

Automation Solutions in Machine and System Building

# SOLUTIONS 11



Face the  
Machine

**MOELLER**



Think future. Switch to green.

For Immediate Delivery call [KMParts.com](http://KMParts.com) at (866) 595-9616

# Contents

<b>News</b> .....	<b>3-7</b>
<b>Face the Machine</b> .....	<b>8-9</b>
Complete range for machine building	
<b>Scalable automation</b>	
<b>In stirrer and homogenizing technology</b> .....	<b>10-11</b>
Batch tracing in cosmetics and pharmaceuticals	
<b>easy800 &amp; MFD-Titan: Global use</b> .....	<b>12-13</b>
Simple project design and reduced production costs	
<b>Observing the regulations</b>	
<b>Integrating machine documentation</b> .....	<b>14-15</b>
<b>XVC600: Networked confectionery production</b> .....	<b>16-17</b>
Efficient and cost-effective automation concepts	
<b>Touch display PLC:</b>	
<b>Transparency at all levels</b> .....	<b>18-19</b>
Packaging in accordance with EC178/2002	
<b>HMI-PLC: "All-in-one" packaging</b> .....	<b>20-21</b>
Standards in engineering – for simple handling	
<b>XV400: Multilingual labelling</b> .....	<b>22</b>
Easy operation, flexible scalability	

## Imprint

Moeller Solutions is the Moeller customer publication for industrial automation

Published:  
Moeller GmbH

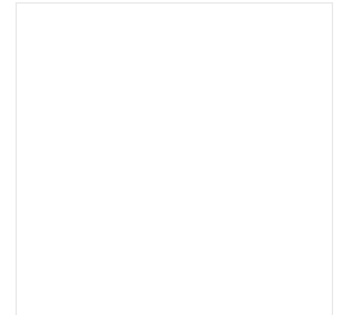
Editors:  
Dirk Bolz ( v.i.S.d.P.)  
Frank Spelter  
Integral Dr. Schumacher®  
Stefanie Böttner

Authors:  
Michael Backhaus  
Ralf Becher  
Horst Maaßen  
Burkhardt Staudacker

Hein-Moeller-Straße 7-11  
53115 Bonn  
Tel.: +49 228 602-0  
Fax: +49 228 602-62275  
E-mail: [info@moeller.net](mailto:info@moeller.net)  
[www.moeller.net/solutions](http://www.moeller.net/solutions)

Copyright 2005 by Moeller GmbH  
KM 0213-4273G  
Article No.: 102942

Layout: buntebrause agentur  
Printed in Germany (10/05)



# SOLUTIONS 11

For Immediate Delivery call [KMParts.com](http://KMParts.com) at (866) 595-9616

## SMS Messaging for Moeller PLCs

Moeller's xSystem PLCs include the XC100, 200 modular PLCs and the XVC100, HPG230, XV400 and XVC600 HMI PLCs. For these PLCs, Moeller is offering protocol libraries for sending and receiving SMS messages via GSM wireless modem. These can be used with all Moeller xSystem controllers. The modem is connected via the RS232 interface. The libraries including documentation are contained in the latest xSoft V2.3.3 PLC software. They can also be downloaded from the Moeller homepage ([www.moeller.net](http://www.moeller.net)).



Moeller is now offering for its PLCs free protocol libraries for Modbus master and slave. The libraries support both serial and Ethernet interfaces. These can be used with all Moeller xSystem controllers, including the XC100, 200 modular PLCs, the XVC100, HPG230, 300, XV400 and XVC600 HMI PLCs. The libraries, including documentation are contained in the latest xSoft V2.3.3 software or can be obtained via the Internet.

 [www.moeller.net/aktuell/s1101.jsp](http://www.moeller.net/aktuell/s1101.jsp)

## Moeller Remote I/O: Saving Space with XION-ECO



Moeller's XION remote IO system features a wide range of standard components such as digital and analog I/O modules, counters, temperature and technology modules. These enable IO stations to be created according to specific customer requirements: in this way, analog, digital and function modules can be used to form clear and logical units.

Two space-optimised I/O slices are new Moeller innovations for the XION I/O range. Depending on type, a slice allows eight inputs and eight outputs to be connected – on only a 12.5 millimetre wide space. The high connection density now considerably reduces the mounting width of a XION station. All modules are designed with integrated terminal levels so that no separate ancillary parts are required. The connections are made with spring-loaded terminals.

 [www.moeller.net/aktuell/s1102.jsp](http://www.moeller.net/aktuell/s1102.jsp)



## Freely Programmable CANopen Gateway for XI/ON



**xSystem**

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/s1103.jsp](http://www.moeller.net/aktuell/s1103.jsp)

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



**xSystem**

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 XSOFT-EPAM 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's (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 XSOFT-EPAM (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 XSOFT-EPAM – Easy Page Machine. XSOFT-EPAM 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/s1104.jsp](http://www.moeller.net/aktuell/s1104.jsp)

## XV200: Trendsetting Machine Operation at an Excellent Price

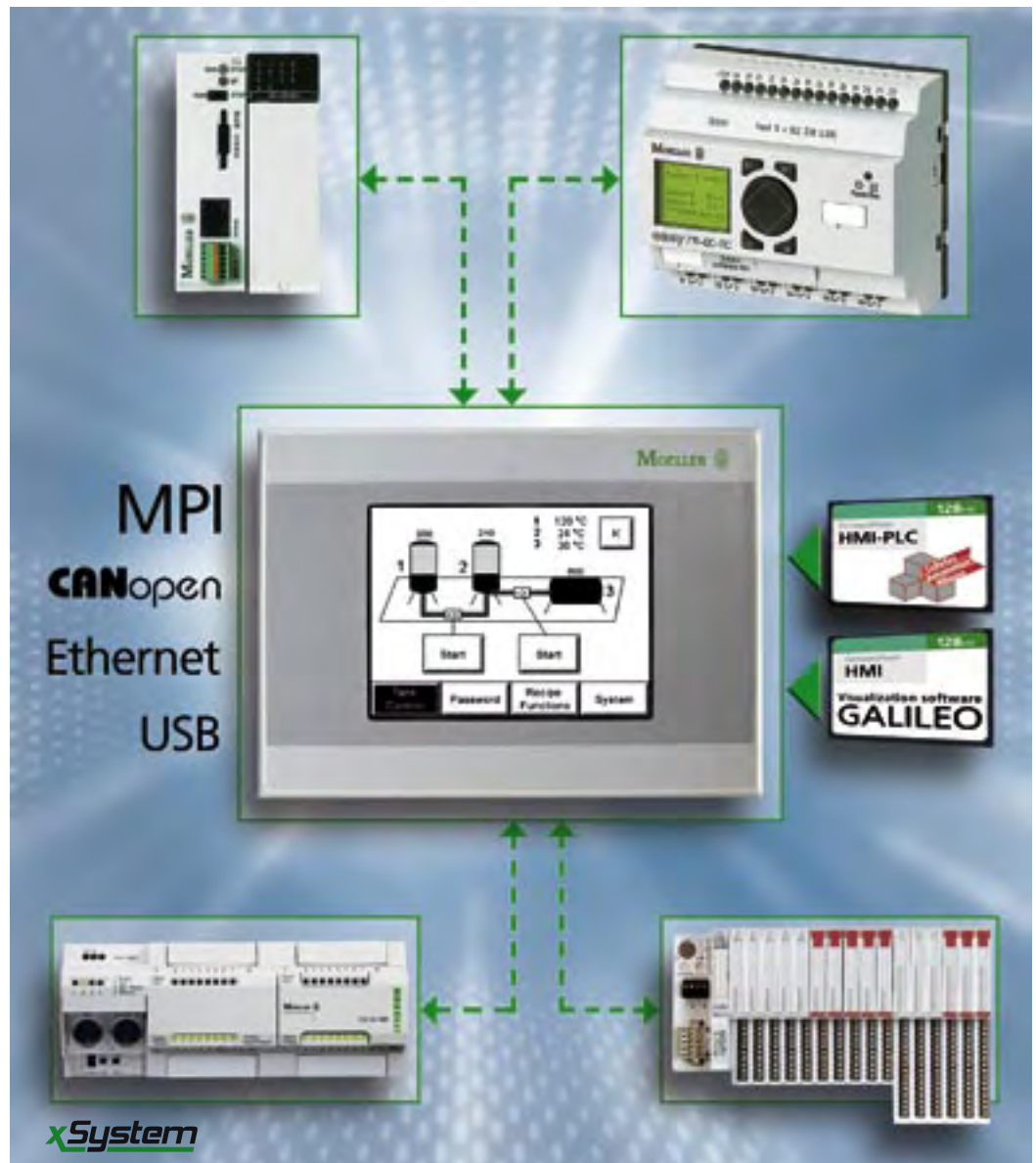
The new XV200 touch display series offers a fully graphical 5.7" LCD mono display with four greyscales, resistive touch technology and a host of communication and networking options. The touch-sensitive display (320 x 240 pixels) ensures intuitive HMI operation. The language-neutral and self-explanatory buttons enable the creation of clearly designed operating screens.

The Windows CE-based device comes with an integrated 32 MB RAM, 1.5 MB Flash for data / program memory and a maintenance-free, battery-backed real-time clock. A CompactFlash card provides sufficient memory for storing an entire project and the operating system. This enables the project or the operating system to be updated even without a programming device.

All devices feature an Ethernet and USB device interface. Three device versions are available with additional RS232, CAN or MPI interface. The RS232 interface offers a straightforward connection of the devices to an easy control relay or to the tried and tested PS4 PLCs. The CAN interface enables data exchange with the XC100 or the programmable XN-PLC-CANopen gateway. The MPI interface provides other communication options.

The onboard Ethernet interface ensures fast program downloads and is used for networking with other xSystem controllers via UDP or TCP/IP, and the CoDeSys SymArti driver. Industrial Ethernet can also be connected easily.

If required, XV200 can also provide the PLC functionality for small automation tasks. The high-speed 200 MHz 32-bit RISC processor then provides additional PLC performance.



Programming is carried out in accordance with IEC 61131-3 using the CoDeSys-based xSoft-Professional. The new space-optimised XION-ECO remote I/O system is an ideal addition to the XV200 with PLC functionality. The range also includes counter, temperature and technology modules, as well as digital and analog I/O modules.

The MS Windows-based xSoft-Galileo visualization tool integrates a host of functions such as UNICODE support, password management

(200 levels, 500 users), online project simulation on the PC, alarm and history function, recipe management and printer functions.

XV200 can be operated if required in portrait format (turned 90°). The minimum mounting depth and rugged front design (IP65) makes the XV200 series ideal for industrial field use close to the machine. The UL/CSA approvals ensure that the devices can be used worldwide. XV200 devices are also designed for operation

in dust-laden environments in accordance with ATEX directive 94/9/EC Group 22 Cat. 3 D.



[www.moeller.net/aktuell/s1105.jsp](http://www.moeller.net/aktuell/s1105.jsp)

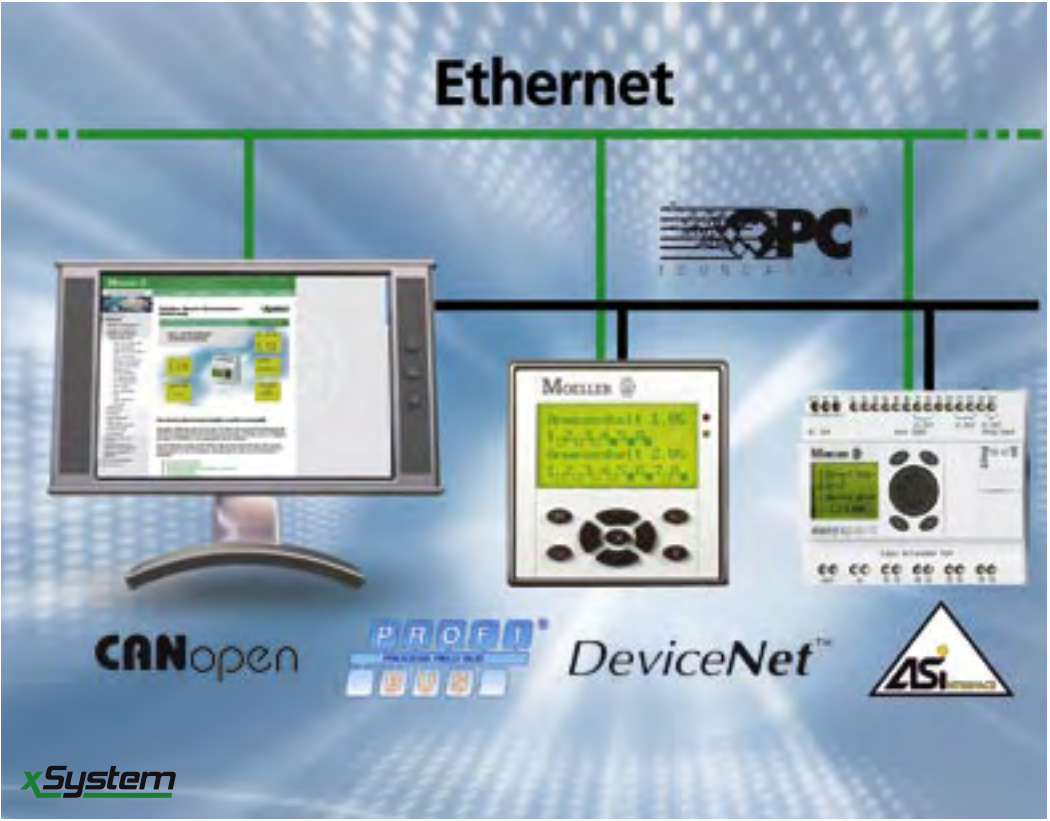
# Flexibly Integrating Networked Compact PLCs with Visualization in Decentralised Automation Concepts

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 do not require extensive 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 subprocesses 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 activation of 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. In this case, the devices can either work as stand-alone devices or can be connected to an easy network as well.

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

modules with display functions 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 decentralised 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/s1106.jsp](http://www.moeller.net/aktuell/s1106.jsp)

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

... now in German, English, French, Italian, Portuguese, Polish, Czech, Rumanian, Dutch, Spanish, 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.

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

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).



[www.moeller.net/aktuell/s1107.jsp](http://www.moeller.net/aktuell/s1107.jsp)



## 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.

The ergonomically designed fingerprint reader is a thermal line sensor, with which the finger

is moved in a line across a linear array of thermal sensors. The thermo sensors register the time between changes in temperature difference 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.

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



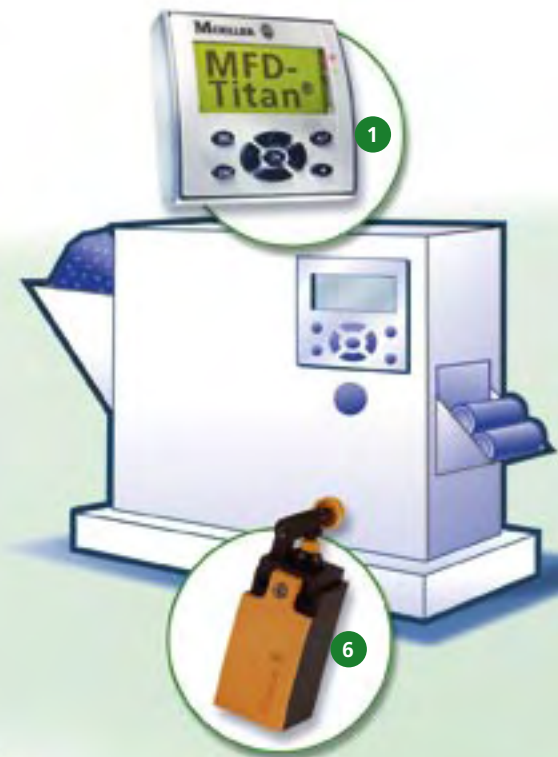
[www.moeller.net/aktuell/s1108.jsp](http://www.moeller.net/aktuell/s1108.jsp)

# Face the Machine - Control and Protection

Modern machines and system lines place much value in optimum design. Suitable operating concepts are designed to support the functionality and facilitate intuitive handling. In this respect, the control circuit devices as well as the MMI are particularly important. They make up both the face of the machine, engender trust, provide user-friendliness and ensure safety.

**1 Multi-function display:**  
visualization, display and  
control

The MFD-Titan combines control and visualization functions in one device. The rugged display comes in a high-quality design and offers outstanding flexibility for HMI and parameter tasks. The graphic displays can also be labelled to customer requirements.



**6 LS-Titan A Position  
Switches:** reliable position  
detection

Whether in rugged metal or in light plastic, the exchangeable operating heads allow flexible use for a wide range of applications. The LSE (Limit Switch Electronic) position switch is a particular highlight. Its freely programmable switch point can be set to individual requirements at any time.

**2 RMQ-Titan control circuit devices: innovative design, optimum functionality**

RMQ-Titan control circuit devices are designed for use in rugged environments: The devices with protection to IP65 use LEDs with a service life of over 100,000 hours. The ergonomic button elements are designed to the curve of the fingertip.

**3 Signal towers & Emergency-Stop: clear indication – rapid response**

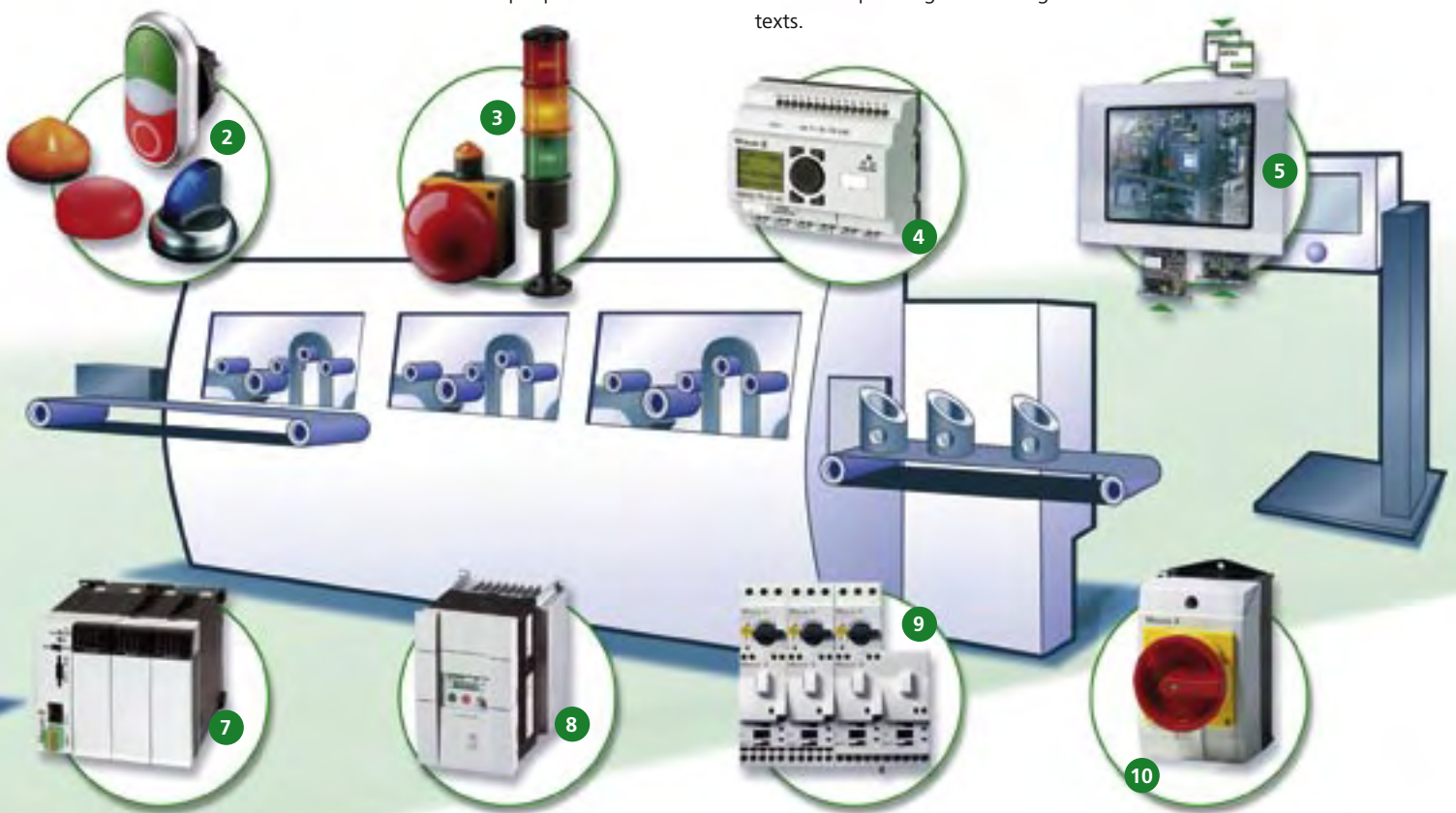
SL signal towers indicate machine states using different visual or acoustic signals. This conveys the relevant message immediately and unambiguously – even at distance. If necessary, a response can be implemented using the FAK foot and palm switch: FAKs are ideal for standard solutions such as ON, ON/OFF or Emergency-Stop switching, provide a large actuation surface and are tamper-proof.

**4 easy control relays: multiple functions easy to program**

All the functions of the easy control relay can be parameterised simply with EASY-SOFT. This software provides a host of useful function blocks. The easy800 control relay and MFD-Titan can be networked simply and inexpensively via easy.NET or connected via gateway modules to standard bus systems. The ergonomically designed display can show operating and message texts.

**5 HMI-PLC: TOP design – high performance**

Moeller HMI-PLCs are universal devices for a wide range of possible automation applications. Their future-proof and compact device architecture enables them to offer standards-compliant solutions for automation and networking. The device series comes in a flat design and integrates an impressive and scalable range of functions.



**7 PLC-XC series: fast and compact**

With the XC 100/200 controllers, users can implement up to 494 digital signals – on a maximum mounting width of only 510 millimetres. The new function design allows a simple and direct response to events independently of the cycle time.

**8 Frequency inverters: optimise variable speed drives**

With the XC 100/200 controllers, users can implement up to 494 digital signals – on a maximum mounting width of only 510 millimetres. The new function design allows a simple and direct response to events independently of the cycle time.

**9 xStart: combination plug connectors – toolless connections**

The new xStart starter combinations enable switchgear to be implemented even more simply and effectively in flexible solutions. The combination plug connector simplifies mounting, prevents wiring errors and creates more space in the control cabinet.

**10 Switch-disconnectors: safe switching and isolating**

In addition to use as a main switch – with or without an Emergency-Stop function – the Moeller switch-disconnectors can be used as an ON/OFF switch, maintenance and repair switch or as a safety switch. The ruggedised switch is available in four different mounting forms.

## Scalable Automation in Stirrer and Homogenizing Technology



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 (GAMP). With Moeller's xSystem, machine and system builders are able to achieve full compliance with these stringent regulations.

## THE COMPANY

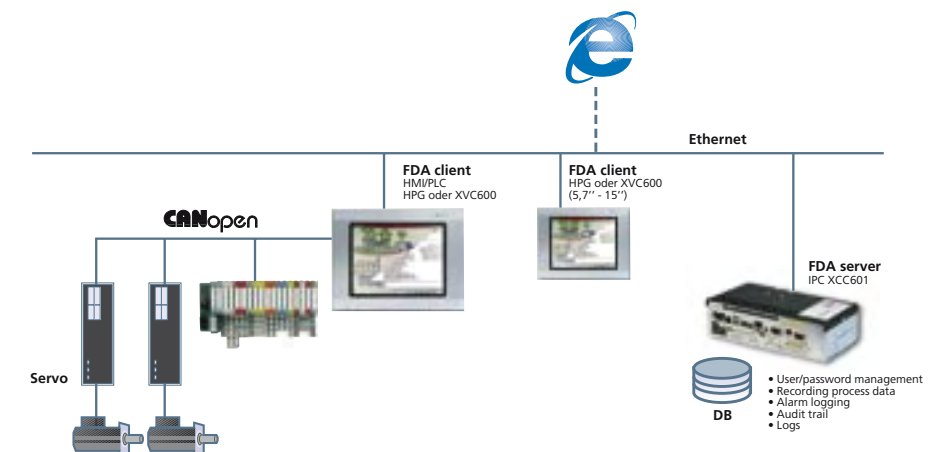
VAKUMIX Rühr- und Homogenisierertechnik AG was founded in Weyhe near Bremen in 1995. It designs and manufactures machines and plants for the manufacture of liquid to semi-solid products. Customers include national and international companies in the pharmaceutical, cosmetic, food and chemical industry. 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 global 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 stations 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 the 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."



[www.moeller.net/aktuell/s1109.jsp](http://www.moeller.net/aktuell/s1109.jsp)

## 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.



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.

### 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 three easy800 control relays were able to replace 42 contactor relays and over 10 relays. The three 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-Titans. 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.



## Packaging machines in 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.



easy 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 dimension 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.

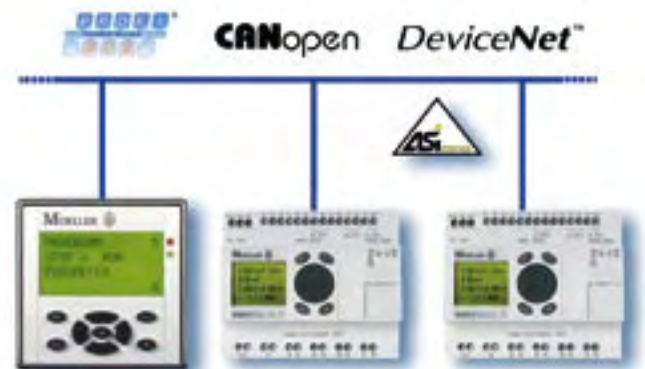
## Benefits of easy800 / MFD-Titan for the packaging industry

- 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.



## 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.



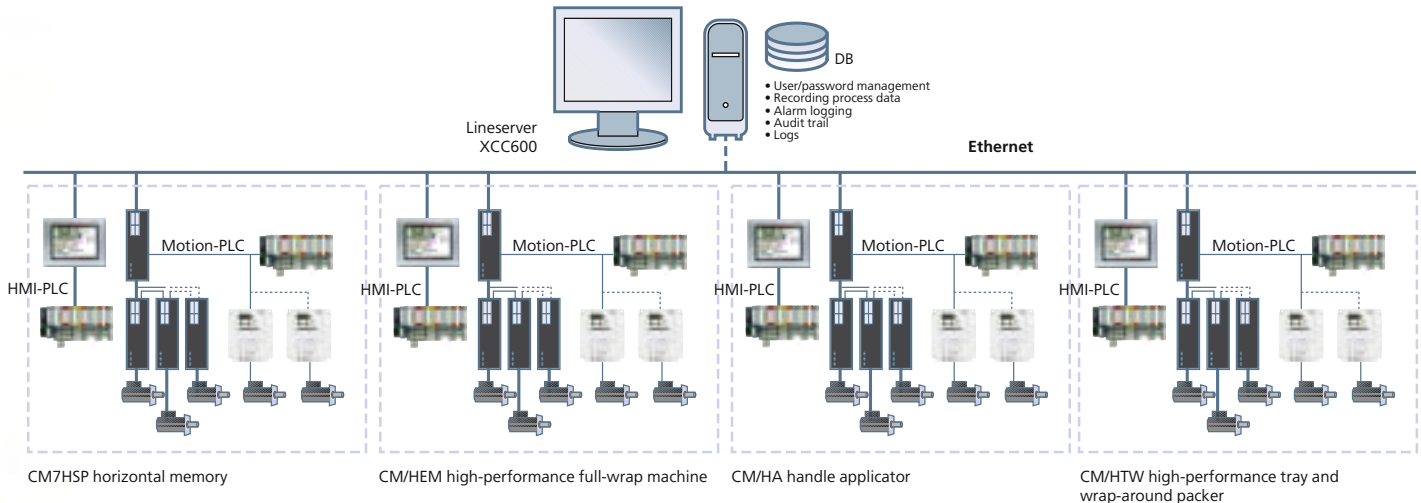
[www.moeller.net/aktuell/s1110.jsp](http://www.moeller.net/aktuell/s1110.jsp)

# Observing the Regulations Integrating Machine Documentation



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.





For Meurer Verpackungsmaschinen, a company based in Fürstenu, 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."



[www.moeller.net/aktuell/s1112.jsp](http://www.moeller.net/aktuell/s1112.jsp)

## 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.

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 obligatory requirements today, 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.

### EC178/2002

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/s1113.jsp](http://www.moeller.net/aktuell/s1113.jsp)

## HMI-PLC: “All-In-One” Packaging



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 CartoJet. 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/s1114.jsp](http://www.moeller.net/aktuell/s1114.jsp)



# XV400 Touch Display Devices Ideal for Labelling Machines

Machines manufactured by Langguth are as varied as the products which they can label: pails, canisters, tins, jars, bottles, paper bags or cartons. Langguth provides tailored solutions – from small semi-automatic machines to fully automatic systems. Wet or dry glues are used for labelling, and Langguth machines also process adhesive labels. 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 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.

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 infra-red 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 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."



[www.moeller.net/aktuell/s1115.jsp](http://www.moeller.net/aktuell/s1115.jsp)

For Immediate Delivery call [KMParts.com](http://KMParts.com) at (866) 595-9616

# Moeller Info-Service: Fast, Simple, Direct



## MOELLER INFO SERVICE

Information where it's needed. Simple, reliable and direct information by download, mail or fax.

## FAX REPLY

+49 (0)228 602-2275

## E-MAIL

info@moeller.net

## INTERNET

www.moeller.net

## NEWSLETTER

## ELECTRONIC CATALOGUE

catalogue.moeller.net

## FAX Reply: +49 (0)228 602-2275

Please send me Moeller Solutions regularly

Company: .....

Name/First Name: .....

Department/Function: .....

Street: .....

Post code/Town: .....

Country: .....

Telephone: .....

E-mail: .....

Automation 2005 product overview

XV400 HMI-PLC

XV200 HMI-PLC

XION remote I/O

XION ECO remote I/O

easy control relay / MFD-Titan  
multi-function display

M22-ESA fingerprint

Electronic catalogue

Company brochure



Please include me in the mailing list for your electronic newsletter.

# MOELLER

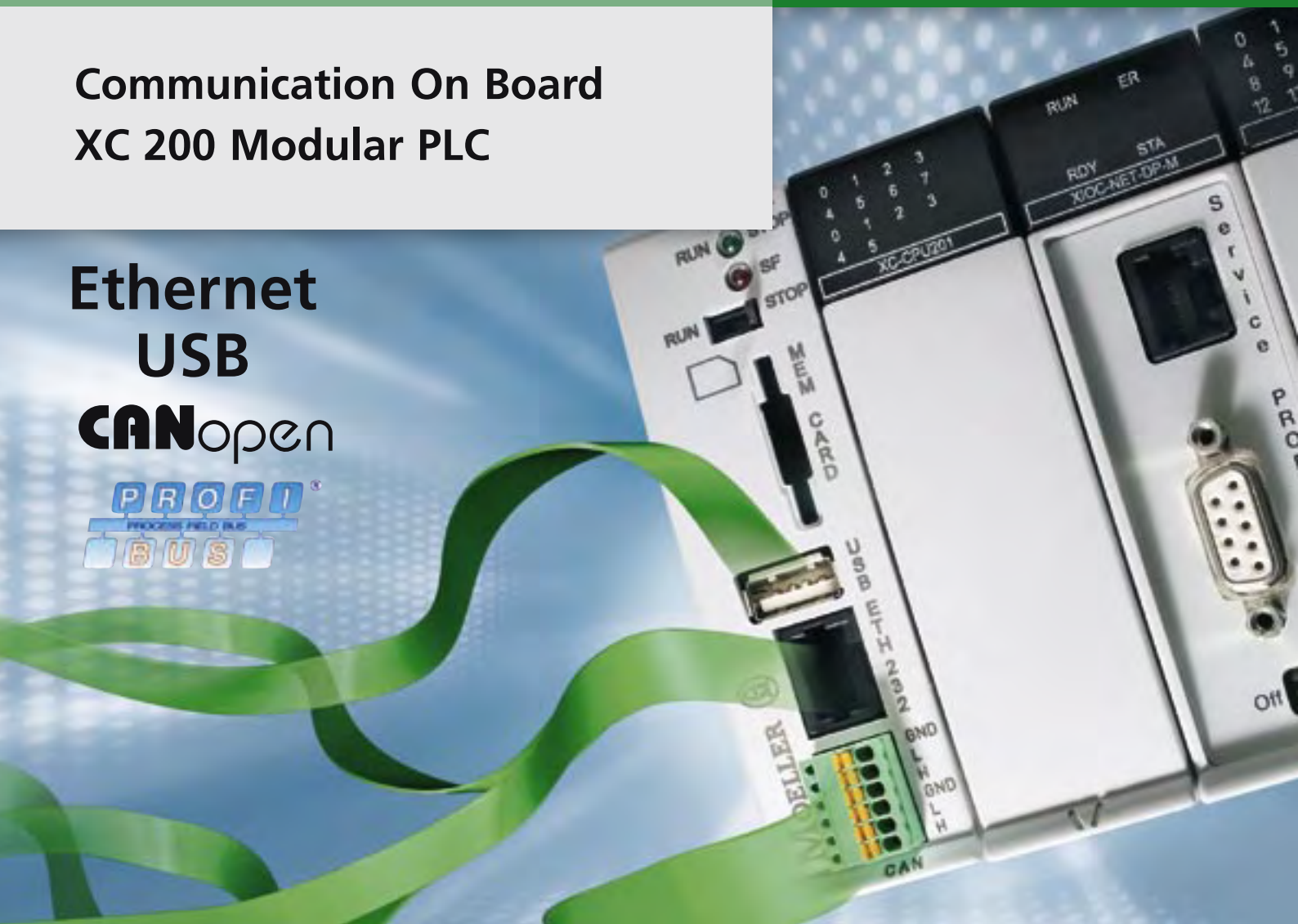


Think future. Switch to green.

For Immediate Delivery call KMParts.com at (866) 595-9616

# Communication On Board XC 200 Modular PLC

## Ethernet USB CANopen



### xSystem

Automation products, system solutions and services all around the PLC that will improve the efficiency of your machines and installations.

PC based HMI-PLC and PLC

Embedded HMI-PLC

Modular PLC

Compact PLC

HMI

Remote I/O

Operating and control relay



**"A controller with all the interfaces on board: This solution has saved us a lot of time and money."**

Moeller GmbH  
Hein-Moeller-Straße 7-11  
53115 Bonn  
Fax (0228) 602-2275  
info@moeller.net

XC200 – these are modular PLC systems with outstanding communication options. All interfaces are provided already on board:

- Ethernet: for networking PLCs, for connecting to the IT world
- USB: for data storage, as recipe download, for data acquisition
- CANopen: for fieldbus components up to demanding drive technology
- OPC: fast and secure coupling to visualization systems, databases and control systems
- Integrated WEB server

Let the XC200 reduce the cost and effort required for your automation solution. We shall be pleased to give you further advice.

# MOELLER

Think future. Switch to green.

For Immediate Delivery call [KMParts.com](http://KMParts.com) at (866) 595-9616