

### HMI-PLC: Scalability and Interface Flexibility



Today's machine builders can only improve their competitive strength and reduce costs at the same time by using a state-of-the-art automation system. As packaging machine builders, Meurer were faced with increasing demands in terms of the intelligence, operator guidance and diagnostics functions of their machines over all machine sizes and generations. Customer requirements also have to be fulfilled with the most cost-effective solution. Moeller's scalable automation system with its flexible interface capability ensures that Meurer keeps its competitive edge: What was already developed on a small machine for Asia can be adapted to customer requirements for a larger line in Europe or North America.



#### Company

Meurer was founded in 1969 in Fürstenuau. Today the company manufactures film wrapping and case packing machines, conveyor and palletising systems. The company holding is divided into four business areas: Meurer Packaging Systems GmbH & Co. KG, Meurer Palletising and Conveying Technology GmbH with headquarters in Freren, Meurer Electrical and Control Engineering Technology GmbH & Co.KG, which is the international system supplier for automation and mechatronics, and supplies the required units of control, visualization and bus systems. Meurer Environmental Technology GmbH was set up in 1993 as an addition to the end-of-line packaging systems in order to work on the development of a high-level gasification reactor for utilising solid fuels.

Engineering costs continue to take up an even larger share of the overall costs of a project. Furthermore, the smaller the machines were, the more unfavourable this proportion normally was. Meurer therefore looked for an automation system that featured reusable software modules, offering scalability in terms of performance, and flexibility with regard to its communication functions. This last requirement is particularly important because of the wide range of fieldbus systems used around the world: "What we require from an automation system is a seamless software and flexible hardware platform – from the small operator terminal up to the largest touch display, including the electronic drive controls. A low-cost machine cannot be equipped with the same operating device that is used for a

complex line. Nevertheless, we don't want to continually re-write new software modules for every machine size. We therefore looked for a system with which we could use the software cohesively in any machine size," said Ludger Richter, sales and project manager for packaging systems at Meurer. The right solution was found with Moeller's automation specialists in Bonn.

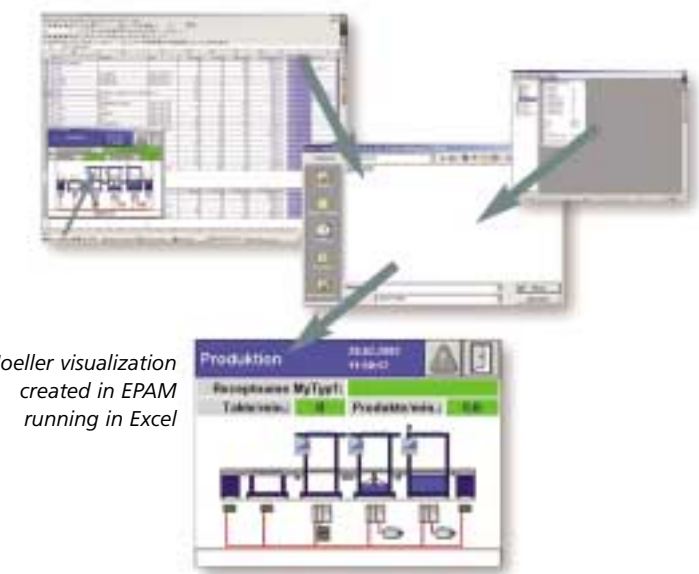
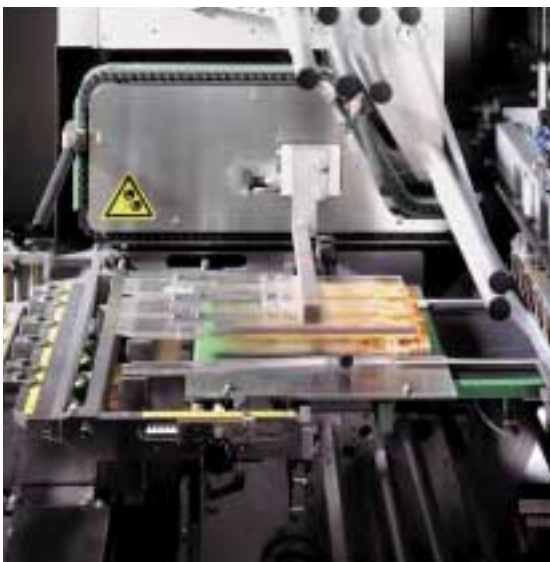
#### Operating and monitoring

Initially Meurer was only looking for an operator system. This was where one of the major time and blockage problems in machine engineering occurred. The idea of implementing one operator interface on many different devices without any modification

requirements offered the engineers the possibility of considerable savings. The integrative Moeller concept of a compact PLC with an integrated operator unit not only reduces the number of interfaces but also the time and costs required, particularly for programming and engineering.

Meurer also looked for a suitable visualization system together with the operator unit. The performance range of conventional visualization systems was far too large for the requirements of operator interfaces on Meurer machines. The licenses are always for the entire package even though key functions of these kinds of packages were not required. Even here, Moeller could offer the right solution. The visualization integrated in the Moeller devices functions completely differently to conventional visualization systems. They are programmed in tabular form, in fact using Excel. Operator device functions can simply be transferred from one device to another one using the Copy & Paste functions in Excel. Meurer was also attracted to the integrated web server of the HPG series.

The screen entry masks are configured with the Easy PageMachine (EPAM) visualization tool that runs in Excel. The size of the software objects can be configured as required. An integrated scroll bar allows a screen page of virtually any length to be created. In other words, page changing is no longer necessary. The size of the touch buttons can be adjusted as required. The user can also create reports without any problem and read them simply into Excel. The error diagnostics supports fast troubleshooting in the event of a malfunction.



*Moeller visualization created in EPAM running in Excel*

## Interfaces

For Meurer, the standard integration of the Ethernet interface on the HPG 300 is an absolute necessity today. This allows remote maintenance functions to be integrated as required in the new machine generations without any difficulty. Service technicians can access an entire line via a teleservice system. The HPG series includes a CANopen interface as a standard feature, which is used by Meurer for controlling a number of small drives. Meurer machines often use an integrated Profibus interface on the I/O level. Whilst other automation suppliers only offer Profibus as a slave system, Moeller devices can integrate a Profibus master if required. This allows Meurer to save an additional component.

Profibus integration on small PLCs is often a problem for many automation manufacturers. However, Moeller can cover this area as well. In their international business, the machine builders from Fürstenuau also have to take into account the requirements of their customers with regard to interfaces. A machine's communication must therefore be easy to replace when necessary. A multi-protocol board from Moeller supports all important interfaces, thus ensuring the necessary communication capabilities and the fast exchangeability of components.

*The HMI-PLC provides a scalable automation concept*

## PLC programming software

The Moeller system allows the use of standard software modules regardless of device size and performance class. The user interface of the design software is also always the same for the developer, regardless of the target platform. The fact that Moeller used 3S programming software in its automation components was a great benefit to Meurer. The company had already been able to gain a lot of experience with the CoDeSys system before the partnership. A number of software modules were therefore already available that could be used in the new devices. Meurer suppliers also used the programming system, thus enabling a seamless integration. The scalable cycle times that the Moeller system provided were also a decisive factor in choosing the Moeller system.

## Conclusion

The device concept of the HPG series offers a wide range of automation and networking options: PLC and HMI are combined together in one device. Both Thomas Tegethoff and Reinhard Meer, engineers at Meurer, agree: "Moeller's HPG series allowed us to make considerable savings. In the construction of control cabinets alone we are able to make cost savings thanks to the new seamless system. In the software engineering we can also achieve a considerable value addition for the customer in the same amount of time."