven welding system POSIWELD from the sheet metal division of the H.A. Schlatter AG in Schlieren, not far from Zurich. It works on the principle of electrical resistance welding and with various welding electrodes. The medium frequency technology used enables very short welding times, the lowest levels of heat-induced distortion and highest level of weld surface quality.

The electrode pair is automatically moved to the programmed welding points with high precision to make the welds. An additional pair of welding tongs can make welding points vertically. Two horizontally traveling frames, with support gauges for mounting the components to be welded, move the work pieces into the welding machine's work zone in pendulating mode. The POSIWELD system is operated using a mobile touch screen which makes it easy to change over from one production task to another.

New system with the highest demands

In 2002, the developers at Schlatter were faced with the challenge of developing an even more flexible and faster POSIWELD machine with the shortest possible changeover times, thus meeting the customer's requirements better than ever before. The new POSIWELD Libra had to meet the following main objectives:

- Further improvement to machine properties, such as integrated remote maintenance, ability for customer to perform maintenance tasks and increased production performance.
- Make new storage media available via USB and CD burners.
- Scalability of the machine functions: Customers pay only for what they really need.
- Reduced space required by the system.
- Addition of new functions such as data backup, remote diagnostics and remote maintenance.
- Optimal price/performance ratio by using the most modern technology available.
- Protection of investment with the reuse of existing software.

Only a complete reconstruction of the mechanics and controller made it possible to achieve these goals. The POSIWELD Orion system, which has been very successful up to now, was introduced to the market in 1997 and was equipped with a B&R CNC system. Even then, the system was already mobile-operated and based on a touch PC.

A completely new concept in automation was necessary to meet the high demands. The amount of space required was reduced by optimally distributing the functions. The space in the switching cabinet was cut down to a quarter of its original size. Electrical drives were to be applied throughout the entire machine for higher dynamics in the controllers and the highest possible level of flexibility. Wiring in the machine was to be reduced to a minimum on the basis of fieldbuses. The Libra should be able to be programmed online in the Teach-in procedure as well as receive production instructions via the network or data carriers. Energy consumption, operating costs and amount of maintenance needed to be reduced.

In earlier models, Schlatter partly used conventional controls in the network with CNC systems. This automation basis was no longer able to handle the new requirements. The expansion of the existing machine concept from a few axes to 12 electrical axes would have meant an enormous increase in costs for Schlatter. In the evaluation phase, B&R came back into play next to a few major corporations.

Integrated automation as the key to success

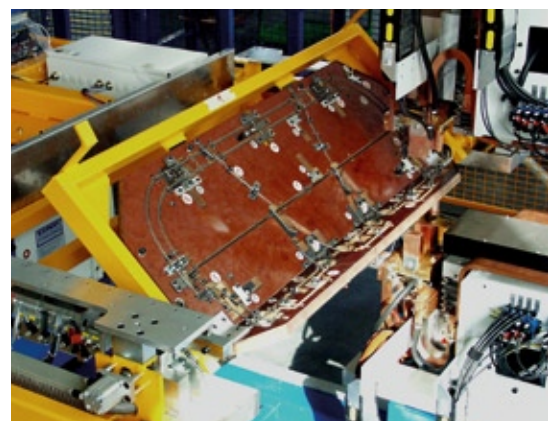
The integrated B&R automation solution with drives, software, controllers and networks all from one source received the best grade from the Schlatter team. Technologically, the B&R solution was up-to-date. This combined with references from well-trusted companies, as well as the excellent price/performance ratio, accelerated the decision in B&R's favor.

The flexibility of the B&R system had already been proven in earlier systems. The earlier Libra systems used the B&R 2005 system and the NC154 CNC controller for analog control of servo drives from third-party manufacturers. The Libra helped to achieve considerable cost advantages by replacing the old servo drives with the intelligent B&R ACOPOS servo drives. The intelligence of these drive systems reduced the costs with regard to the controller and allowed the realization of completely new motion concepts with lower costs for the mechanics. New parameter sets can be loaded to the ACOPOS systems with ease. An ACOPOS

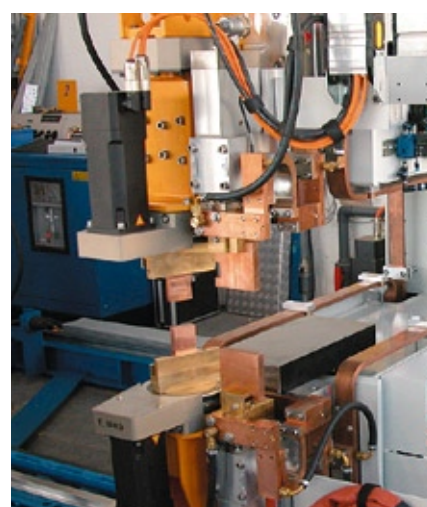


Ernst Iberg,
Director of Software Systems,
H.A. Schlatter AG

"The POSIWELD controller is mostly a data processing system with PLC function. This is why we have been using the programming language C or other programming similar to C to efficiently process data."



POSIWELD Libra making seats in automobile production.



Rotating electrodes on POSIWELD Libra.



Production of round wire tableaus.

drive is replaced e.g. without having to be reconfigured by the maintenance personnel. The ability of the systems to work together presents optimal requirements for remote maintenance. This provided a flexibility unheard of with conventional systems. Schlatter uses ETHERNET Powerlink for complete networking of the control and drive systems in the Libra. This standardized real-time network further significantly lowers the costs for wiring and maintenance of the system.

Data processing with the PLC

If you already had success using the PG2000 programming system from B&R, Automation Studio now offers even more freedom, regardless of the programming language. The software was divided into generic standard code and project-dependent data objects.

The Libra is controlled centrally by a B&R industrial PC, IPC 5000. In addition to the data processing and visualization, all drives are controlled and synchronized with Soft CNC function. Axes and high-speed I/Os are wired using the


space-saving fieldbus. ETHERNET Powerlink, invented by B&R and since then worldwide standard, was the first choice due to the dynamics and increased number of axes. The wiring costs are the same as for CAN bus, but the performance is significantly higher.

At Schlatter, there is interest to further standardize the network. Ethernet is already being used to supply data to the welding processor, which would allow a future combination of drive and I/O network. As a result, there is much interest in the activities of the EPSG, the public association of leading automation users, manufacturers and researchers formed to promote the rapid development of ETHERNET Powerlink.

Mobile operation

For even greater flexibility in operation, Schlatter connected a separate mobile screen with operator functions to the B&R industrial PC. This operating device, a unique Schlatter development, allows operation and Teach-In anywhere on the machine. As a result, all necessary

CE safety functions are met.

The Libra easily surpassed difficult goals. Development started in February, 2003. The first Libra was delivered the following November. In the meantime, 15 machines have been assembled and more orders are lining up. "Thanks to the automation components and software from B&R, we have been able to meet the demand of developing a market-ready machine within the shortest possible amount of time," states Iberg. "And there's still a lot more potential in the new Libra automation. This potential can also be used in other Schlatter systems in future developments." 

The Libra controller concept

