

Automation Solutions in Machine and System Building

# SOLUTIONS 10



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## Editorial



Dear Readers,

Machines for the food and packaging industry are designed to meet demanding and complex requirements. Whilst producers have to control processes efficiently and prevent operator errors and unauthorised use on the one hand, machine and system builders also have to fulfill requirements for optimum operational safety as well. Furthermore, regulations that are already in force, such as EC 178/2002 and FDA 21 CFR Part 11, place additional demands on food and animal feed producers which also apply to the automation technology. Increasing cost pressure and growing customer requirements have to be carefully balanced.

With its new XSystem range of automation systems, Moeller takes all these requirements fully into account.

The Moeller concept is astonishingly simple. Based on a standard automation system that is modular and expandable, it comes with Windows CE, VxWorks, OPC, FTP and web server already integrated. Machine and system builders use software add-ins to determine whether or not the machine or system is to meet particular regulations, depending on customer requirements.

We hope you find the information in this publication useful and enjoyable.

Best wishes

Ralf Beckmann

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Germany  
Industrial Automation

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**xSystem****XV400 Touch Display Devices – Two in One: HMI or HMI-PLC**

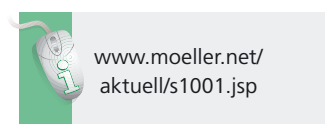
Whilst packaging machines require both a visualization and a control system, it is not always clear beforehand whether a machine is to be integrated in a higher-level control concept. With its XV400 touch display devices on one hardware platform, Moeller is offering scalable solutions that are a secure investment for the future. With the XV400 series, whether

an elementary HMI or combined HMI-PLC is required by the user is determined by a removable CompactFlash card. The XV400 basic unit with infra-red touch (resistive optional) 5.7" STN colour, 10.4" or 12.1" TFT colour displays can be enhanced simply with software functions and optional communication cards. The CompactFlash card is available with an integrated

graphical configurator (Galileo) which provides the HMI functionality. Alternatively, it can come with the XSOFTEPAM PLC/visualization function, thus offering an HMI-PLC in one device. All XV400 touch display devices are provided with a web browser, FTP server and OPC client/server.

The basic units are provided with RISC-CPU (32-bit, 400 MHz) and feature integrated RS232, CAN, USB and Ethernet 10/100 Mbit interfaces on board. It is also possible to fit one (5.7" devices) or two (10.4" and 12.1" devices) communication slots. Communication boards such as the multi-protocol board with MPI, Profibus-DP master or slave, and CAN card for CANOpen/DeviceNet, support a wide range of communication and networking options. In this way flexible use is ensured as well as with the CompactFlash card (32 to 512 MB): whether as an HMI unit, HMI-PLC solution, panel with gateway function or as a connection to the control level via Ethernet.

The user-friendly Windows-based graphical configurator (Galileo) is used for elementary HMI functions. The HMI/PLC with multi-tasking capability is programmed with XSOFTEPAM (CoDeSys). XSoft is the tool for PLC programming in compliance with IEC 61131-3. Powerful engineering features and programming languages (IL, ST, FBD, CFC, LD, SFC) are available, as well as a wide range of debugging, commissioning and simulation functions. The visualization system is programmed in Excel using XSOFTEPAM – Easy Page Machine. XSOFTEPAM is a Moeller add-in that is integrated in Microsoft Excel. The programmer simply stores the textual description of the visualization application inside the Excel spreadsheet and has unrestricted access to all Excel features. Once screens or objects have been created, they can also be reused simply with the Copy & Paste function.



[www.moeller.net/aktuell/s1001.jsp](http://www.moeller.net/aktuell/s1001.jsp)

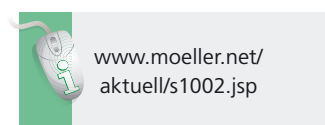
**xSystem****Freely Programmable CANopen Gateway for XI/ON**

The freely programmable XN-PLC-CANopen gateway brings the power of the PLC directly to the fieldbus terminal. The CANopen gateway for the XI/ON modular remote I/O system relieves the processing on the central PLC. The gateway can be used for remote pre-processing, for control with the CANopen periphery or as a compact PLC. When used as a compact PLC, other remote stations can be

connected to the CANopen fieldbus. Programming and online commissioning are carried out via the main PLC and the CANopen fieldbus. The XN-PLC-CANopen gateway also comes with a serial interface on board that can be used for onsite programming access as well as for the I/O Assistant configuration and diagnostics tool. Alternatively, the interface can be used as an optional user interface.

The PLC does not require a battery for data storage and is therefore maintenance free. An

integrated FLASH memory is used for storing programs and data. The XN-PLC-CANopen gateway is equipped with a real-time clock and an integrated battery. Up to 72 XI/ON slice modules can be fitted together. The local serial interface also allows access via an OPC client system for visualization.



[www.moeller.net/aktuell/s1002.jsp](http://www.moeller.net/aktuell/s1002.jsp)

**xStart****DF51 and DV51 – More Flexibility for the Drive**

The new DF51 and DV51 frequency inverter series offers optimum flexibility for drives in the rating ranges 0.25 to 2.2 kW at 230 V and 0.37 to 7.5 kW at 400 V. DF51 and DV51 feature an onboard RS 485 interface with the Modbus RTU protocol. An extensive range of accessories makes it possible to set up a complete electrical drive train system. Certification to CE, UL, c-UL, c-Tick, and the extended supply voltage range allow devices to be used worldwide.

DV51 frequency inverters have a modular design. The keypad or communication

DP and CANopen can be fitted directly on the front. The DF51 is a compact device with a permanently integrated keypad, setpoint potentiometer and a function set similar to the DV51. The keypad has an interface port to which the new communication options of the DV51 can also be connected.

The new sensorless vector operation of the DV51 series simplifies and shortens commissioning. The drive is directly operational without any complex settings required. A high starting torque of more than 200 percent is already available at an approximate output frequency

of 1 Hz. A torque limitation function can also be activated, depending on the application concerned.

DF51 and DV51 can offer ideal drive solutions, thanks to the new parameter software and a wide range of new functions.



[www.moeller.net/aktuell/s1003.jsp](http://www.moeller.net/aktuell/s1003.jsp)

**xStart****Contactors up to 32 A Directly Controllable from the PLC**

In addition to their standard series, contactor manufacturers have up to now offered a second series of so-called interface contactors, which can be activated directly from a PLC due to their low pickup and sealing power. Coupling relays that are otherwise required thus become unnecessary, and this also applies to expensive and cumbersome relay outputs. As the new XStart standard contactors up to 32 A can be controlled directly from a PLC, a second product series is no longer necessary, thus saving costs in logistics and stockkeeping. New DIL M contactors therefore allow the design of more compact switching cabinets and inexpensive solutions.

For all contactor magnet systems with a rated current between 12 and 150 A and a rating of 75 kW the DC sealing power is only 0.5 – 1.5 W.

By reducing the DC sealing power on Moeller's new contactors by up to 95 percent, considerably less load is placed on the PLC outputs so that customers no longer have to take utilisation factors or maximum current carrying capacity into account. DIL M contactors with DC actuation also require on average 35 percent less power than similar products.

Sealing power that is not required neither has to be provided nor dissipated with fans or air conditioning. The 24V DC power supply units are therefore designed smaller and in some cases fans or air conditioning devices are even unnecessary.

A new magnet system for contactors above 12 A makes this possible. The magnet system is now supported electronically so that its power consumption is adapted to the power required



by the contacts. The power requirement of the contacts is greater on closing than when in a closed position. The power adjustment increases the lifespan of the contacts at the same time, since contact bounce caused by the discharge of excess energy is considerably reduced. A further benefit of the new magnet systems is the integrated suppressor circuit. This suppressor



[www.moeller.net/aktuell/s1004.jsp](http://www.moeller.net/aktuell/s1004.jsp)

**xCommand**

**M22-ESA Fingerprint System: Electronic Locking System for Machine Users.**

Machines or individual zones are often sensitive areas that need to be protected, particularly in the packaging industry. Whilst traditional access controls such as with keys, PIN code, chip card are not tamper-proof, every human body has unique and lasting biometric features that can be used for identification and access control. For this purpose, Moeller has developed a secure system that is fast to install. The M22-ESA fingerprint system can scan and memorise the structure of the human fingertip and can store up to 100 different fingerprints.

line sensor, with which the finger is moved in a line across a linear array of thermal sensors. The thermal sensors register the changes in temperature that occur between the lines and the grooves of the fingers. The system identifies the unmistakable characteristic pattern formed by finger lines, ends and branches. If the fingerprint is identified, a green LED indicates access authorisation and the protected area is made accessible. The appropriate finger just needs to be passed over the fingerprint system three times so that it can be recognised.

65 mm x 50 mm black housing. The evaluation unit is simply fitted on the sensor from the back, the power supply (24 V DC) is connected and the relay output (changeover contact up to 8A/250VAC) is wired. M22-ESA is fastened with two standard 22.5 mm drill holes.

The M22-ESA fingerprint system is an addition to Moeller's easy control relay and MFD-Titan range. The MFD-Titan is used for programming the fingerprint reader.



[www.moeller.net/aktuell/s1005.jsp](http://www.moeller.net/aktuell/s1005.jsp)

The ergonomically designed fingerprint reader is a thermal

The M22-ESA combined reading and evaluation unit has a stylish

**xSystem**

**EASY-SOFT V6.10: easy Multi-Lingual in 13 Languages...**

... now in German, English, French, Italian, Portuguese, Polish, Czech, Rumanian, Dutch, Spanish, Russian, Hungarian and Turkish

The software for Moeller's easy control relay and MFD-Titan multi-function display is now available in a new version. EASY-SOFT 6.10 now comes in two versions: EASY-SOFT-BASIC for easy400, 500, 600, and easy700; and EASY-SOFT-PRO (Professional) for all easy400, 500, 600, and 700, 800 devices and MFD-Titan. This therefore provides one software for all easy devices.

as a Central European font. These can be selected in the Screen Overview and language definition in EASY-SOFT-PRO. The font itself is associated with a language that can be defined by the user as required. Changing this at a later time may result in unintelligible characters. The user can now copy the language as required and switch to the required character set. The device then always displays the characters shown in the entry fields in the font that is set (WYSIWYG).

The new and extensive functions of easy800 and MFD-Titan can be programmed and assigned parameters using EASY-SOFT-PRO. easy800 and MFD-Titan can thus now support 13 languages with specific national codes and appropriate fonts, which include Western and Central European as well as Cyrillic.

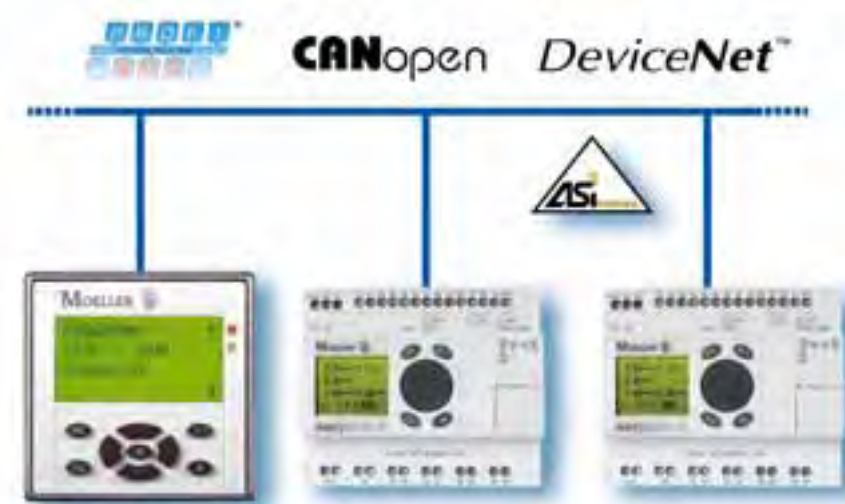
The MFD-Titan visualization functions now offer a new font with Cyrillic characters as well

[www.moeller.net/aktuell/s1006.jsp](http://www.moeller.net/aktuell/s1006.jsp)



**xSystem**

**Integrating Network Control Relays with Visualization Flexibly in Decentralised Automation Concepts**



Control relays such as Moeller's easy series are becoming increasingly popular as an inexpensive alternative to low-cost PLCs. These kinds of control systems require very little training, offer a wide range of functions, high performance, as well as integrated visualization and networking capability. Control relays can also be used in conjunction with central PLCs or linked to a higher-level control system. Complex subordinate processes can thus be outsourced from the main controller in order to relieve its load.

**Scalable visualization**

HMI functions are nowadays a fundamental part of an automation solution. Even the smallest easy control relay offers text and data output capabilities as well as value entry functions, and can organise this in up to 32 screens.

The integrated display system of the easy500, 700 and 800 is controlled using the text display function blocks D1 to D16 or D32. The text display can be programmed as a coil function such as a contactor, set reset function or impulse relay.

MFD-Titan is the ideal solution for visualization applications

requiring different font sizes, displayable graphics with particular attributes or screen activations. Automation and visualization are thus integrated in one device. When a touch panel is required in the automation concept, users can find the right panel from Moeller's MI4 range, which can be connected to the easy without any problems. easy provides the operating units with their own control level which can also perform more complex functions.

**Multiple networking**

The easy.NET network not only enables easy800 or MFD-Titan to run as controllers and visualization devices but also to be connected to any other controller in the network. The diagnostics and programming tasks that are distributed in this way relieve the central controller.

easy can also communicate via multi-vendor bus systems as well as via its own network. The devices can either work in this case as stand-alone devices or can also be connected to an easy network.

easy and MFD-Titan devices with a Profibus DP gateway can be used for integrating special modules with displays such as

for frequency or high-speed counting. Even when easy devices are simply used as remote I/O devices on the bus for digital or analog signals, they can still function as modules with their own processing and visualization.

CANopen is used for implementing remote communication involving several processors. The CANopen gateway allows easy700, easy800 and MFD-Titan to be integrated as external controllers or display devices in CANopen networks. This solution is ideal when several time-critical functions are distributed, or when the maintenance personnel are required to modify functions without being able to access the main controller.

The available network gateways - Profibus DP, CANopen and DeviceNet - allow easy controllers and MFD-Titan to be used as distributed technology modules.



[www.moeller.net/aktuell/s1007.jsp](http://www.moeller.net/aktuell/s1007.jsp)

## Controlling Processes Safely and Preventing Manipulations



Manufacturers aim and are required to control processes efficiently, prevent operating errors and manipulations, and optimise production whilst still improving quality. All this can only be achieved with extensive data acquisition and processing solutions. Public bodies likewise aim and are required to ensure safety for the consumer, to minimise risks and ensure transparency by the implementation of directives and regulations. Manufacturers worldwide are thus faced with a plethora of regulations that have to be understood and fulfilled. In collaboration with several machine and system builders, Moeller has developed an astonishingly simple concept that fully meets all these requirements. The concept has now been implemented successfully in several machines .

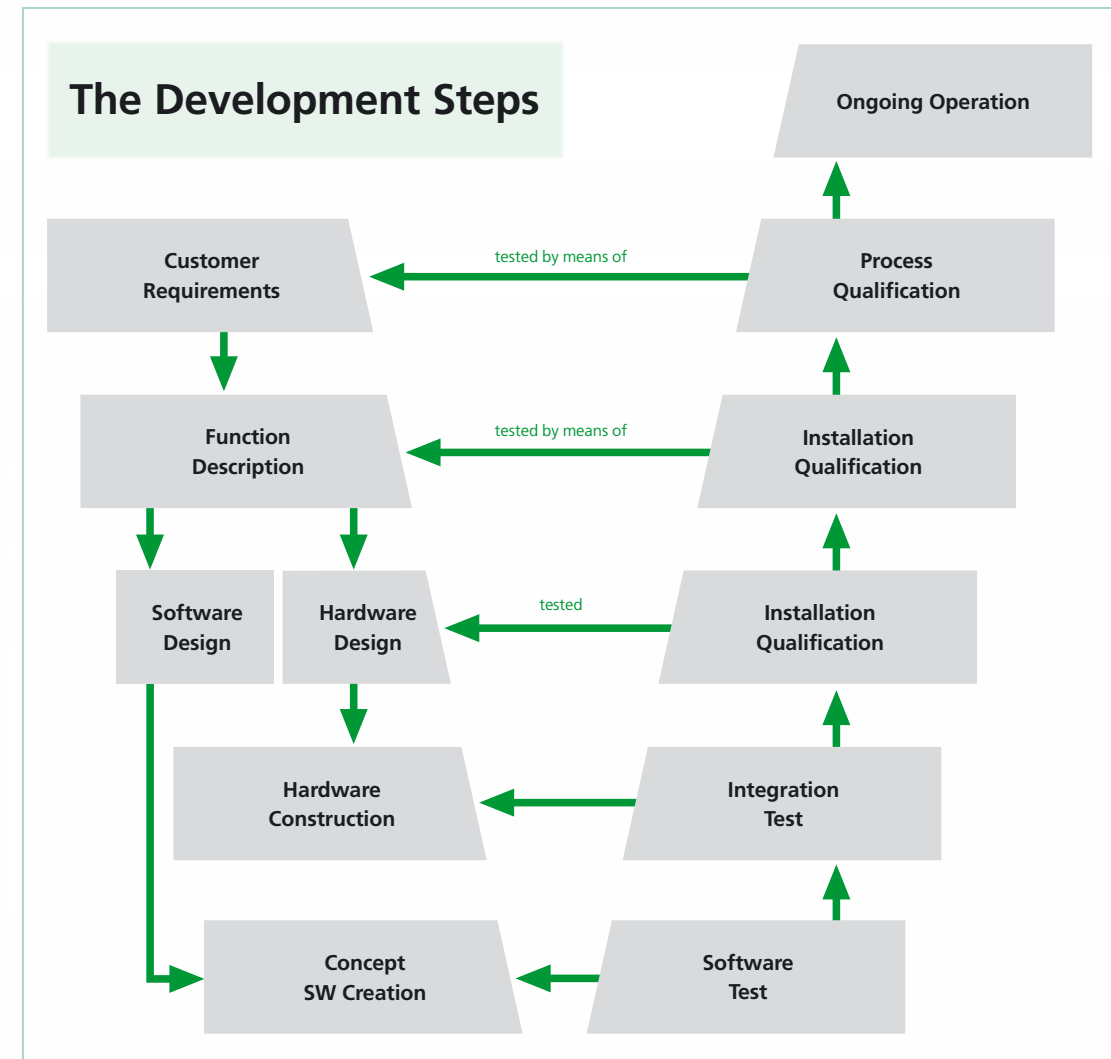
Information technology nowadays plays an important role in the pharmaceutical, cosmetic, food and animal feed industries, and is increasingly taking over the function of paper-based processes. European and US directives and regulations set out extensive safety requirements in the production process, the associated handling of data and its control. The quality control and monitoring requirements of the International Food Standard (IFS) as well as the traceability requirements of the EC regulation 178/2002 refer to the product without any specifications concerning the handling of data. The FDA authority in the USA, however, explicitly stipulates the observance of its requirements with regard to the use of data in electronic form.

### Meeting the requirements – the Moeller concept

Partly at the request of customers in the food industry, and the packaging industry in particular, Moeller developed solutions for these regulations.

The demanding objectives required were swiftly defined. Firstly, the need for a flexibly scalable system that provides machine automation, visualization and operation in its basic design. Secondly, a simple concept for the machine builder, based on standard hardware, that does not require special know-how for project design and software creation. Thirdly, a seamless software that is capable of providing solutions for any branch in order to meet the requirements of a wide range of customers. Fourth and principal objective - compliance with all the various regulations.

The fourth objective was clearly the most difficult. As the FDA regulations were the most extensive, these had to be implemented in order to avoid any parallel developments in areas such as password management, access protection,



data acquisition, batch handling or data logging.

The Moeller solution is simple, appealing and cost-effective. It is based on the use of standard hardware components that are shaped into function using software add-ins. A Moeller XCC600 Box PC and a powerful database have been added to this basic concept in order to achieve the compliance with all regulations. Installations are also possible without any problem at a later time. Software add-ins and the FDA server for the database form the basic concept for complying with the various regulations. This affordable solution covers small to medium-sized applications.

### Automation systems, GAMP4 and FDA regulations

The regulations are not new.

The FDA issued the first so-called cGMP regulations (current Good Manufacturing Practice) for pharmaceutical production as early as 1963. Similar regulations were then gradually implemented in the national legislation of virtually all industrial countries. GMP (Good Automated Practice) and GAMP (Good Automated Manufacturing Practice) are the names of relevant regulations and describe the entire procedure from project design, the operation of systems or machines and the use of automated computer-assisted systems for planning, development, installation and commissioning. They all provide the cornerstone of all development and testing at Moeller.

Regulation FDA 21 CFR 11 applies if paper-based recording or logging is replaced with electronic data and the paper form is not explicitly

required. The regulations are designed to improve the safety and reproducible quality of pharmaceutical and food products, and ensure the safety of humans.

Part 11 contains the requirements for electronic records, electronic signatures and the audit trail. The key points concern protection from manipulation and traceability. Access authorisation to the system must therefore be secure from interventions by third-parties. The data itself is assigned an unalterable, legally binding electronic signature. The manufacturing of products requires accurate documentation of every production step. Audit trail records document all interventions or modifications to the process, so that it is possible to trace at any time who did what, when and why to the automation process.

The validation process provides verifiable proof that the production system and product meets the high standards of quality required. Manufacturers requiring FDA approval for a product must be able to prove that their manufacturing process is FDA-compliant. Onsite audits by FDA auditors confirm this in the form of a validation.

### Handling process data, protecting processes

The freely combinable Moeller components provide flexibly tailored solutions for automation concepts. The project design for the data to be recorded is carried out in the HMI-PLC visualization, where it is possible to assign every operation with a user and password level. In this way, any project design on the server is unnecessary. The database is preconfigured and contains ready-made screens. The administrator just has to define the users involved.

The system offers a range of different versions. These range

from the stand-alone system with an autonomous function up to the multi-PLC or multi-client concept. Ethernet TCP/IP is used as the communication medium. HMI-PLC names and IP addresses are used to guarantee that the data is unambiguous in the system.

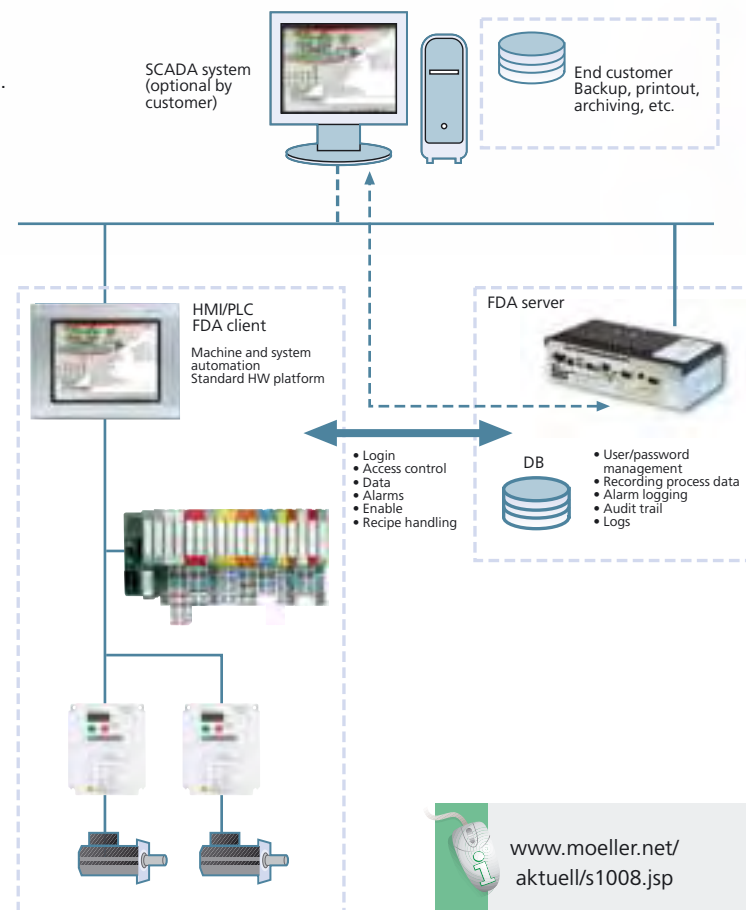
For operating data acquisition, batch traceability and FDA compliance with an audit trail, the Moeller concept integrates extensive user/password handling facilities, the recording of all operations in the event log, the logging of individual values and alarms, as well as the data allocation of the batches (batch history).

The automation concept can be expanded and adapted easily. Only a client has to be added and registered with the server, and the same goes for the addition of a subsystem below the client.

A powerful real-time database with open, standardised interfaces for all data formats links the system to the IT world.

### 21 Code of Federal Regulations Part 11 Electronic records; Electronic signatures

Subpart A	General Provisions
§ 11.1	Scope
§ 11.2	Implementation
§ 11.3	Definition
Subpart B	Electronic Records
§ 11.10	Controls for closed systems
§ 11.30	Controls for open systems
§ 11.50	Signature manifestations
§ 11.70	Signature/record linking
Subpart C	Electronic Signatures
§ 11.100	General requirements
§ 11.200	Electronic signature components and controls
§ 11.300	Controls for identification codes/passwords



## CONCLUSION

With this pragmatic approach, Moeller is offering its customers an outstandingly simple but powerful concept for meeting the requirements of different regulations, in particular, the FDA regulations. The range of versions available covers a broad spectrum of automation concepts. General certification is not possible due to the range of versions available. However, Moeller provides extensive documentation for supporting users in the validation of their machine or system.

## FDA Solution Based on Standards



The regulations of the US Food and Drug Administration are particularly stringent. Its Code of Federal Regulations (CFR) now has legal status, and so does Part 11, which applies to the processing of data in electronic form. However, it is often the

case that only parts of this law applicable to the pharmaceutical and food industries are fulfilled. Moeller's comprehensive solution, based on inexpensive standard components, enables machine builders to design projects easily that are still fully compliant with the legal requirements.



pester pac automation, one of the leading manufacturers of final packaging machines, uses Moeller's FDA solution for its PEWO-pack Compact 250 stretchwrapping machines.

**FDA 21 CFR Part 11: safety as the top priority**

The recording and traceability of production data are essential requirements in the production of pharmaceuticals and cosmetics, and increasingly in the food industry. After all, the safety of the consumers using these products must be ensured. As early as 1997, the FDA issued a directive prescribing the complete and secure documentation of all processes in electronic form. These requirements are set out in FDA 21 CFR Part 11. Although this is only legally binding for the US market, globally operating pharmaceutical and food companies in Europe are also affected by these regulations. Manufacturers requiring FDA approval for a product must be able to prove that their manufacturing process is FDA-compliant. Onsite audits by FDA auditors confirm this in the form of a validation.

**Manufacturer's aim: 100 percent compliance**

"As machine builders we must create the conditions to achieve the production goal of 100% compliance," said Stephan Remer, responsible for software and electronics development at the Bavarian company. pester pac automation achieves this on the one hand by the careful selection of the materials processed and GMP-compliant machine design in accordance with the quality standards of the pharmaceutical industry. On the other hand, the automation system must

be designed so that it meets the requirements of FDA 21 CFR Part 11. Previously this was only possible through the use of cumbersome process visualization systems. Apart from this, some other display solutions are available on the market, but these only cover some aspects of the FDA regulations. The proprietary developments of machine builders often involve a lot of time and money, and are not available for a wide range of uses due to their speciality.

**FDA client and FDA server in the network**

Moeller therefore looked at this area thoroughly and worked out a comprehensive solution. Practical suitability was a key priority in addition to compliance with all the necessary regulations. Standard machines and machines for the pharmaceutical industry are mostly built compliant to FDA requirements, and this is also the case at the plant in Wolfertschwenden. A machine builder requires engineering that is standard regardless of whether systems have FDA functions or not.

The FDA client, consisting of a Moeller XVC601 HMI forms the basic unit for the FDA solution. This client can be used for both types of applications – with and without FDA functionality – and is within the standard price range for a visualization device. FDA functionality simply requires an additional component, the FDA server, and client and server are linked via Ethernet. Retrofits are also always possible.

The server itself consists of a Moeller XCC601 Box PC and integrated with a powerful SQL database. The data can be viewed via pre-configured screens on a flat-screen display

connected to the XCC601. An HTML interface is available for headless versions without a display. This system is then simply set up via a web browser on a PC connected to Ethernet. Major cost benefit for complete production systems: several FDA clients can be connected to the FDA server. Data exchange with higher-level systems is possible as an option for storing or further processing the logged data.

**Flexibly scalable functions**

For integration into existing control concepts, the FDA client can provide either visualization and HMI functions for the machine, or can also provide as an HMI-PLC the entire open and closed-loop control of the system. For this purpose, the XVC601 is equipped with a powerful processor, and can be supplied with 10.4" to 15" displays. If necessary, the PLC functions can be programmed with CoDeSys from 3S in compliance with the industrial standard IEC61131. Moeller also uses standard programming packages for designing the visualization functions. EPAM (EasyPageMachine) is the name of the visualization tool, which offers a powerful development environment that is fully integrated in MS-Excel. For data recording in compliance with FDA requirements, the data points that have to be processed via the server are simply marked in EPAM.

**FDA integration with the PEWO-pack Compact stretchwrapper**

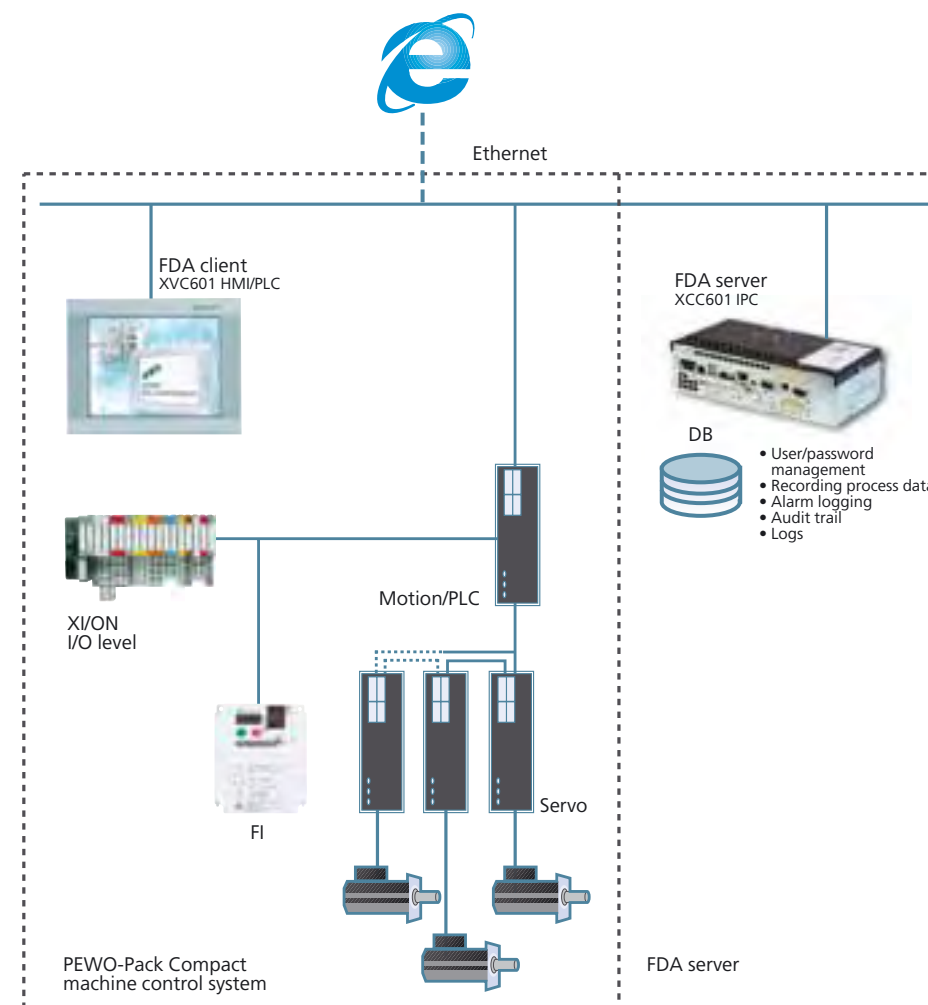
The PEWO-pack Compact series of machines are designed for the stretchwrapping of collations. The cartons coming from an upstream cartoning machine are fed via a conveyor belt to the Compact 250. Three servo axes ensure that the cartons are sealed with a polyethylene foil as finished packages. The pester pac automation machines are available as stand-alone units and as components in a packaging line, with possible cycles of 60 units/minute. Thanks to the balcony construction, the low-wearing sealing system, the swing-design control and pneumatic cabinet, a GMP compliant

machine construction and intelligent recipe management for swift size changeovers, these machines meet the demanding requirements of the pharmaceutical industry.

pester pac automation, which had been confronted by this sector with the FDA regulations, had for a long time been looking for a system based on standard components whilst still offering flexibility. As Stephan Remer noted about the Moeller concept: "The Moeller components can be integrated in our control philosophy without any problems. The price performance ratio is very good, and the system enables us to be equipped for further or modified FDA requirements in the future."

**FDA 21 CFR Part 11 functions:**

The Moeller concept offers extensive functions for implementing the large number of requirements of the FDA regulations: password management, unlimited access levels, and audit trail with complete and secure event logging, alarm archiving, version management of software and recipes, creation of reports and interface to the IT environment (end user). Functions such as operating data acquisition and batch logging (data logging) are available as additional products.



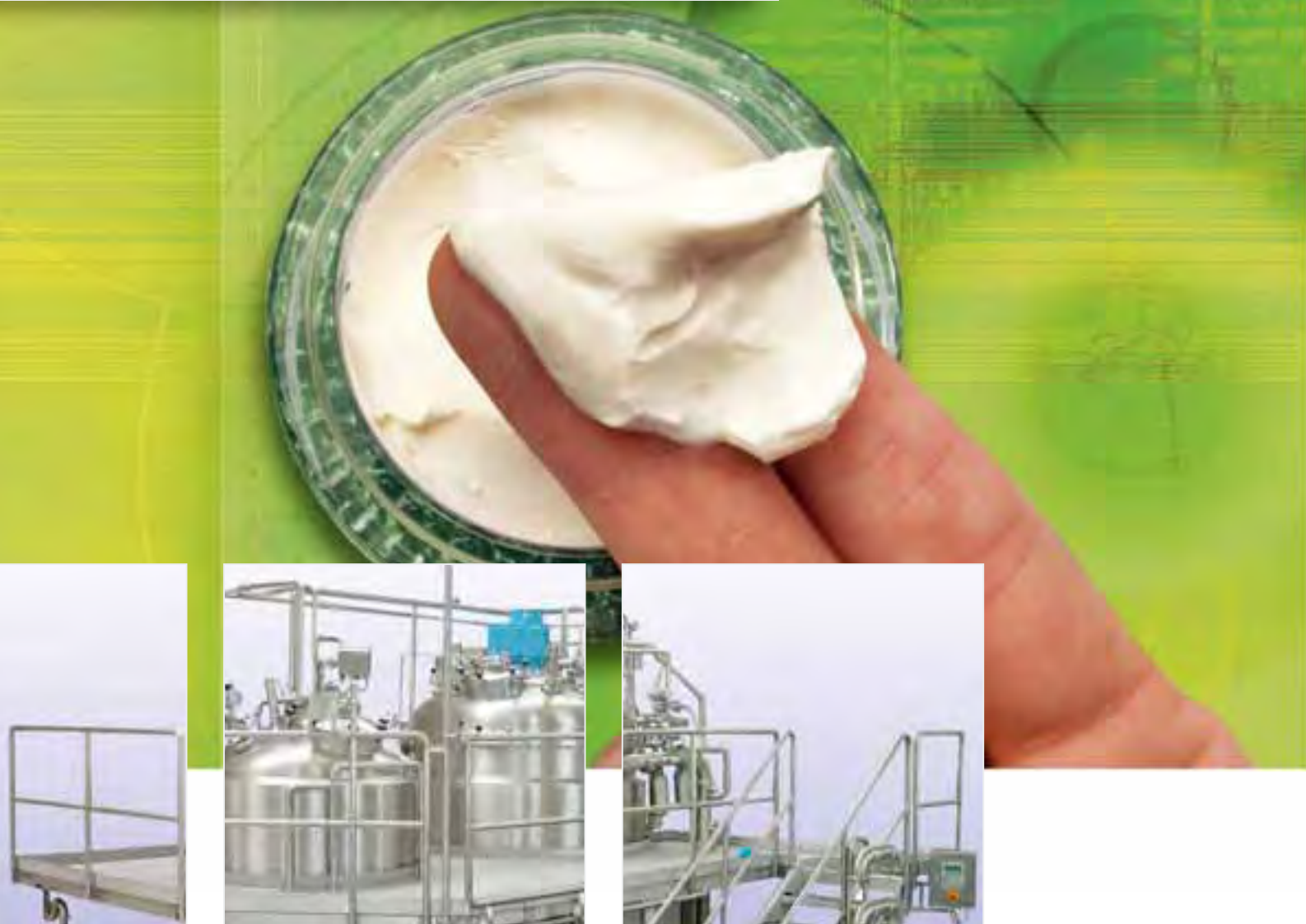
**CONCLUSION**

As well as an appealing solution made up of product and know-how, machine builders require competent advisory support. As an FDA expert, this is something that Stephan Remer from pester pac automation appreciates. "We also require our suppliers to provide customer support and consulting. With Moeller, we have a partner that can meet these requirements to the fullest."

**THE COMPANY**

The family based company was founded by Emil Pester in 1888 and now looks back on over thirty years of experience in the building of packaging machines. At Wolfertschwenden in Bavaria, 280 employees make sure that high quality components and machines meet specific customer requirements. The machines are used in applications for walletting, foil packaging, cartoning and palletising, especially with global players in the pharmaceutical, cosmetic and food industry.

# GAMP and FDA Compliant Engineering



The level of automation possible in an application largely depends on system size and the volume of materials to be processed. A high level of automation and safety is indispensable when manufacturers have to guarantee high quality products without exception, such as in the pharmaceutical industry. In this sector, automated systems must comply with the international GMP regulations and Good Automated Manufacturing Practice (GAMP4). With Moeller's XSystem, machine and system builders are able to achieve full compliance with these stringent regulations.

## THE COMPANY

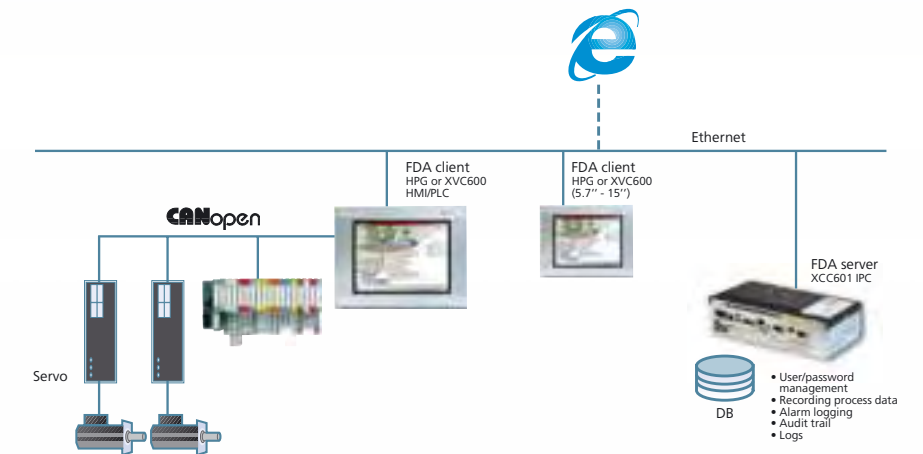
VAKUMIX Rühr- und Homogenisierertechnik AG was founded in Weyhe near Bremen in 1995. It designs and manufactures machines and plants for the manufacture of liquid to semi-solid products. Customers include national and international companies in the pharmaceutical, cosmetic, food and chemical industry. VAKUMIX homogenizers and process plants are already used in many countries in Europe, North and South America and Asia.

Ointments and creams primarily consist of greases and water. These ingredients are homogenized together in order to produce a stable combination of these elementary components. The reaction takes place in a mixing container which has a homogenizer and stirrer running inside. The grease phase is initially solid and has to be melted by heating up the container walls. Once the grease has turned to liquid, water that has been heated in the same way is also added. Both phases, grease and water are then sucked in by the homogenizer, and the shearing forces of the homogenizer break up the molecular structures of the individual phases so that the grease and water molecules are then combined to form an emulsion which is then cooled slowly. The viscosity of the product increases at the same time. A number of other substances in liquid or powder form are usually added up to the final end product.

### Scaled automation

Vakumix Rühr- und Homogenisierertechnik is a company that uses a scalable automation solution in all its systems from small to large. This ranges from the XVH300 HMI-PLC to the XV400 to the PC based XVC-601 HMI-PLC. The EPAM (Easy PageMachine) Excel-based visualization tool is able to meet all customer requirements in all systems from the compact system to the fully developed large system. This license-free system offers the full range of functions with all automation solutions.

Machine and system builders use the software modules when designing projects for the high-end XVC-601 HMI-PLC as well as for the smaller and medium sized XC100 and XVH300 devices. The software function blocks are created and tested extensively in compliance with GAMP (Good Automated Manufacturing Practice) so that standard software modules can reduce project design costs. Vakumix now only uses one function block library for all HMI-PLCs. The uniform structure of the user interfaces also reflects the Vakumix philosophy



of minimising training requirements and ensuring that globally operating customers can use Vakumix plants reliably.

The touch technology eliminates the need for special keyboards that are difficult to house in humid environments. The flexible language selection options – also for Chinese, Cyrillic, Japanese or Persian – make the Moeller devices ideal for international use. The devices feature a user-friendly alarm handling function: the overall system display provides system supervisors with detailed photos of the flashing error source, the fault location, and the message text window gives precise instructions to rectify the fault. This ensures accurate troubleshooting for the end customer and short downtimes.

A scalable system with one software library for all automation devices saves project design times for all stages of the validation concept (V model). After all, software modifications occurring during programming or during the individual qualification phases always have to be integrated back into the function description and requirements catalog.

### Process data acquisition

Batch traceability and the proof of a reproducible and constantly high product quality require extensive data management facilities. For this Moeller offers an FDA server that can run on Windows XP or 2000, and an SQL database for data logging, password management, printing, archiving and an interface to the end customer's IT environment. The data server can be networked via Ethernet straightaway to the HMI-PLCs or at a later time. The server stores logs of every intervention by the system supervisor as well as all process data and error messages. Users can access the database via Ethernet and carry out their own evaluations. Major benefit for complex production systems:

several FDA clients can be connected to the FDA server. Data exchange with higher-level SCADA systems is possible as an option for storing or further processing the logged data.

## CONCLUSION

Stefan Hüfe, electrical engineering manager at Vakumix, had this to say: "The graphical route selection function for filling, circulation and emptying enables us to offer our customers optimum flexibility. We use Moeller's scalable XSystem for both standard and GAMP validated systems. This reduces the time required for project design and commissioning both at Vakumix and at the customer." As his colleague Sven Neumann from electrical engineering development said: "With the development of standards the use of only one software tool enables us to create a rapidly growing library of function blocks." Robert Müller, sales manager and authorised company representative expressed the view of a Vakumix end customer: "The entire system with FDA server and clients is easy to explain and is cost effective. With the WEB server for all HMI units, our customers can monitor the process, even outside of humid environments – a key benefit."

## easy800 & MFD-Titan: Global Use

The packaging market is a very competitive global market. In addition to quality, service and price, attractive ideas have to be made available that provide the customer with real value addition. Small and medium-sized machine builders particularly require smart solutions in order to be competitive in the market. Machines have to be easy to configure and reduce production costs in the long term. Only then can a competitive advantage be gained in international markets.



The Moeller easy / MFD-Titan series provides the ideal basis for these requirements, enabling, for example, programs to be created simply and used flexibly. The MFD-Titan multi-function display also combines control and visualization functions in one device. A menu-driven operator interface supports intuitive operation and prevents errors. The option of a decentralised configuration with networked I/Os is also an essential feature for machine building applications. Only in this way is it possible to distribute subordinate tasks and process responses swiftly. MFD-Titan and easy control relays offer cost-effective solutions for this that can be customised as required.

### Packaging machines Hungary

The universal horizontal LINEPACK flowpack machine is used for packaged goods such as chocolate, cottage cheese, baked goods, croissants, plastic products or soaps. The standard model of the LINEPACK packaging machine has a covering, frame and working surfaces made from stainless steel plates. Machines for packaging ice cream or cottage cheese are made entirely from stainless steel. The simple design and problem-free handling are the striking features of these Hungarian packaging machines. All operator tasks are designed for intuitive use.



easy800 and MFD-Titan ensure smooth operation. The products supplied from the conveyor belt are first wrapped in film by the packaging machine. The resulting packages are then sealed, cut to the correct size and then printed. The advantage of this system is the combination of a powerful controller with a user-friendly visualization system. Faults, packed quantities and other relevant parameters can be monitored precisely. If required, the machine operator can make menu-guided interventions in the process. This keeps costly and time-consuming faults to a minimum. With dimensions of 313x660x1800 mm and a weight of 450 kg, the packaging machines operate at speeds of 60 to 250 units/minute. LINEPACK machines are used on production lines at Fundy, Jacobs Suchard, Stollwerk, Nestle, as well as in over ten production plants for cottage cheese processing.

### Benefits of easy800 / MFD-Titan for the packaging industry

- Integrated PID controllers,
- Networking via easy.NET on board,
- Comprehensive function block library,
- Recipe management,
- Optional fieldbus interface (Profibus DP, CANopen, DeviceNet),
- OPC server,
- 13 menu languages for worldwide use.



### Filling beer cans in Rumania

Even traditional beer production uses state-of-the-art technology nowadays. When a bottling line had to be modernised, one of the market leaders in Rumania used an easy solution instead of the conventional wiring design. In this way, just four easy800 control relays were able to replace 42 contactor relays and over 10 relays. The four easy800s with easy600s as local expansions could be connected up using easy.NET. This also saved valuable space (40 %) in the control cabinet. The use of Moeller control relays brought other impressive advantages: comprehensive, pre-defined function blocks increased the level of functionality available. The system also offers a high level of reliability.



### Controls for cooling systems

At a plastics processing plant in Upper Franconia, fluid is passed through the mould and the machine body in order to cool injection moulding machines. Valves control the heated liquid in different forms for cooling, depending on the temperature of the buildings, the outside temperature and the machine temperature. This is implemented in a finely balanced process with a number of different regulators which precisely open or close the valves to machines, exchangers or external convectors. This process is now controlled using several easy control relays and MFD-Titan. All analog inputs and outputs, as well as the different function blocks such as comparators and PID controllers are implemented with easy devices. Thanks to the network capability of the control relay series, the closed-loop control concept can now be expanded as required.



### Oven controls in Poland

Bakery production requires steam, since only then can a light and soft bakery product be ensured. With high quality bakery products, however, the steam needs to be supplied accurately and at the correct time. A key factor in the choice of a control solution based on MFD-Titan was the cost savings calculated and later achieved. One single MFD-Titan can replace several temperature controllers, contactor relays, and timing relays that were previously required. In conventional control systems, the lighting and separate steam controls alone require considerably more components in each chamber. Apart from the space saved and the fewer components needed, other benefits are made available. MFD-Titan offers additional ease of operation as well as additional information such as the current baking temperature,



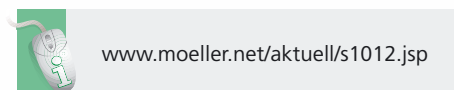
the duration of baking, other baking parameters and any alarm messages. Component availability is another important customer requirement. If servicing is required, an MFD-Titan device can be replaced swiftly and simply. The relatively wide range of options offered by MFD-Titan now make conventional baking technology with traditional baking controls seem overpriced.



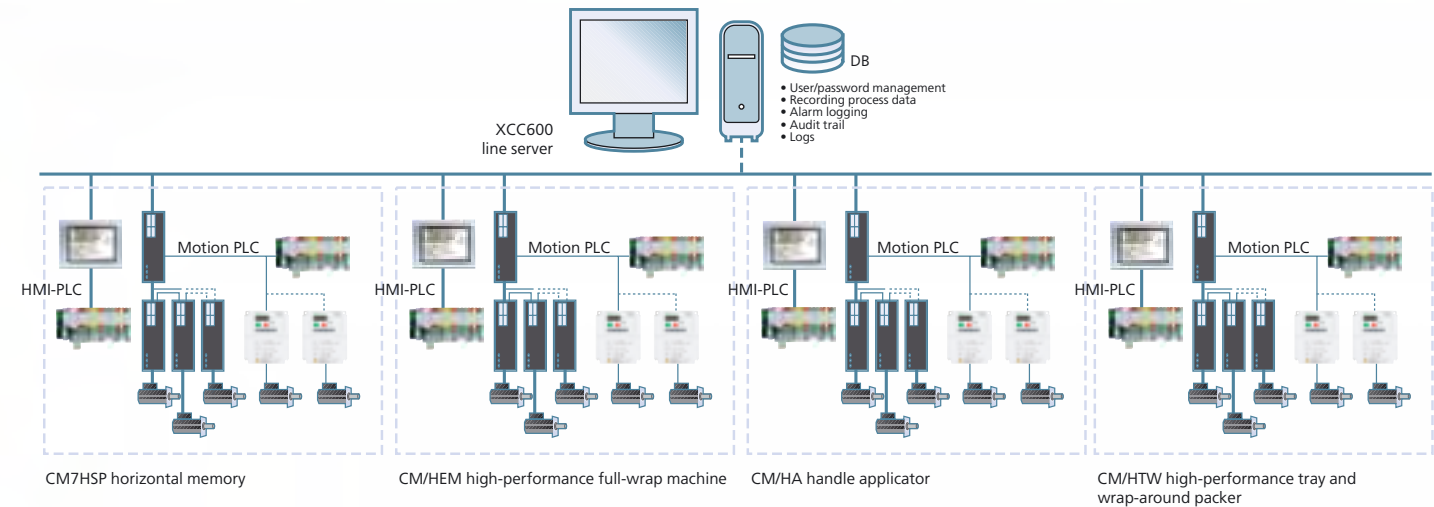
## Regulation-Compliant Operation: Precise Traceability



Since January 1 2005 all ingredients for food and animal feed must be traceable at all stages of production, processing and distribution. January 1 2005 therefore marks a milestone in consumer protection and the EU regulations (EC) 178/2002 are now a legal requirement. In the USA, the FDA authority issued a directive prescribing the complete and secure documentation of all processes in electronic form (FDA 21 CFR Part 11) in its Code of Federal Regulations (CFR) as early as 1997. Both these regulations also apply in particular to all relevant machine and system building requirements.



[www.moeller.net/aktuell/s1012.jsp](http://www.moeller.net/aktuell/s1012.jsp)



For Meurer Verpackungsmaschinen, a company based in Fürstenuau, this requirement for the transparent documentation of events and their evaluation in the production process does not represent any particular difficulty. By using Moeller's touch HMI-PLCs, Meurer was already able to present an integrated machine and process diagnostics system at the Interpack 2002 fair.

"Since then the requirements of our customers have continued to grow, whilst legal requirements have also changed" said Lüdger Richter, sales manager at Meurer. "Our customers want seamless solutions for the transparent documentation of processes, the clear marking and identification of products, as well as the presentation of process and production data to a higher level system via standard software interfaces. All this is required right through from simple machines up to complex systems." said Lüdger Richter.

Machine documentation integrated in the system is yet another requirement of customers. In the event of a fault, the display shows the user the necessary rectification procedure. Other advisory information such as circuit diagrams simplify work for the operating personnel and make everything transparent. Spares lists that are integrated and visible on the touch HMI-PLC are already provided with type designations and order numbers, and simplify the acquisition of spare parts.

### Flexibly scalable solutions

The solution is astonishingly simple. The machines are equipped with 5.7" to 15" touch HMI-PLCs from the XV400 or XVC600 series. The touch HMI-PLCs both visualise and control the process. An FDA client is installed on the devices in addition to the visualization runtime (XSoft-EPAM from Moeller) and PLC runtime (CoDeSys from 3S). The FDA client acts as a kind of broker and communicates with

the FDA server via Ethernet. The FDA server itself is an XCC-600 compact Pentium IPC and comes with an integrated hard disk, DVI interface and other typical IPC features. An SQL database running on Windows is installed on the FDA server, which logs every change in the production process. Every user login, any setpoints changed by the user, any faults and all production data are logged with a time stamp and stored clearly and transparently in a configurable batch report. This report can then be printed out locally via the parallel printer port integrated in the XCC600.

### Line concept

This was the task definition in brief: Drink packs of one litre are wrapped in foil, provided with a carrying handle and packed in cartons for transport. The drive concept combines multi-axis servo drives and fixed drives. Meurer's end-of-line packaging line is designed in compliance with GMP/GAMP requirements and is based on an automation concept in compliance with the OMAC GEN 3 standard. Data storage and data preparation are designed in accordance with FDA regulations 21 CFR Part 11 and are connected to MES and PDA systems via a central data interface. TCP/IP and standard web components of a PC-based controller are used to implement the vertical and horizontal integration into custom architectures. Touch HMI-PLCs are used for automation, machine controls and HMI functions. Meurer uses these devices to implement the problem-oriented visualization of machine states. The alarm handling is also implemented in a user-friendly design: the overall system display provides system supervisors with digital photos of the machine, the error source and location, whilst the message text window gives precise instructions on how to rectify the fault. The integrated picture-in-picture function ensures straightforward troubleshooting for the end users and short downtimes.

The line server has a central role in this concept. On the one hand it is used as a data collector in compliance with EC178/2002 and FDA 21 CFR Part 11 for the entire line. On the other hand, it contains the entire documentation including all manuals. The spare parts lists of machines with type designations and order numbers can be transferred via Ethernet to the displays if required. All machines of the line are connected via Ethernet, and the machine peripherals are seamlessly connected on the fieldbus level.

## CONCLUSION

Batch traceability and the proof of a reproducible and constantly high product quality require extensive data management facilities. For this Moeller offers an FDA server that can run on Windows XP or 2000, an SQL database for data logging, password management, printing, archiving and an interface to the end customer's IT environment. The data server can be networked via Ethernet to the HMI-PLCs. The server stores logs of every intervention by the system supervisor as well as all process data and error messages. Users can access the database via Ethernet and carry out their own evaluations. With complex systems, several FDA clients can be easily connected to the FDA server. Data exchange with a higher-level SCADA system is possible as an option for storing or further processing the logged data.

## XVC600: Networked Confectionery Production

Klöckner Hänsel Processing (KHP) offers a wide range of systems that are automated with Moeller's XSystem components.

Whilst the requirements of regulations could previously be fulfilled easily and data recorded on paper, current legal regulations stipulate a higher standard of data recording. However, not only current regulations but also end customers demand transparent production processes with the same high level of quality, thus making extensive production control mechanisms unavoidable. The high volume of data involved requires more efficient, cost-effective concepts. With the introduction of a new weighing system using the Moeller XVC600 as the automation platform, KHP has fully met the requirements for operating data acquisition and at the same time the traceability requirements of the EC 178/2002 regulations.



### THE COMPANY

Klöckner Hänsel Processing GmbH is part of the Klöckner-Werke AG founded in 1923. Klöckner-Hänsel itself was founded in 1980 by the merger with Otto-Hänsel, Hannover, where the company still has its headquarters. Klöckner Hänsel continued to develop into a respected packaging specialist with special solutions for automation, and as a manufacturer of process systems for the food industry. The innovative system and packaging technology is used in the food and luxury foods sectors.

End customers have previously only described the process and the relevant system for the production of new products and never the data framework to be managed. This often meant that the automation system had to be modified extensively, with the necessary data having to be made available in a SCADA system or a customer computer. In order to minimise costs, KHP used to record the data as a precautionary measure. With the implementation of the EU regulations, the additional features required for operation, the recording and provision of data are now taken into account. The new concept enables the data acquisition system to be installed at a later time without any problems.

#### Combinations form the concept

The new concept is based on standard Moeller automation products. Other HMI-PLCs are used, in addition to the automation of the Contigrav central metering and weighing system for the JellyStar high-performance stir cooker with a Moeller XVC-601 HMI-PLC. Nowadays, all the data required for logging is marked when the PLC programs and the visualization application are designed. The operation of the weighing system, the mimic diagram and the general operation of the system are also combined in a clear and user-friendly layout so that training requirements for new personnel can be kept to a minimum.

The central metering and weighing system processes liquid, powder or granular materials equally. In this process, a high



level of precision is required for applying the recipes for jelly or fondant products. The XVC-601 HMI-PLC provides several weighing controllers simultaneously with jobs via a fieldbus. Moreover, it registers and visualises the weighing systems on the touch panel. The HMI-PLC saves up to 250 recipes with up to 64 components. Automatic tare, coarse/fine metering for high accuracy, emptying control and tolerance monitoring, as well as an interface to the printer complete the range of functions provided by the user-friendly touch panel.

A dynamic metering monitor with the last, the actual and the next step, is provided on the main screen for system supervisors to obtain the latest information on production status. A dynamic clock monitor is also integrated with recipe names and batch numbers. This type of structure reduces the number of recipes and makes them more manageable.

Previously, only a required/actual value comparison of the weighed materials was logged. The new system records basic data such as recipes, parameter changes and operator interventions, extensive operating data such as temperature or pressure, as well as every error. All this data is assigned to a batch, logged and documented with a high level of transparency.

### Batch tracing in confectionery production compliant with EU regulations 178/2002

The new EU body EFSA (European Food Safety Authority) has now been set up. The EU regulations 178/2002 were passed by the EU Commission for the protection of consumers and came into force on January 1 2005. The regulations require that food manufacturers ensure the traceability of their products and the pre-products used in their company. Major food companies have established a standard system of quality assessment with the International Food Standard IFS 4.0, which also includes the requirements for traceability: "The organisation must be able to identify all raw materials by suitable means and be able, if necessary, to trace these materials during processing, as well as the finished products at all stages of manufacturing, storage, shipment and distribution to the customer."

### CONCLUSION

As Friedrich Reinecke, head of electrical engineering at Klöckner Hänsel Processing, explained about the Moeller HMI-PLC concept: "The projects that we implemented jointly were outstanding. The hardware is scalable and can be networked seamlessly. The need for only one software for all systems simplifies and shortens project design and implementation. Thanks to the process data acquisition and batch traceability features, our customers are ensured a future-proof solution. With a single IPC, the data from several HMI-PLCs can be collected in a database and made available to the customer. The data can then be accessed easily and processed as required in an IT environment. This saves us the need for many discussions before, during and after commissioning."



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## Touch Display PLC: Transparency At All Levels



Up to now, machine builders have concentrated on the mechanical and electrical processes involved in their field. Whilst a standard automation system with HMI operation, fault detection and diagnostics are today standard features, the logging of product related data, process interventions or compliance with the new regulations in the food industry are not. A new machine type is opening up many possibilities of dealing with a new trend in electrical design and software development. Fawema's VC250 is a new continuous bag form, fill and seal machine featuring a Moeller touch display-PLC – a solution that meets all these requirements.

### New control concept

With the development of the new bag form, fill and seal machine, Fawema is pursuing new approaches in the selection of control components for the drive system, the visualization and seamless communication. The system is also able to provide if necessary features such as access control, operating data acquisition and even traceability in compliance with EC178/2002 or the FDA regulations – without major changes to the engineering. The core of the control concept for the bag form, fill and seal machine is a multi-axis system with three servo axes and Moeller's XVC601 touch display PLC with the 10.4" infra-red touch display. The concept also includes Moeller's WinBloc remote I/O system.

The simple linking and communication with the servo system is one benefit of the XVC601. Axis controllers and XVC601 exchange their data via Ethernet. Just one parameter definition is required since both systems were programmed with 3S CoDeSys and use the integrated SymArti protocol for communication. Visualization and operation are designed on all machines series according to the "one face to the customer" principle. In other words, standard features for visualization, functions and operating elements ensure that operators can get to know the system easily.

An additional benefit is that machine parameters and operating data can also be made available if required by the customer.

### Flexible visualization, operating data acquisition and product traceability

For the new EU Directive EC178/2002, Moeller developed a concept that uses software extensions to link standard hardware components to the so-called FDA server, and enable features ranging from operating data acquisition to traceability. The FDA client software just has to be installed on the XVC601 device. This provides a permanent and secure connection via Ethernet to the FDA server. The server itself consists of a Moeller XCC601 Box PC fitted with a powerful SQL database. This database is preconfigured with ready-made screens and does not require any additional configuration. An HTML interface is available for headless versions without a display. This system is then simply set up via a web browser on a PC connected to Ethernet.

Users can design the visualization application with XSoft-EPAM (Easy Page Machine) in Microsoft Excel. XSoft-EPAM is an add-in

supplied by Moeller and is simply integrated into Microsoft Excel. The visualization application can then be designed entirely in Excel – with all the features provided by this standard software.

The visualization application created with XSoft-EPAM is therefore automatically prepared to customise the machine in full compliance with the relevant standards. Data to be recorded is marked during the project design phase. The great advantage of the Moeller solution is that Fawema does not have to make any changes to the project design and visualization when customers place special requirements. As customers can modify and control virtually all the parameters via the integrated visualization system, Fawema decided that it was necessary for all interventions to be immediately loggable if required. Moeller's traceability concept meant that this requirement could be met without any problem – thanks to the powerful and safe user management system and the log function of the connected database.

It is now possible to trace exactly who changed which machine parameter and when. Whether for a bag or a batch, end customers can at any time clearly assign a product to the machine parameters at the time of production. The data written can also be used easily for statistics functions, so that a temperature or speed curve, for example, can be prepared graphically for a particular batch and can be printed immediately.

### THE COMPANY

Fawema Maschinenfabrik GmbH & Co KG is a company operating worldwide in the packaging industry. The products of the machine builder from Engelskirchen-Ründeroth range from the manufacture and supply of machines for packaging, metering, filling and sealing to product collating. Filling and packaging solutions are manufactured for dry products with different consistencies such as flour and sugar, and non-food materials such as washing powder or charcoal. Packaging sizes range from 100 gram bags to 25 kilo sacks. Packaging solutions are developed for stand-up bags or tube bags.

### EG178/2002

The regulation EC 178/2002 came into force on January 1 2005 for the food and animal feed industry within the European Union. The new regulation applies to all companies involved in production, processing and distribution. This regulation stipulates the duties, responsibilities and procedures required for suitable crisis management. A key requirement for the packaging industry is stipulated in Article 18 "Traceability": The mandatory and unambiguous traceability of ingredients at all stages of production, processing and distribution. Manufacturers must thus be able to trace the history of a product at any time, its use and the locations involved.



[www.moeller.net/aktuell/s1014.jsp](http://www.moeller.net/aktuell/s1014.jsp)

## HPG230: Packaging "All-In-One"



In the highly competitive packaging market there is a constant demand for continuous improvements and innovations, whilst customer requirements for flexibility and user-friendly operation are increasing in the same way. This fast-moving market calls for innovative and future-proof control concepts and individual components. Wächter Packautomatik is a company that uses Moeller's XSystem for its new CartoJet C3A together with a multi-axis system. The new CartoJet offers end customers several packaging operations in one machine: carton set up, filling and sealing, i.e. "all-in-one" – and this is also what's offered by Moeller's HPG230 HMI-PLC.

### THE COMPANY

Wächter Packautomatik GmbH & Co KG is a worldwide supplier of final packaging technologies. The family-run business, based in Bad Wünnenberg was founded in 1975. Customers of Wächter Packautomatik are from the food, beverage and also non-food sectors, such as the hardfloor industry in particular. The range of services covers the planning, development, manufacture, installation and commissioning of dedicated machines, right up to complete automatic packaging lines with palletizing, transport and distribution systems.

The CartoJet C3A is a consistent further development of the tried and tested Wächter CartoJets. Its flexible and compact modular design allows effective space utilisation. The system is adapted to customer requirements according to whether the product is fed from the side or in line, whether trays are used with or without covers and wrap around, and whether a steel or painted version is used.

The recently developed product inserter offers the alternatives of loading and inserting, optionally also with several layers. Bendable products are shaped in grouping chains and carefully inserted. All the drives relating to the output are designed with servo motors and synchronous running. This adapts the machine speed to the actual incoming product volume at up to 25 packages per minute. Products and packages are moved on only one manageable and accessible level. The servo technology and the fast changeover system enable the system to be reconfigured for other products or product arrangements at the simple push of a button. The system offers intuitive and user-friendly operation via the 5.7 inch colour touch panel. The display informs the operator at any time about the current state of the system. In the event of a fault, the display outputs a graphic diagnostics message with additional error texts. This enables a rapid response and reduces downtimes.

### All-in-one controls

According to Roman Bense, head of automation at Wächter, the new visualization system of the C3A had to meet the following requirements in full: "Simple handling of the interface to the multi-axis system, as well as a clear and easy-to-learn programming tool for visualization and the integrated PLC." Roman Bense had had several

unfortunate experiences with extremely time consuming systems. The new system had to be implemented in the machine application swiftly and without any problems. The automation specialist chose Moeller's HPG230, a PC-based 5.7 inch infra-red touch display with an integrated IEC61131-compatible PLC. The device comes with Ethernet, CANopen and RS232 interfaces on board, and Profibus DP or the multi-protocol board with MPI possible if required. The front consists of scratchproof, non-breakable glass. The device does not require any rotating parts such as fans or hard disk. An exchangeable CompactFlash memory is used for storing the operating system, program, visualization application and data. Provided with the VxWorks real-time operating system, the device is ideally suited to operation in rugged industrial environments. The integrated web server, an FTP client and server simplify remote diagnostics and teleservice operations and complete the all-in-one system.

### EPAM – standards reduce engineering costs

Wächter nowadays creates its screen pages simply and efficiently using Microsoft Excel. The Moeller add-in, XSoft-EPAM (Easy Page Machine) just has to be integrated in Excel. The visualization application can then be designed without any other software required – with all the standard features provided by Excel. This simplifies engineering and saves time.

The simple connectivity to the multi-axis system was an important feature for choosing HPG230 with EPAM. Both systems are based on CoDeSys from 3S and both use the

SymARTI interface (Symbolic Asynchronous Runtime Interface) for communication. Only a symbol file with the variables to be visualized has to be generated in the servo system. This file is imported into EPAM so that all variables are then available immediately for visualization. All that is then necessary for communication to be up and running is to declare the IP address of the servo system in EPAM and connect the two devices via a twisted Ethernet cable. The imported variables of the multi-axis system therefore do not have to be declared twice, which therefore saves the user additional engineering. Compliance with international standards also reduces other costs for engineering.

### CONCLUSION

Roman Bense, responsible for automation at Packautomatik, expresses his relief: "The Moeller HPG230 touch display PLC offers us a visualization system that we can connect simply and swiftly via Ethernet to our servo system. The Excel-based engineering tool also reduces the time required for project design. This is an important benefit for our customers since they can take advantage of the simple and straightforward operation."

[www.moeller.net/aktuell/s1015.jsp](http://www.moeller.net/aktuell/s1015.jsp)



## XV400: Multilingual Labelling

Machines manufactured by Langguth are as varied as the products which they can label. Langguth provides tailored solutions – from small semi-automatic machines to fully automatic systems. Wet or dry glues and adhesive labels are used for labelling.. As particular importance is placed on the user friendliness of a system, Langguth systems use Moeller's flexible and scalable XV400 touch display units which are easy-to-operate.



The XV400 touch display units from Moeller are based on one hardware platform with an interchangeable Compact Flash card that determines whether HMI or HMI-PLC functions are implemented. The required software function is simply added to the XV400 basic unit via the Compact Flash card. XV400 devices are available either as infrared or resistive touch devices with 5.7" STN colour, 10.4" or 12.1" TFT colour displays. The infra-red touch screens also feature a scratch-proof safety glass front. The basic units come with a RISC-CPU (32-bit, 400 MHz) and integrated interfaces such as RS232, USB, Ethernet 10/100 MBit and CAN. Other interfaces such as Profibus DP or MPI can also be implemented by means of an optional communication card.

Moeller offers two functional versions – HMI or HMI-PLC – for all XV400 units, depending on the CompactFlash card used. The graphical



configurator Galileo or the text-based XSoft-EPAM (EasyPageMachine) software is used for designing the HMI functions. Combined with XSoft Professional, the PLC programming software based on CoDeSys 3S, these produce two powerful versions for a multi-tasking capable HMI-PLC in compliance with IEC 61131-3..

The XV400 units are also available with one (5.7" devices) or two (10.4" and 12.1" devices) communication slots. Communication boards such as the multi-protocol board with MPI, Profibus DP master or slave, DeviceNet and others support a wide range of communication and networking options as required.

The configuration of container and label data on Langguth labelling machines is carried out automatically. The Moeller XV400 can manage recipes for around 200 products. The

### THE COMPANY

Langguth GmbH is based in Senden-Bösensell near Münster and was founded in 1932. Today Langguth produces labelling machines, pail handling systems for the paint, lacquer and chemical industry, as well as for companies from the food and drink sector. The machines are manufactured as custom made items and the present export share of 60 percent is increasing.

two slots for the CompactFlash cards make it possible to make a separation between operating system/function and data. Higher-level data acquisition via Ethernet can also be implemented, as well as automatic recipe downloads from SCADA systems.

XV400 supports languages with different character sets such as Chinese or Cyrillic. The use of the Windows CE operating system allows many functions of the operating system to be used for automation and visualization. Alfred Potthoff, head of the electrical engineering department at Langguth had this to say: "XV400 enables us to provide optimum financial and functional benefits thus ensuring even greater quality for our customers."

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Moeller is offering a simple and cost-effective concept for process security. A flexibly scalable HMI-PLC system covers the machine automation, your PLC and visualization, including operation. A Moeller XCC600 Box PC with a powerful real-time database expands the basic concept. A software add-in, the FDA client for the HMI-PLC and the FDA server for the Box PC store all the relevant data in a database.

However, Moeller offers a lot more: The versions are suitable for a single PLC solution for a stand-alone machine, a single PLC solution with multiple HMIs and a multi-PLC solution for several machines. Ethernet TCP/IP is used as the communication medium.



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