



SIMOTION Top Loading

Optimized handling functions for packaging machines

Short product changeover times, quick format changes and the continuously increasing diversity of packaging materials are just some of the challenges faced by the manufacturers of packaging machines. As a result, there is a growing tendency to use handling robots directly in the process. With SIMOTION® Top Loading, we are offering you a standard application for motion tasks that occur frequently in handling processes, allowing you to create innovative machine concepts.

A better performance all round

SIMOTION Top Loading delivers a standardized software library which significantly simplifies engineering, programming and operation while increasing the performance of the machine. The software library enables you to program and configure Top Loading cells that have different kinematics. Moreover, the tool meets all the requirements for a continuous packaging line, including product feed, tubular bag solutions, cartoning and palletizing. The programming and engineering complexity required by such applications is therefore substantially reduced.

Flexible handling

With its wide range of functions, such as the easy integration of vision systems, conveyor tracking, belt and kinematics calibration or product tracking, SIMOTION Top Loading can be used in almost all handling applications. The tool supports a large number of kinematics which can be controlled by the Motion Control System using preprogrammed and tested software modules.

Suitable for all SIMOTION platforms

The Top Loading library is platform-independent and can run on any SIMOTION system, whether controller-, drive- or PC-based. Modular architectures with multiple control systems are also possible.

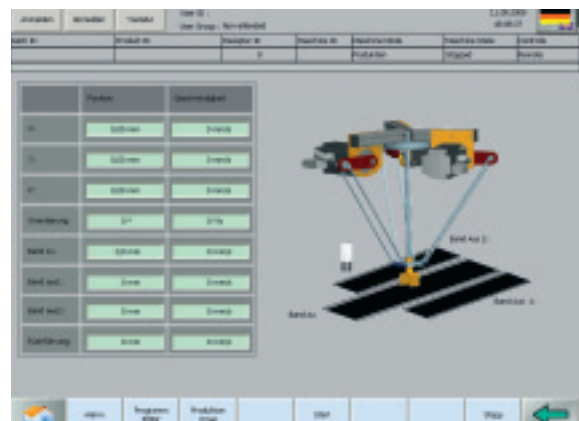
Packaging

Answers for industry.

SIEMENS

Optimized Path

The path can be traversed at either constant or variable speed. The variable path speed is calculated by the Top Loading library which also monitors and limits the dynamics of the physical axes, the geometry axes X, Y and Z (TCP) and the path axes. All these functions make it much easier now for the user to program the motion paths. Gantry, scara, articulated arm, roller and delta kinematics are already integrated. Thanks to the standardized parameterization of transformations, the rest of the software remains unchanged.



Easy programming

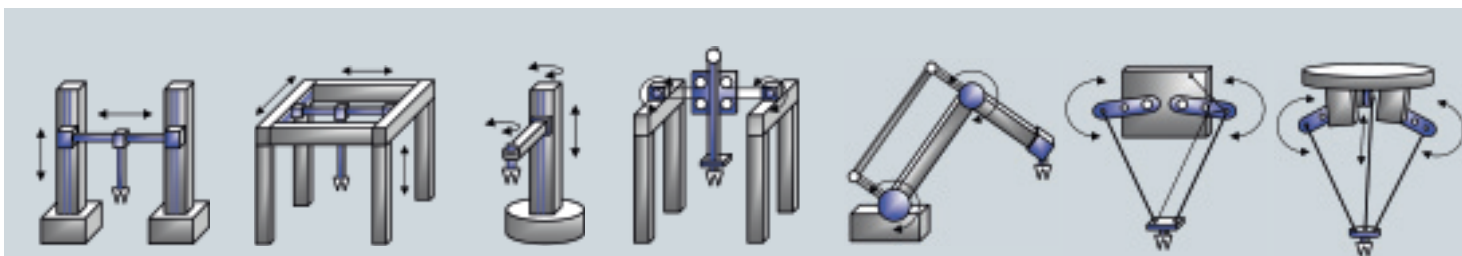
Thanks to the sample applications, integrated error handling and uniform diagnostic structures that are delivered with the software, it is easy to integrate the motion tasks of the Top Loading module cell into the main project. The motion program is extremely easy to configure using the extensive set of motion, jump and control commands. The software library even provides single-axis and coupling commands for additional synchronized or infeed axes. The definition of work areas and barred zones, report zones or product zones is also supported three-dimensionally.

The toolbox for standardized applications

The SIMOTION Top Loading technology package is one of several applications for the automation of packaging machines and is an integral component of the Optimized Packaging Line toolbox. This toolbox offers standard solutions for widely used machine types and common tasks – based on the SINAMICS drive system and the SIMOTION motion control system. With Optimized Packaging Line, we have developed a concept to automate the entire packaging line based on a uniform automation and communication standard.

Advantages offered by the SIMOTION Top Loading standard application

- Easy configuring of different kinematics (gantry, SCARA, articulated arm, roller, delta and specialized kinematics)
- Standardized Top Loading application for all SIMOTION platforms
- Integrated automation of the whole machine with a single control system
- Preconfigured interfaces for the integration of product detection vision systems
- No training in robot programming languages required thanks to uniform, IEC 61131-3-compliant programming methods



The motion path is defined independently of the machine kinematics. All kinematic principles typical of handling modules are supported.

Siemens AG
Industry Sector
Motion Control Systems
P.O. Box 31 80
91050 ERLANGEN
GERMANY

www.siemens.com/packaging

Subject to change without prior notice
Order No.: E20001-A20-P620-58-7600
Dispo 06372
SCHÖ/18997 GD.MC.20.VERP.52.9.06 SB 03092.
Printed in Germany
© Siemens AG 2009

The information provided in this brochure only contains general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.



WOLF Packaging Equipment Chooses New, Low-Cost Control Concept

An innovative manufacturer is now also using the SINAMICS S120 intelligent drive system for its machine control tasks

With more than 15 years experience in the industry and over 1000 systems installed worldwide, WOLF Verpackungsmaschinen GmbH is one of the world's leading tubular bagging machine vendors for a wide range of bag types and sizes. The simpler machines, which are deployed in very large numbers worldwide, are particularly vulnerable to price pressure. That is why every opportunity for cutting costs must be exploited to the full – including the electrical equipment. Here, WOLF has opted for a new and very efficient concept: It uses the technology functions of the SINAMICS S120 drive system for machine control, allowing the company to dispense with its own controller hardware.

The challenge: **Maintaining functionality while reducing components**

The vertical tubular bagging machine can shape, fill, and seal up to 120 bags with a maximum width of 140 mm per minute. The bag length and cycle rate can be set via an operating panel. That makes for a versatile and flexible machine.

But the functionality of such a machine presents many tasks for the automation, including multiple operating modes, proportioning calculation, precise positioning of the servo axes, heating control or dead-time compensation.

Meeting this variety of different tasks usually involves implementing two systems: servo drives and the control system.

In the case of the drives, WOLF has already been using the SINAMICS S120 for a number of years – an innovative drive system that now also offers technology and control functions. This offered the company a practical opportunity to dispense with its own controller component while maintaining full functionality.

Packaging

Answers for industry.

SIEMENS

Drive system also performs all control tasks

The CU320 control unit was chosen to implement the new concept with the SINAMICS S120 drive system. This module is particularly powerful: It can control several drives at once, including the positioning functionality. Technological functions and control tasks can be implemented with programmable software blocks, the number of signal inputs/outputs passing through an interface and terminal modules can be expanded as required. This permits implementation of all necessary machine functions.

A touch panel is used for operation and recipe management, which communicates with the CU320 via PROFIBUS.

Drag – drop – connect – and off you go!

All technological functions and control tasks were implemented using the SINAMICS functionality "Drive control Chart (DCC)." These are ready-programmed function blocks such as logic commands, adders, ON/OFF delays, or closed-loop control blocks. Almost any number of these blocks can be used and interconnected or connected to process signals. This is done simply by selecting them in a graphical editor, interconnecting and then – depending on the type of block – parameterizing them.

All control tasks, including the various operating modes, machine start/stop, proportioning calculation, temperature control, dead-time compensation etc. can therefore be implemented simply and directly in the drive.

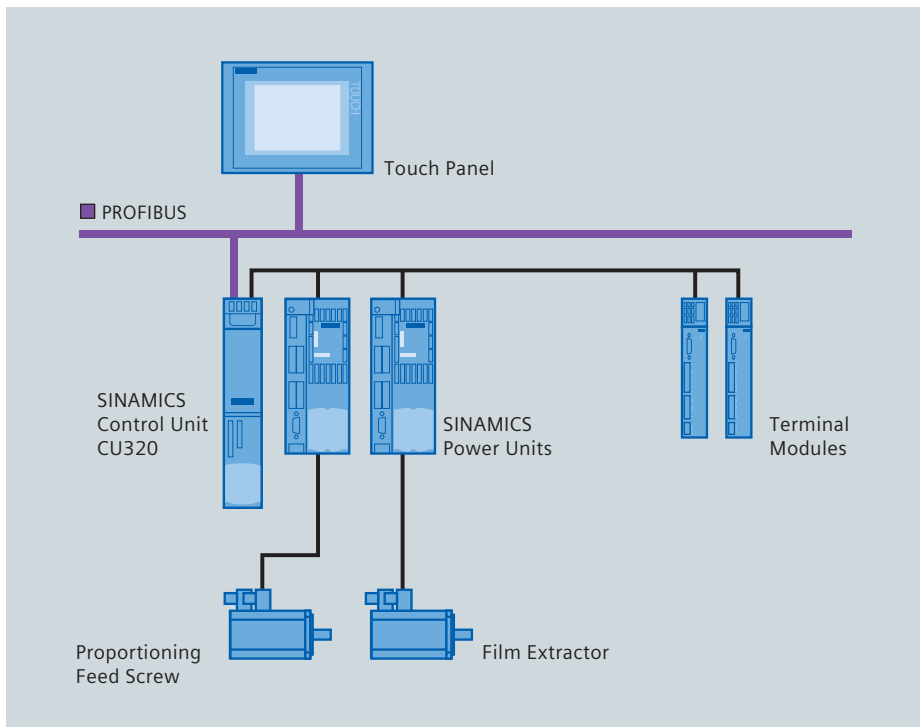
Fast implementation, convincing result

The project presented here was executed as part of an undergraduate dissertation – the best proof that such an automation solution is possible without great engineering costs and system know-how. And additional functions, such as print mark correction and film slip compensation, can be implemented at any time with this machine.

Open for expansion

The solution described here is implemented with a scalable SINAMICS drive platform and is therefore not limited to simple machines: The number of axes and signal inputs/outputs can be expanded if and when needed. A separate controller system such as SIMOTION or SIMATIC can be added for additional, more complex control tasks.

www.wolf-pack.com



Special features:

- Entire machine control implemented in the drive, that is, customer's own controller hardware no longer required. This makes the solution particularly economical.
- Simple engineering: Control functions are implemented by graphical interconnection of blocks.
- Solution can be expanded whenever needed, for example, for more complex machines

Siemens AG
Industry Sector
Motion Control Systems
P.O. Box 3180
91050 ERLANGEN
GERMANY

www.siemens.com/packaging

Subject to change without prior notice
Order No.: E20001-A20-P620-57-7600
Dispo 06372
SCHÖ/18118 GD.MC.20.VERP.52.9.11 SB 02092.
Printed in Germany
© Siemens AG 2009

The information provided in this brochure contains solely general descriptions or characteristics of performance, which in the case of actual use, do not always apply as described; these could also change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.



HayssenSandiacre banks on retrofitting packaging machines

Leading manufacturer enjoys the benefits
of modern motion control technology

Packaging consumer goods at a high turnover rate demands modern, high-performance motion technology. As a leading manufacturer of vertical high-speed forming, filling, and sealing machines, as well as packaging systems, the Sandiacre Packaging Machinery company, founded in Nottingham in the UK in 1969, has responded to its customers' requirements. Increasingly, these customers have been demanding space-saving solutions.

Teamwork from the word go

Sandiacre were prompted to assess their existing machinery offer when they received an order from a very large food producer for a new range of vertical form/fill/seal machines. The technical specification for standardizing their systems required the use of motion control technology from Siemens. This started the move towards upgrading the previous control systems for a number of machine types. For the combined team of Sandiacre and Siemens personnel, the main criteria were the need to achieve similarly high performance levels to those pro-

vided by the previous supplier, while retaining large parts of the existing controller and drive structure. Another important requirement was that the new control system had to have the same dimensions as the existing controllers. The need for cost-efficiency, and an ambitious time frame of three months from the start of the project to its completion, presented additional demands. The result of this teamwork is a modern, wide-ranging offer of automation platforms based on motion control systems.

Packaging

Answers for industry.

SIEMENS

Good things come in small packages

The packaging market demands compact control and drive technology. Siemens proposed a solution based on combining a SIMOTION® D motion controller with the universal SINAMICS® S120 drive system and standard 1FK7 servo motors. The MP277 panel was used with the machine for visualization, operator guidance, and parameterization purposes. To ensure that the image printed onto the plastic film used always fits the tubular bag, the print mark is detected by a sensor. Industrial Ethernet is used for connection to the company network. The ET 200M distributed I/O system for detecting digital and analog systems is connected via PROFIBUS.

Less space needed in the control cabinet

In "twin" form/fill/seal machines, two single form/fill/seal machines are placed next to each other and equipped with a shared control cabinet. This

allows the two axes of each single intermittent form/fill/seal machine to be combined in a compact 4-axis unit, an arrangement which requires less space in the control cabinet. Foil extractors and traverse sealing units are found in a drive line-up. The tubular bag sealed by the traverse sealing unit can be filled with free-flowing/free-pouring products. A pulse-driven sealing device is used as part of this process.

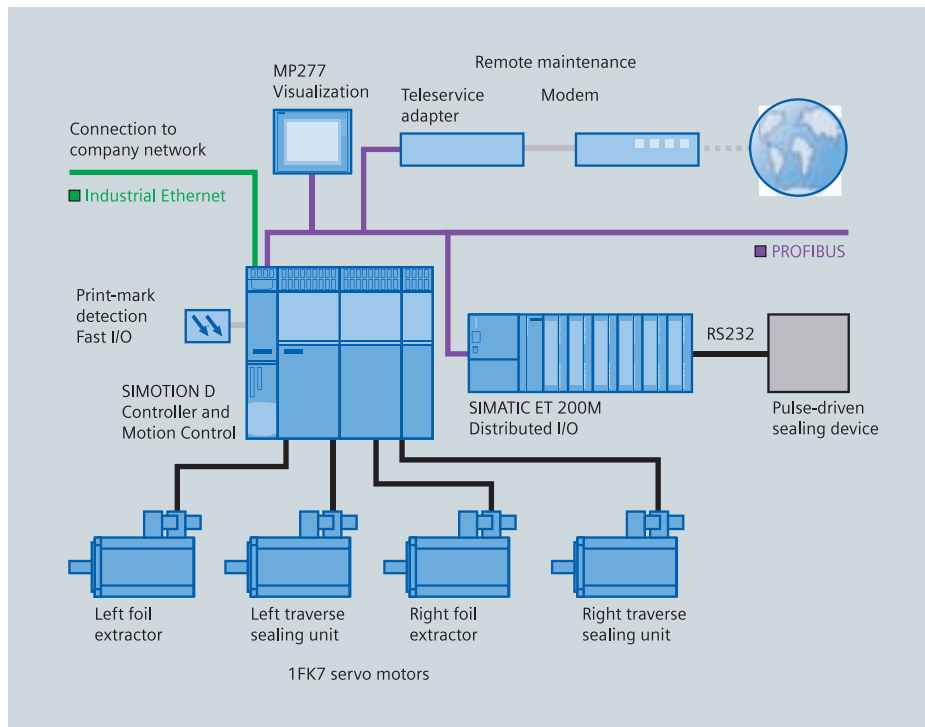


The traverse sealing unit performs precision sealing actions after each pre-weighed product quantity (such as milk powder) arrives through the downpipe.

Teamwork makes difficult tasks easy

"The Siemens solutions exceeded our expectations throughout the entire project", commented Jim Goodwin, a technical director of the company. According to Mr. Goodwin, this meant: "The solution was simple and could be directly implemented in a number of our vertical form/fill/seal machines. Also, you could not put a price on the fact that a Siemens engineer was present on site throughout the entire project to support our in-house engineers and advise on the best choice of products. After the success of this first upgrade, we are now in the process of applying the concept to the rest of our intermittent form/fill/seal machines, with a view to extending it to our continuous form/fill/seal machine ranges during the next year."

www.hayssensandiacre.co.uk



Special features

- Reduced control cabinet space requirements thanks to compact design of controller and drive modules, and direct integration of functions into SIMOTION (such as temperature control)
- Reduced time to market as a result of pre-tested software modules and Siemens on-site application support
- Improved quality, space savings, and reduced costs for the same machinery layout thanks to innovative motion control technology

Siemens AG
Industry Sector
Motion Control Systems
P.O. Box 3180
91050 ERLANGEN
GERMANY

www.siemens.com/packaging

Subject to change without prior notice
Order no.: E20001-A20-P620-56-7600
Dispo 06372
SCHÖ/18118 GD.MC.20.VERP.52.9.04 SB 02092.
Printed in Germany
© Siemens AG 2009

The information provided in this brochure contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.



Product movement parameterized simply at Oystar A+F

With SIMOTION Top Loading software for handling tasks

Oystar A+F of Kirchleugern, Germany, is a premier manufacturer of special-purpose machinery including tray erectors, casepackers, palletizers, and transport systems. To deliver value to customers, Oystar A+F incorporates modular servo and robotic designs with built-in flexibility. Further, Oystar A+F Automation has streamlined their manufacturing process by implementing these same modular concepts on the software solution. This success was accomplished with the SIMOTION Top Loading library.

The freshly filled cups must now be packaged. The path is known, including limit values for acceleration, speed, inclination, etc. Converting these specifications into control parameters for the drives and monitoring them is a demanding programming task that has already been accomplished with the SIMOTION Top Loading library, capable of controlling a wide range of kinematics in robotic handling applications. Only the desired movement of goods needs to be input. The result is significantly rationalized engineering.

The aim of Werner Woermann, Head of Electrical Design at Oystar A+F, is to limit in-house software development to 25 or 30 percent for the automation of any machine.

Packaging

Answers for industry.

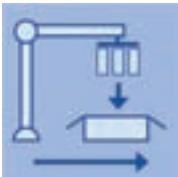
SIEMENS

Less engineering overhead, more flexibility

"Application Sets" for the SIMOTION motion control system play a key role in rationalizing engineering at Oystar A+F. These are off-the-shelf or easily adaptable standard solutions for different machine applications. Oystar A+F has for some time been using the SIMOTION Top Loading library for controlling robotic handling machines. The library essentially reduces engineering to three steps: selection and installation of the SIMOTION Top Loading software module suitable to the machine's kinematics, acquisition of the machine parameters required by the software module, assignment of the motion parameters to the Top Loading software, e.g. in the form of recipes for different combinations of products and packages.

Good for high precision too

The software can also handle high precision work including automatically rounding the path contour when changing direction and automatically taking account of specified off-limit zones. Just a few interpolation points are typically enough to describe how, for example, a set of yoghurt cartons is moved from the sleeve to the second row of the third layer in the box. Limit values for maximum speed and acceleration of the product are also calculated and monitored.



A partnership right from the start

Oystar A+F was the first to experience SIMOTION-based automation and standardized motion control software in the building of a two-axis cup packer for a food and beverage manufacturer. Siemens supported the project with an introduction to the motion control system and the Top Loading library. The Oystar A+F developers also made use of the automation partner's mechatronic support in dimensioning the zero backlash geared motors (also from Siemens).

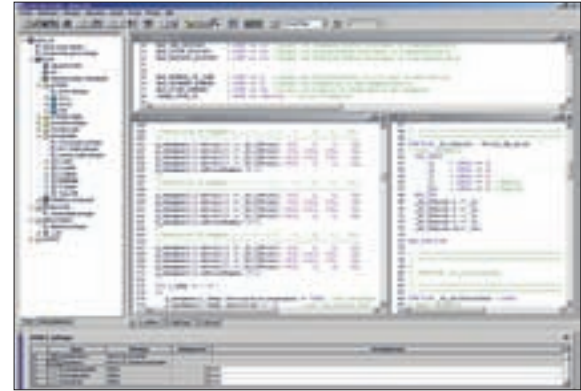
Very brief commissioning on-site

Following a short pre-startup at the factory, the Oystar A+F engineers successfully commissioned the system in just two days, without the support of the automation partner. The performance levels to be established for packaging the cups were ambitious: 180 cycles per minute or 3 cycles per second!

Customer satisfaction secures profit – and future orders

The end customer was highly satisfied with the cup packer and soon ordered two additional and significantly more complex packaging machines from Oystar A+F. These orders involved a display packer with special handling functionality and a tray packer, each with seven axes of control. Cup sizes between 125 g and 500 g are placed in their display packs and transport containers using these machines. The tray packer supports four packing formats for each layer, for boxes with up to three layers and for five different cup styles.

www.oystar.afautomation.com



Special features:

- The TwinLine Two-Axis Robot is capable of up to 180 cycles per minute, depending upon the load. The system's rigid, yet lightweight carbon arms are optimized for high dynamic response controlled by the SIMOTION Top Loading library.
- The SIMOTION Top Loading library provides pre-engineered function modules that are easily configured to control and monitor robotic movements.
- The pre-engineered solution drastically reduces engineering time and minimizes risk since all functions are standardized and tested.
- Standardized libraries for communication between machines and higher-level systems also minimize integration costs for the end customer.

Siemens AG
Industry Sector
Motion Control Systems
P.O. Box 3180
91050 ERLANGEN
GERMANY

www.siemens.com/packaging

Subject to change without prior notice
Order No.: E20001-A20-P620-54-7600
Dispo 06372
SCHÖ/18118 GD.MC.20.VERP.52.9.02 SB 02092.
Printed in Germany
© Siemens AG 2009

The information provided in this brochure contains solely general descriptions or characteristics of performance, which in the case of actual use do not always apply as described; these could also change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.



GDO BV Relies on High-Speed Automation Solution

Inspection of up to 360,000 products per hour

GDO BV with headquarters in Eindhoven, The Netherlands, has earned itself a reputation as a specialist for production automation and inspection systems. The combination of in-house engineering and manufacturing of tools and machines has made GDO BV a coveted partner for international manufacturers. Thanks to its long experience in the automotive and healthcare industry, the company is in a unique position to implement tailored solutions on the basis of proven modular systems using the very latest technologies – from product design to complete production lines. GDO BV chose Siemens as a partner for the automation of its high-speed inspection systems.

The first machine to be equipped with a Siemens solution was the AISAP inspection machine, which uses the innovative SIMOTION motion control system. This system provides every degree of freedom required to build advanced machines. Mechatronic machine concepts improve flexibility, increase the number of cycles, shorten the changeover times and reduce the amount of maintenance required. Of course, SIMOTION is an integral part of Totally Integrated Automation.

The main reason for GDO BV's decision to use Siemens is its firm belief that Siemens offers the most advanced technology for motion control and drive applications as well as the right support structure for every phase of the application: from consulting to fine-tuning to operation. The end customers in the automotive industry, such as VW/Audi, Opel, Ford, etc. are also satisfied with the use of Siemens products on GDO machines.



Packaging

Answers for industry.

SIEMENS

High inspection capacity

The AISAP (Advanced Inspection System for All Products) is one of the latest high-tech automated inspection systems built by GDO BV for defect finding in all kinds of products. The inspection system is able to detect defects, check dimensions and recognize colors on a single conveyor belt at a speed of 50 products per second. The AISAP capacity can easily be doubled by adding a second track of products and using three cameras on the same conveyor belt. This achieves the inspection capacity to an astonishing 360,000 products per hour.

Ready, set, go!

One of the main design requirements was the flexibility of the system. The system is able to handle products ranging from 5 to 80 mm in diameter and up to 40 mm in height. By a

simple manual or automatic height adjustment of the secondary conveyor and supply, the system can handle different products within a set-up time of just a couple of minutes.

High-speed inspection

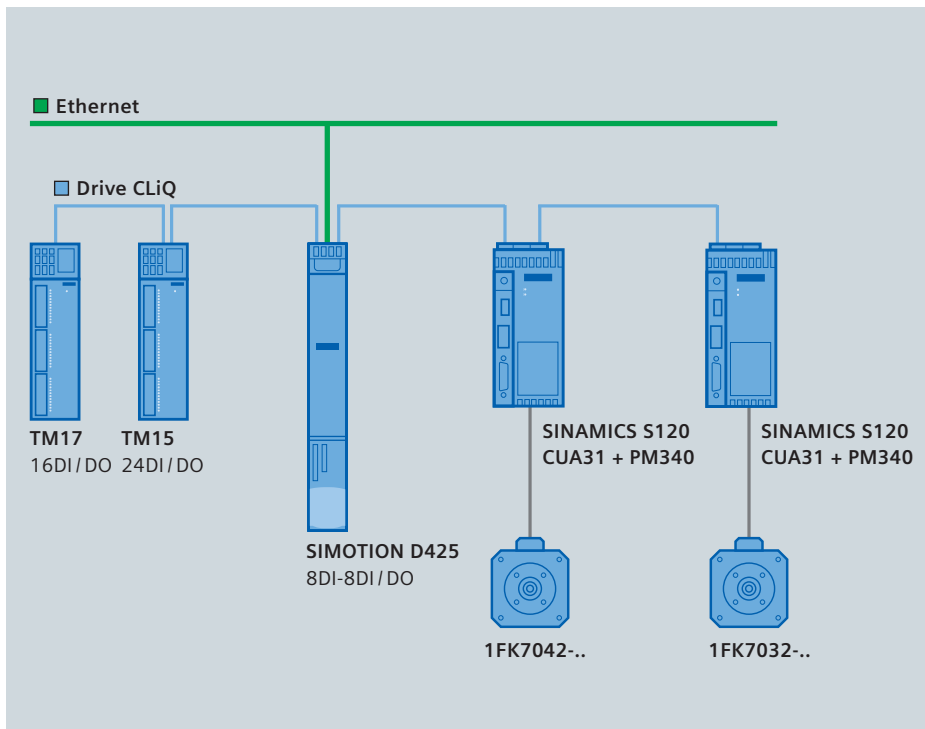
In the past, GDO BV has built many inspection systems that have been applied in different industries such as automotive, aviation, life science and sealing. This inspection system concept was developed as a general high-speed inspection tool for all products in all industries and can be adjusted to customer requirements. The design principle enables the customer to inspect the side, upside and downside of a product without damaging the product during handling. One of GDO's strong characteristics is the short development time for automation

solutions. This system, for example, was developed in just 4 months, from the concept to the functional inspection system.

Optimum equipment for high-end machines

Whether seal or belt inspection machines or seal packing machines for the automotive industry or inspection machines for the healthcare industry – to date, Siemens has equipped about 10 machines from GDO BV with the appropriate automation solutions.

www.gdo-bv.com



Special features of high-speed product inspection:

- Highly flexible inspection system – designed to handle all kinds of products for the pharmaceutical, healthcare, automotive and sealing industry
- Especially developed for cleanroom applications
- Suitable for products with diameters ranging from 5 to 80 millimeters and heights ranging from 2 to 40 millimeters
- Text recognition, color recognition, dimension measurement and defect finding
- The inspection system can be installed directly between production units for in-line inspection

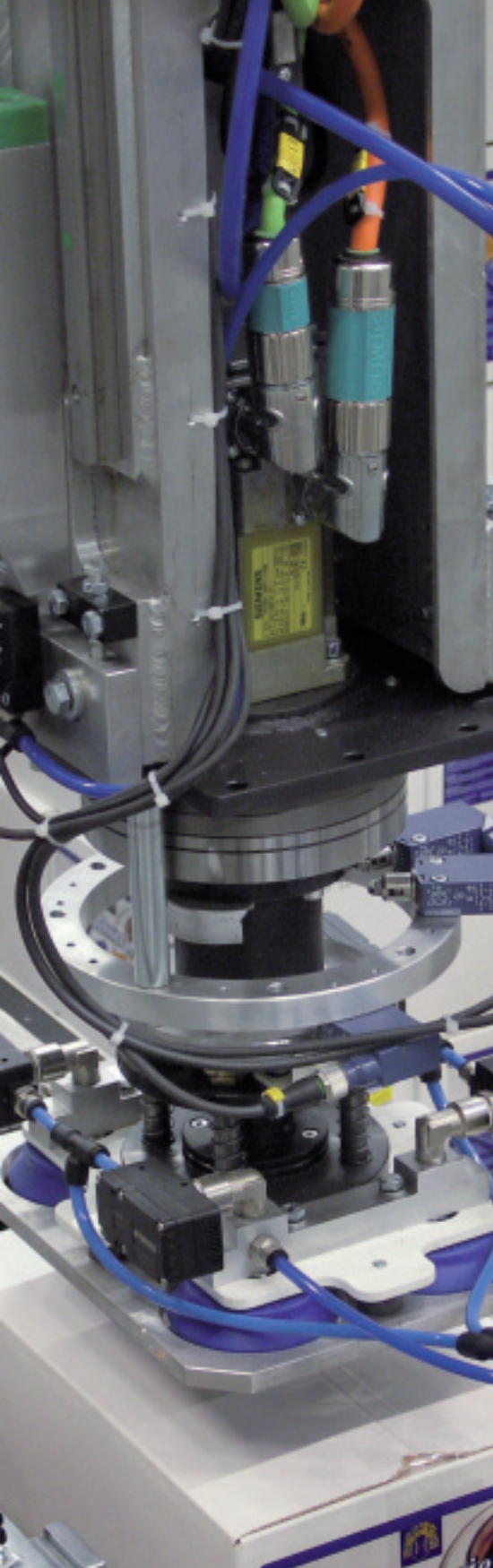
Siemens AG
Industry Sector
Motion Control Systems
P.O. Box 31 80
91050 ERLANGEN
GERMANY

www.siemens.com/packaging

Subject to change without prior notice
Order No.: E20001-A20-P620-53-7600
Dispo 06372
SCHÖ/18118 GD.MC.20.VERP.52.9.05 SB 02092.
Printed in Germany
© Siemens AG 2009

The information provided in this brochure only contains general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.



Avercon Packaging Solutions – Preparing for tomorrow's automation solutions

**Leading machine manufacturer relies on Siemens
and the SIMOTION motion control system**

Very high productivity levels, maximum efficiency, and absolute reliability against a background of increasingly complex projects: these are the varied challenges facing the packaging technology industry. Machine manufacturers can best meet these challenges by choosing the right automation partner. If proof were needed, you need only look at Avercon Packaging Solutions, one of Europe's leading manufacturers of innovative cartoning machines for a number of notable customers. Together with Siemens, a well established partner in this area, Avercon automated the packaging plant of a Belgian cookie factory where cartons for gingerbread cookies are produced. The result was a tailored, holistic solution based on the integrated SIMOTION® high-tech platform and a wealth of forward-thinking functions.

Two heads are better than one: Avercon and Siemens

How do you run a continuous production operation efficiently while guarding against possible future obsolescence? How do you get a picture of productivity while keeping it firmly under control? Today's customers are no longer interested in short-term measures and individually installed machines. They want integrated applications which guarantee solutions offering excellent performance and increased productivity for ever more complex tasks, both now and for the future. Avercon is able to do this thanks to its well developed packaging solutions with integrated additional benefits, which have sprung from their proactive outlook and strategic

partnership with Siemens. Customers can take advantage of a unique package, as the long-standing collaboration between Siemens and Avercon has produced an innovative type of cooperation in the shape of the Siemens OEM team. These are experts working specifically for machine manufacturers, offering a combination of well-grounded sector experience, leading technology, a substantial product offer, and a comprehensive service proposition. The customers of a large cookie factory in Belgium are also enjoying the fruits of this partnership, thanks to an automation solution which more than exceeded expectations.

Packaging

Answers for industry.

SIEMENS

Designed to meet customer needs

The Belgian company wanted a forward-thinking, integrated automation solution for an operation which had previously involved manually packaging individually sealed gingerbread cookies into cartons and placing them onto pallets. The solution was developed around all the required and existing parameters. The result was a holistic solution for the entire packaging process, driven by the need for continuous production with no downtime.

Everything you need, right down to the finest detail – SIMOTION, the tried and tested solution

If you're looking for an automation solution offering comprehensive motion control and technical functions, SIMOTION and SINAMICS® servo drive technology are a winning combination. Among other things, SIMOTION combines logic, motion control, and integrated safety functions, as well as a user-friendly HMI user interface, consistent communication between the various components, and a wealth of IT functions.

Highlights of the SIMOTION solution:

- Excellent motion control
- Extended functionality
- Full range of technical tasks in a single platform
- Not based on a hardware platform
- Hardware and software can be extended
- Combined with SIMATIC® technology
- Highly flexible

A future-proof solution

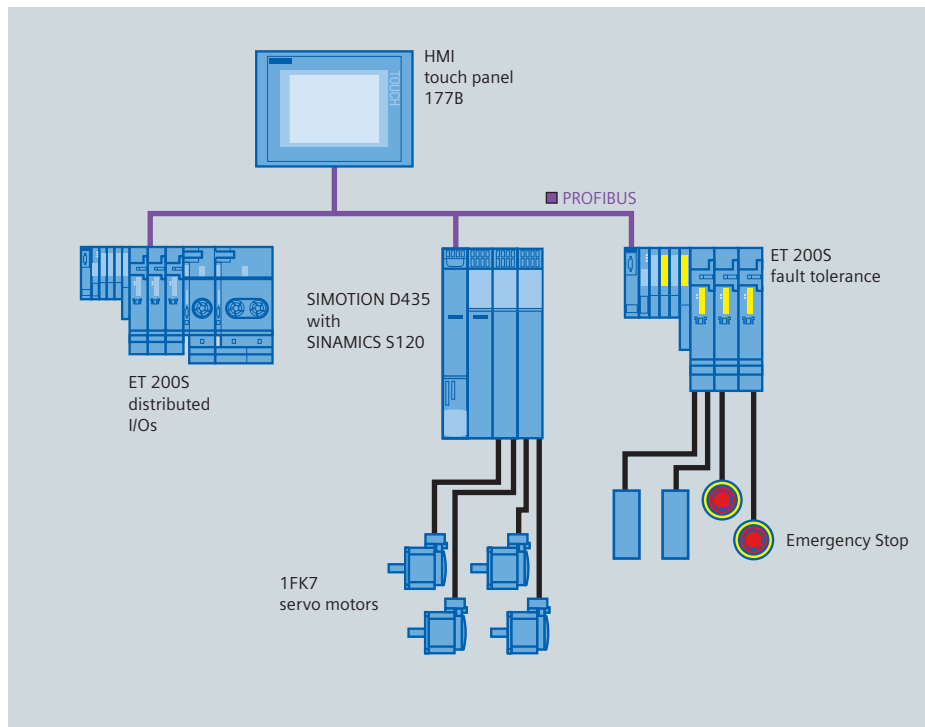
The holistic solution offered provides further proof of our proactive approach. Thanks to its intelligent tracking functions, it is perfectly equipped in terms of any future tracking and tracing specifications. Onboard Ethernet provides the basis for external communication with the software and interfaces already available. This enables a connection to be established between the packaging line and the IT environment.

Avercon won over by Siemens:

"Siemens is an important partner from whom we can gain a lot, both in the short and the long term. Their technical expertise and highly flexible approach provide us with the tools we need to pursue our strategy. Our aim is to develop even better performing machines, which bring real benefits to our customers while proactively anticipating their changing needs."

(David Provoost, Sales & Marketing Manager, Avercon)

www.avercon.be



Special features

- Easily integrated into the line thanks to onboard Ethernet
- Integrated safety functions mean less space is required
- Investment protected thanks to a forward-thinking, very high-performance network and control engineering
- Comprehensive support from the Siemens OEM team in the form of training, services, logistical support, and much more
- Limitless international access to services thanks to local support from Siemens around the world

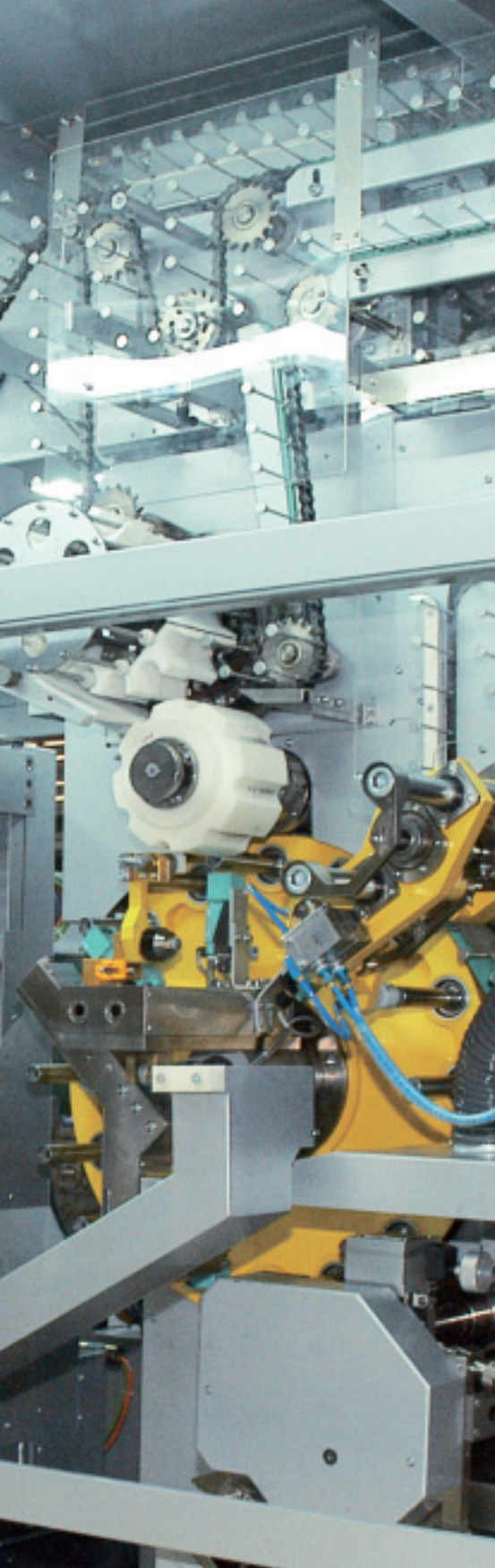
Siemens AG
Industry Sector
Motion Control Systems
P.O. Box 3180
91050 ERLANGEN
GERMANY

www.siemens.com/packaging

Subject to change without prior notice
Order no.: E20001-A20-P620-51-7600
Dispo 06372
21/16400 MK.MC.20.VERP.52.8.08 SB 09082.
Printed in Germany
© Siemens AG 2008

The information provided in this brochure contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.



PackSys Global invests in innovative expertise and is able to cap costs in record-breaking time

World-leading manufacturer integrates the new SIMOTION D435 motion control solution into its decoration line

Bottle caps play an essential role in keeping the contents of drinks bottles in good condition, as well as providing a tried-and-tested vehicle for advertising. The leading manufacturer of such caps is PackSys Global (PSG), which is the world's only machine manufacturer putting together entire lines for producing extra-long aluminum caps for wine and spirits bottles.

When they were looking to develop a new decoration line, PSG saw Siemens as a proven partner for its plant in Rayong, Thailand, choosing its new SIMOTION® D435 motion control solution with integrated PLC, motion, and technology functions. The end result was excellent performance and reliability with reduced engineering and hardware requirements.

A wealth of functions in a single controller

Although the Thai subsidiary of PSG had already used Siemens automation technology in the past, the development of the new metal-cap decoration line heralded the start of a new era and a complete change of system. At the heart of things was the innovative SIMOTION motion control system in the drive-based D435 version for the medium performance range. Combined with the SINAMICS® S120 modular drive system, which had been adapted accordingly, a unique system solution was implemented in less than three months, including the time needed to train PSG personnel. This was only possible as a result of fan-

tastic cooperation between PSG, Siemens Thailand, and Siemens Germany.

What really distinguished the project from previous solutions was the complete integration of PLC motion control and technology functions within a single device – SIMOTION. Apart from the reduced hardware requirements, which meant savings in terms of both space and cost, there was no need for interfaces or the adaptations to the PLC and motion control system. The end result was significantly reduced engineering and optimized cycle times for excellent performance and maximum efficiency.

Packaging

Answers for industry.

SIEMENS

Engineering and operation – simplicity itself

Combined with the SINAMICS S120 drive system, SIMOTION D435 offers optimized functionality and is simple to install and operate. While the SCOUT engineering tool offers easy commissioning, the digital DRIVE-CLiQ system bus facilitates trouble-free parameterization and maintain the new motion control solution thanks to the electronic type-plate function. The modular and compact design, together with the new touch panel with SIMATIC® WinCC flexible, ensures maximum usability.

Solution highlights:

- SIMOTION D435 – new controller with integrated PLC, motion control, and technology functions
- Reduced engineering as interfaces are not required
- Space and cost savings as less hardware is required
- Particularly easy to service thanks to modular design: components can be replaced individually

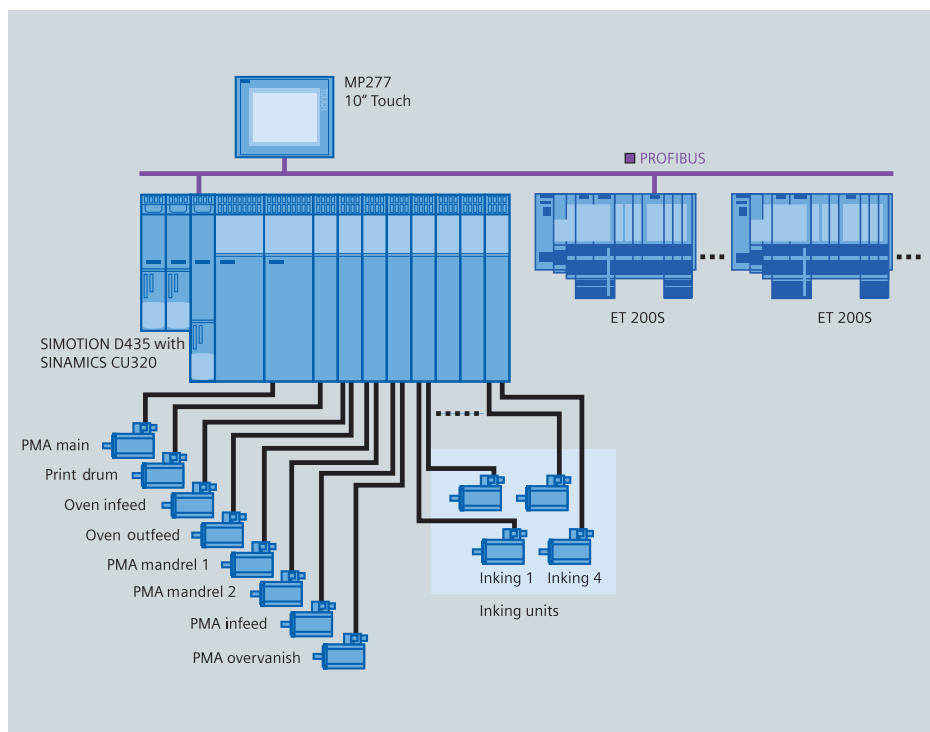
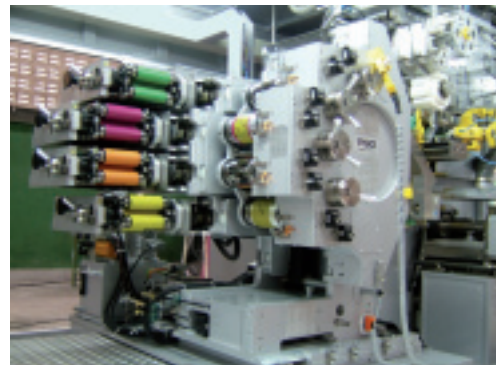
- Easy commissioning with the SCOUT engineering tool
- User-friendly touch panel with SIMATIC WinCC flexible user interface
- DRIVE-CLiQ system bus for quick and easy parameterization

Full speed ahead for highly precise motion

The plant is operated by 16 servo motors to enable precise pressing of 15,000 bottle caps an hour. SIMOTION D435 and two SINAMICS CU320 Control Units coordinate the perfectly synchronized interaction of the servo axes and the continuous processing of around 150 digital input and 130 output signals. The “fast output cam” option ensures there is a fast response to the process, such as when the caps are passed from the workpiece holder to the chain conveyor, or when they are immediately identified. This applies for a clocking of 240 ms.

The product of a successful partnership:
“With SIMOTION and SINAMICS, Siemens offers an innovative platform which fully meets our current requirements while offering the required level of security in terms of future developments. The Siemens brand is an established worldwide presence and the products were very well received by our customers, with the fast and direct local support also being a real plus.”
(Roman Angst, Research and Development Manager, PSG Thailand)

www.packsysglobal.com



Special features

- Reduced time to market thanks to faster commissioning and efficient engineering
- Less hardware means space and cost savings
- Simplified international access to services thanks to local support from Siemens around the world

Siemens AG
Industry Sector
Motion Control Systems
P.O. Box 3180
91050 ERLANGEN
GERMANY

www.siemens.com/packaging

Subject to change without prior notice
Order no.: E20001-A20-P620-50-7600
Dispo 06372
21/16400 MK.MC.20.VERP.52.8.08 SB 09082.
Printed in Germany
© Siemens AG 2008

The information provided in this brochure contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.



Elmach Packages is backing integration from a single source – and wins

Innovative manufacturer of integrated Motion Control system SIMOTION in new blister packaging machine

Maximum hygiene and absolute protection against negative external influences are fundamental requirements in the packaging of pharmaceutical products – optimum solution with blister packaging. The corresponding machinery is developed by Elmach Packages India Pvt. Ltd. – a manufacturer based in Mumbai, India, and one of the world's leading vendors of innovative packaging solutions, with 1,800 blisterpack machines in 88 countries. In the development of its latest machine, Elmach is backing integrated automation engineering from a single source. The result: the blister machine EPI 3020, with convincing maximum performance, optimum functionality and maximum flexibility, thanks to the integrated Motion Control system from Siemens.

The beginning of a strategic partnership

Due to the use of components from different manufacturers, Elmach's previous solutions were as problematic as they were heterogeneous: from costly coordination, through high engineering costs, right up to compromises in functionality. That's why Elmach set out to find a modular and scalable controller, both for the motion program and the logic program.

They found the desired homogeneous system solution in the unique SIMOTION® Motion Control system and the coordinated, modular SINAMICS® S120 drive system.

SIMOTION combines the advantages of logic with Motion Control and technology functions in one and the same controller, and thus offers higher performance levels. All the components for the electrical engineering and electronics of the EPI 3020, henceforth offered by Siemens as a complete solution, are integrated on a shared platform based on Totally Integrated Automation – in other words, all the components are integrated into a standardized product and communications structure. One of the essential benefits of this solution is the significant reduction in engineering costs.

Packaging

Answers for industry.

SIEMENS

Coordinated control with every motion

With speeds of up to 600 blisters per minute, the EPI 3020 guarantees precise execution of the motion sequences. All the strands come together in the virtual master of SIMOTION.

The highlights of the solution:

- SIMOTION – a single controller combines logic, Motion Control and technology packages such as temperature and pressure control
- Independent axis with servo drive – implemented by SINAMICS S120 – offers maximum flexibility for the work steps closing/opening, forming, sealing and transport
- User-friendly touch screen MP 277 with recipe setting and product library

- RFID equipment to detect tool changes, with high-speed switchover of the process parameters
- SCOUT is a standardized engineering tool for Motion Control, PLC and technology, combined with drive configuration and start-up.

Complex tasks – simple engineering

SIMOTION in conjunction with SINAMICS drive technology is easy to install, and approved for both CE and UL. In addition, the SCOUT engineering system offers seamless integration between SIMOTION and SINAMICS. The tool reduces not only the engineering costs here: it also has a powerful trace function for tracking variables such as actual value and set point, alongside a host of functions for supporting tests and fault diagnostics

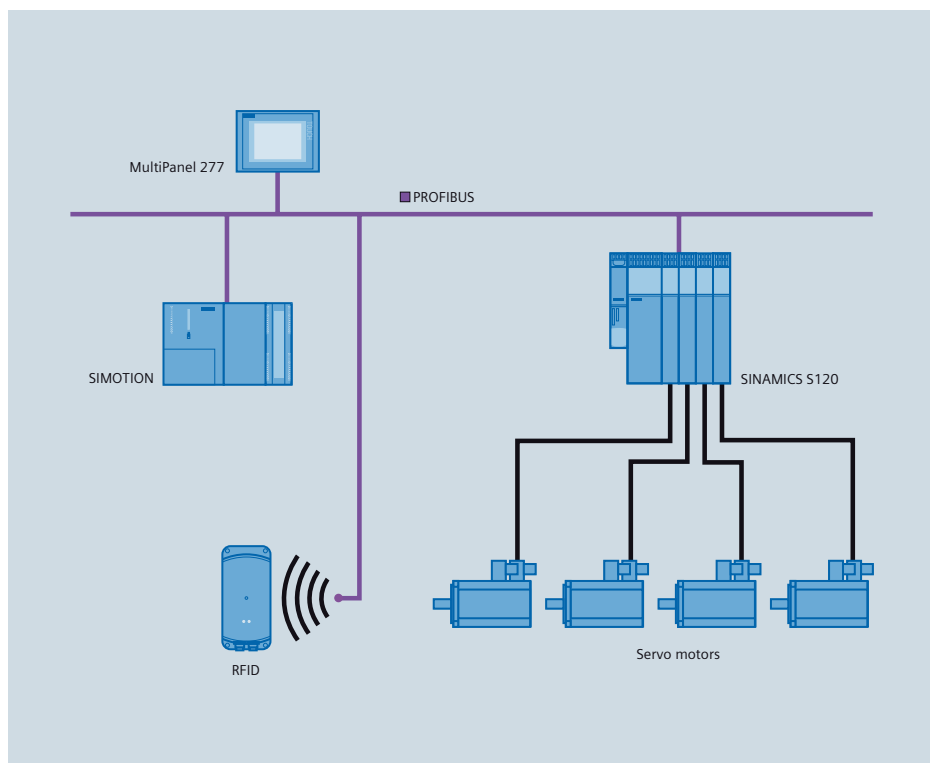
on SIMOTION applications. The DRIVE CLiQ digital system bus represents perfect communications and simplified wiring of the drive components. Simple maintenance is guaranteed thanks to the electronic rating plate function that forwards the data direct to the controller.

The convincing summary of a successful partnership:

“In the course of working with Siemens, we have enjoyed outstanding technical and product-related support. This is the start of our partnership. We hope to be able to produce even better and faster machines in the coming years by combining our synergies with those of Siemens.”

(Sudish Sukumaran, Technical Director, Elmach)

www.elmach.com



Special features:

- The significant benefits from cooperation with Siemens include one shared supplier for all components, one-stop shopping with a shared contact, and a standardized product and communication structure for smooth integration.
- The new Motion Control solution, meets requirements for maximum performance and transparency. Error sources and standstill times are reduced, and higher plant availability is guaranteed.
- As one of the world's leading manufacturers of blister packaging, Elmach applies its unique innovative power to secure a reliable technical advantage for its customers, and to guarantee support and machine availability.

Siemens AG
Industry Sector
Motion Control Systems
P.O. Box 31 80
91050 ERLANGEN
GERMANY

www.siemens.com/packaging

Subject to change without prior notice
Order No.: E20001-A20-P620-48-7600
Dispo 06372
21/12378 MK.MC.20.VERP.52.8.07 SB 04082.
Printed in Germany
© Siemens AG 2008

The information provided in this brochure contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.



Universal-Pack focuses on sticks

Implementation of a sugar stick packaging machine with scalable hardware and software

With more than 40 years of experience, Universal-Pack is one of the leading manufacturers of machines for the packaging of individual portions in "sachets sealed on four-sides", "shaped sachets" and "stick packs". The company relies on high-performance, scalable Motion Control systems for the implementation of its concepts, which range from automatic sachet filling machines through to complete packaging lines, for a broad spectrum of commodities including foodstuffs, chemical and pharmaceutical products and cosmetics.

Flexible machine for 2000 sticks per minute

Universal-Pack was searching for a platform for the design of a new, fully automatic packaging line that was capable of packing a variety of products into "stick packs", i.e. sachets containing single portions. The main objective was to produce a scalable system, which would enable the development and construction of both small machines and complete packaging lines. The Siemens Application Center in Bologna provided support for the implementation of the Motion Control system and the SIMOTION® application libraries. Universal-Pack also used Mechatronic Support to design and dimension the zero-play geared motors.

Stick by stick on the ladder to success

The new packaging line comprises five main modules:

- the module in which the sachet is shaped and heat-sealed on three sides with the help of a protected guidance system
- the proportioning system for sachets of different sizes
- an integrated weighing zone for every sachet produced, with check-back signal to the proportioning units
- the "pick & place" facility that picks the stick packs up and places them in the cartons provided for this purpose
- a chain conveyor to supply the empty cartons and transport the filled cartons to the sealing machine.

Packaging

Answers for industry.

SIEMENS

Engineering reduced by the use of standardized software libraries

Ready-to-use, tried-and-tested, easily adapted standard solutions were used in the form of open software libraries in an effort to meet the tight schedule. Already capable of realizing a large proportion of the motion functions, such as removing the foil or correcting the print mark, these offered a means of reducing the proportion of software actually developed in-house and the associated engineering for the machine to a considerable extent.

Scalable hardware

The proportioning system is the heart of the packaging line, comprising eight independent worm feeders driven by Siemens 1FT6 servomotors. These servomotors enable the sachet filling machine to achieve optimum production speed thanks to their compact dimensions and high torque. At the same time, SIMOTION D controls the worm feeders individually and, with them, the amount of product filled into every single sachet.

The PLC was combined with the system's Motion Control technology, making it easier to optimize the motion sequences, as well as reducing the number of interfaces and the associated engineering costs. The combination offered a means of implementing all of the checking functions for the stick pack machine in a very compact construction and in a single intelligent controller. This architecture has numerous advantages, including its unique but flexible development environment and the ability to organize software in modules and integrate temperature control. SIMOTION D therefore assumes responsibility for all aspects of machine automation.

Everything from a single source

Signals from the linked Siemens SIWAREX® CS weighing system are used to correct the filling process. Each stick pack is checked individually and placed in a carton by means of a "pick & place" function. This function is also performed by servomotors to ensure the necessary dynamic performance.

Safety integrated

The safety functions integrated into SINAMICS® S120 enabled Universal-Pack to utilize the Safe Torque Off (STO) functions certified in accordance with SIL 2 at a standstill, which led to substantial cost savings as a consequence of reductions in hardware and switchgear cabinet requirements.

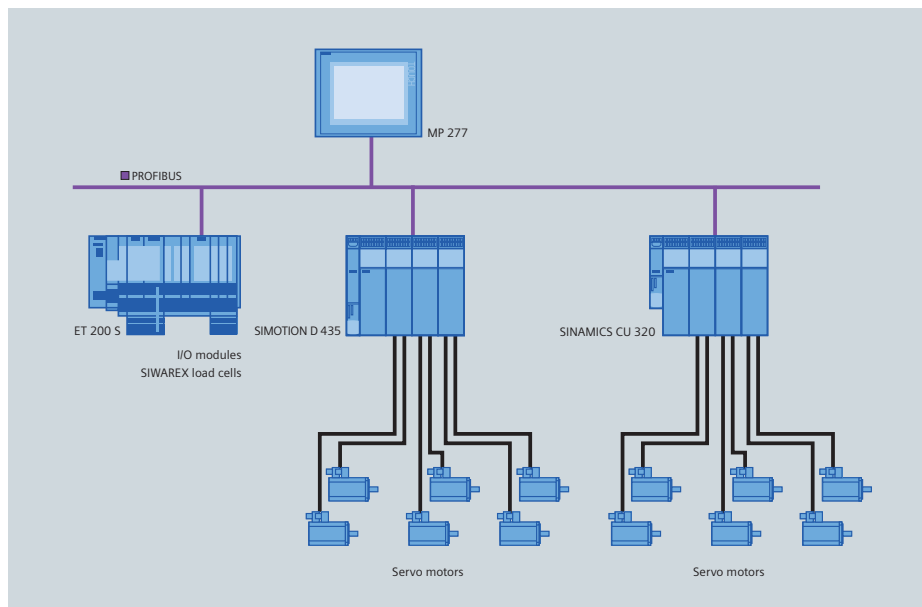
Simple line integration

OMAC-compliant interface blocks for SIMOTION D lower the costs of data communications between the machine modules and the visualization system with MultiPanel 277.

Speeding up the machine production process

The positive experience gathered in this project induced Universal-Pack to implement other machine modules, such as "pick & place" and cartoners, on the same platform. This led to considerable reductions in the development time and associated time-to-market for the new models.

www.universal-pack.com



Highlights:

- Universal-Pack relies on high-performance, scalable Motion Control systems – for the construction of small machines to the same extent as complete packaging lines
- Engineering reduced substantially by the use of open software libraries
- Fast, problem-free integration of all automation components

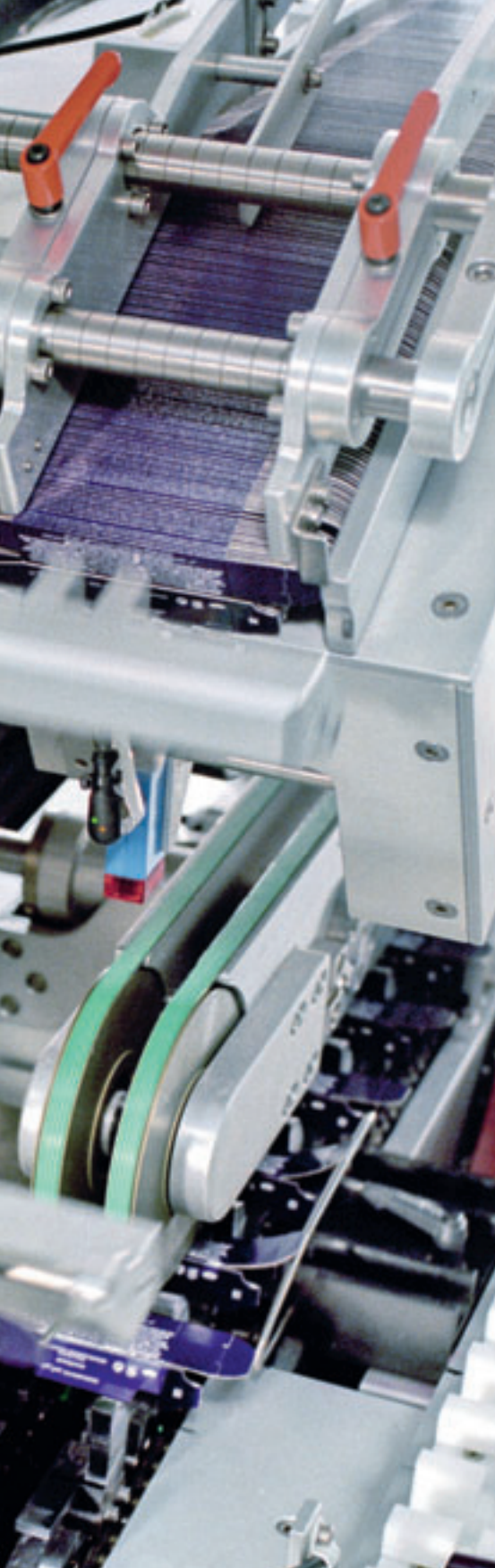
Siemens AG
Industry Sector
Motion Control Systems
P.O. Box 31 80
91050 ERLANGEN
GERMANY

www.siemens.com/packaging

Subject to change without notice
Order No.: E20001-A20-P620-47-7600
Dispo 06372
21/12634 MK.MC.20.VERP.52.8.06 SB 04082.
Printed in Germany
© Siemens AG 2008

The information provided in this brochure contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.



Weckerle GmbH gets packing

World market leader converts a new carton packer to an integrated Motion Control system

A multitude of work steps and motion sequences have to be precisely coordinated every second in order to pack lipsticks, other cosmetics and pharmaceutical products automatically into small folding cartons. Weckerle GmbH, based in Weilheim, Southern Germany, is a leading manufacturer of cosmetic production machines. It has chosen to obtain its integrated automation equipment from one source. It has recently expanded its range to include tailor-made carton packers. As a result, Weckerle GmbH now offers a complete range of machines covering everything from the preprocessing of the basic material through to the product packed ready for shipment. Everything revolves around our drive-based Motion Control System that integrates the essential performance and functionality in a compact form.

Gaining from integration

Siemens control and visualization equipment had already been an indispensable part of most Weckerle machines for a long time. The company has now found the high-performance drive and control solution it had been looking for by coupling the SIMOTION® D445 drive-based Motion Control System and converters with the matching SINAMICS® S120 modular family.

Weckerle programmer, Leonhard Habersetzer, explained: "The decisive advantage of the new solution is that, in future, we'll have everything under one roof. That means

we'll be able to configure and program logic, Motion Control and visualization on one and the same software platform." The complete integration of the configuration of the HMI system (in future: SIMATIC® WinCC flexible) into the SCOUT engineering system (for logic and Motion Control) has now eliminated the previously typical time-consuming replugging and reloading of separate projects, and significantly simplified the engineering. This gives a timesaving of around thirty percent. The graphic support makes working with the SCOUT engineering system quick and user-friendly.

Packaging

Answers for industry.

SIEMENS

Everything obeys a single command

The carton packer has to pack the just finished lipsticks into folding cartons. That means transforming a cyclical process into a continuously running process. The master for all motions is a virtual master axis generated in the SIMOTION system, which is electronically linked to all the other axes and units.

- The feeder takes the products from the outlet of the previous machine, and places them on the double-chain conveyor belt.
- As soon as the product lies in the loading slot ready for packing, the suction unit of the box-erector picks up a flat pre-cut box from the stock-pile with each revolution.

- The gearboxes are synchronized with the master to ensure that the conveyor belts also run as a synchronized unit.
- Instead of the previous pneumatic system, the lipsticks are now simply slid into their boxes under electronic control. This harmonizes the motions which, in turn, minimize the loads on the mechanisms.

Retool in minutes!

Because all the axes are equipped with electronic drives, formats can be changed almost at the "touch of a button" on the operator panel. This has reduced the retooling time from some two hours to a few minutes. That's an obvious advantage wherever products have to be changed frequently.

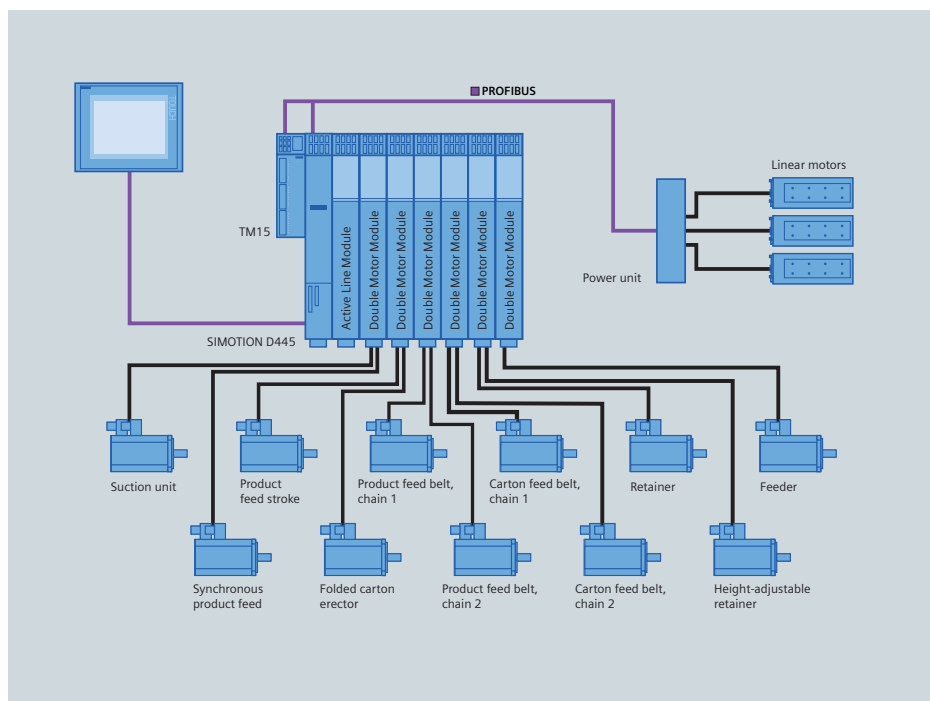
Space-saving solution

The Control Unit CU320 of the SIMOTION D445 controls a total of eleven real axes. A single regenerative Active-Line module supplies five double-axis and one single-axis motor module from the SINAMICS S120 drive family. Last but not least, this new Siemens drive line-up is considerably more compact than the previous solution. That saves valuable space in the control cabinet.

All on a single line

All SINAMICS drive components are connected to each other via a digital DRIVE-CLiQ system bus. That simplifies not only the wiring but also maintenance because drive data are stored in the control unit, and replacement units can be virtually automatically identified by their electronic rating plates.

www.weckerle.com



Special features:

- Spare part supply and support on the customer's premises minimizes downtimes, and ensures high machine availability.
- The new drive line-up is significantly more compact than the previous solution. That saves valuable space in the control cabinet.
- All axes are equipped with electronic drives. This enables a format to be changed almost at the touch of a button on the operator panel, and has reduced the retooling time from some two hours to a few minutes.

Siemens AG
Industry Sector
Motion Control Systems
P.O. Box 31 80
91050 ERLANGEN
GERMANY

www.siemens.com/packaging

Subject to change without prior notice
Order No.: E20001-A20-P620-46-7600
Dispo 06372
21/12359 MK.MC.20.VERP.52.8.05 SB 04082.
Printed in Germany
© Siemens AG 2008

The information provided in this brochure contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.



Present reality?



Future strategy.

Optimized Packaging Line

Answers for industry.

SIEMENS





Optimized Packaging Line: Just the solution for you

Whether in the food and beverage or pharmaceutical industries, the problems are always the same: Machines from various manufacturers must be connected up in one line. That often means high integration costs and long start-up times. And the responsibilities are often unclear, because ultimately each machine builder bears responsibility only for its own machines.

In the end, if the line has been integrated according to specific customer requirements, the large number of different components means high maintenance costs – and thus high operating costs as well.

Furthermore, there's a lack of transparency in the production processes, resulting in high service costs from malfunctions and a great deal of time spent with troubleshooting, since the program structure and machine topology differ.

Automate end to end – and enjoy end-to-end advantages

Optimized Packaging Line, or “OPL” for short, is our concept for solving these problems right from the start. Based on Totally Integrated Automation, it offers you end-to-end automation solutions for packaging lines and machines. OPL integrates the entire packaging line on a common automation and communications standard, thus creating a solid foundation for fully exploiting all aspects of potential optimization throughout its entire life cycle.





Components built especially for the packaging industry

The concept of the Optimized Packaging Line is based on Siemens' many years of experience in various industrial sectors and our application centers for packaging solutions. The OPL has harmonized comprehensive software libraries, sample applications, and best-practice examples into an overall system that standardizes the hardware and software from beginning to end. A selected set of powerful hardware and software components for all packaging-related automation functions ensures a complete automation structure and reduces complexity across the entire packaging line. And it's always updated with the latest technology.

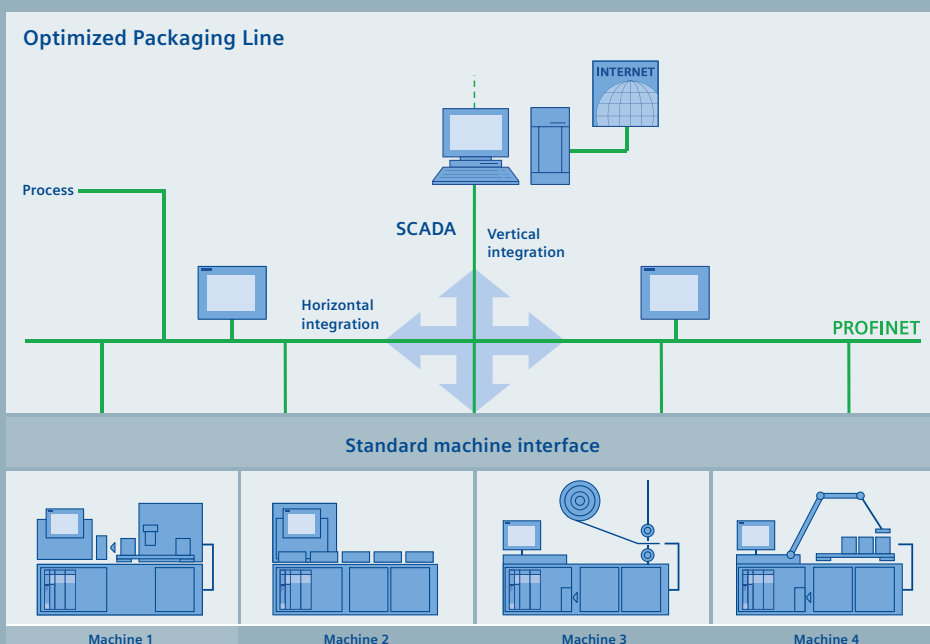
Greater transparency and line efficiency through uniform line supervision

Higher machine availability, greater transparency, more control and improved quality – thanks to uniform line supervision and a standardized operating concept for fault diagnosis and maintenance, you have a complete overview of the state of your system at all times. Machine data and status as well as diagnostic information are defined in the machine in compliance with the international standard, line components are uniquely identified electronically, the information flow is continuous, and documentation easy to follow. Scalable tools keep you informed about the OEE (overall equipment efficiency) and allow drill downs to machine level.



Standardization integrated

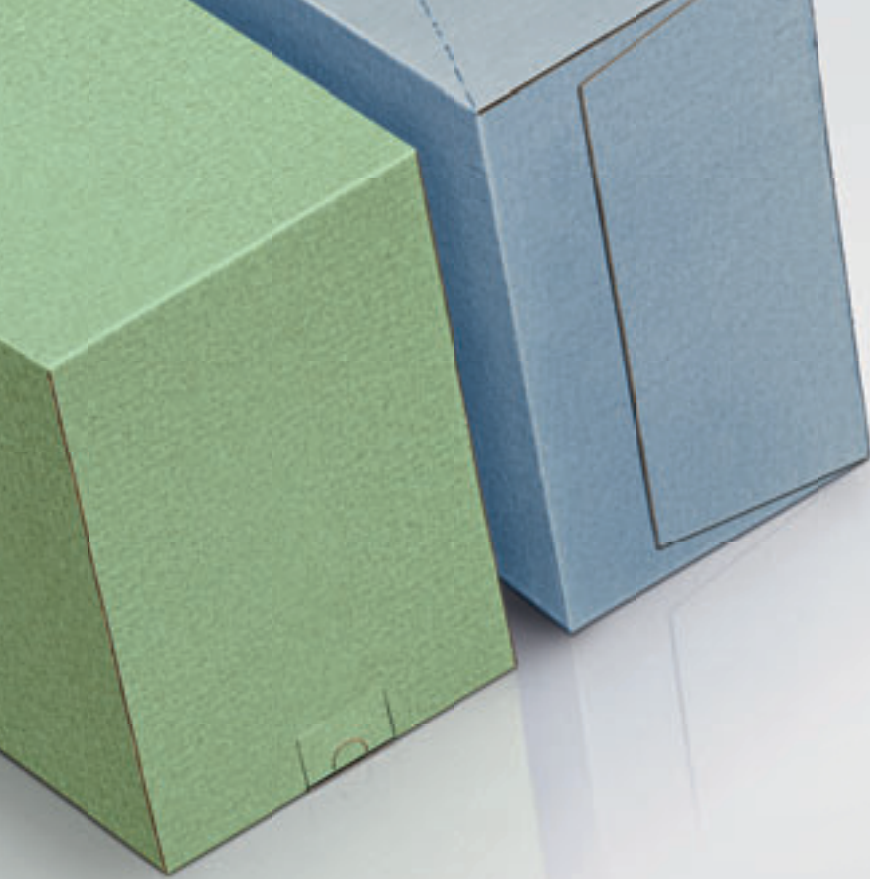
Optimized Packaging Line rigorously applies and implements the international standards of OMAC and the PROFINET User Group. The user organization OMAC has set the goal of defining guidelines for the wide-scale introduction of open and modular automation architectures, and the use of these international standards makes line integration considerably simpler and faster. The details of communication via PROFIBUS or PROFINET are also defined – including uniformly and clearly assigned interfaces for messages and alarms as well as a continuous operating concept throughout the entire system.



Advantages of standardization

Standardization of components reduces complexity, and the resulting increased efficiency helps to reduce:

- Engineering expenditure
- Sources of errors and downtimes
- Training expense
- Spare parts inventory
- Version control and updates



Prefabricated software modules

The use of standard modules offers numerous advantages in terms of simpler engineering, maintenance, or integration.

That's why OPL is rigorously based on open and standardized software structures. Ready-made and easily adaptable software libraries and modules for fundamental automation functions, for instance, for handling modules, reduce the volume of application software needed, thereby increasing the functional reliability of the machines. For example, the scalable OMAC PackTags for SIMOTION® and SIMATIC® provide a uniform interface for all packaging machines for homogenous communication from machine to machine or to the MES (manufacturing execution system).

This significantly speeds up construction, commissioning, and integration of all the machines in the line, standardizes operation, maintenance, and diagnostics, and radically simplifies the link to master computer and IT systems.

Cooperation of the highest standard

As your automation partner, we accompany you along the entire process of automation suitable for OPL. A project team consisting of specialists in packaging automation and employees from our application centers on site oversees your project from the planning phase through the entire run time, and ensures overall homogeneity and consistency. And we support you in integrating the line – whether in Europe or anywhere in the world.



The advantages of the Optimized Packaging Line reduce life-cycle costs and decrease time-to-market.

Easy line integration

Optimized Packaging Line significantly speeds up integration of all machines on the line: Machines can be quickly and simply connected to one another. Moreover, the responsibilities between machine builders and integrators are clearly defined. Risks are substantially reduced during the start-up phase of your packaging line and the lines are easier to expand and maintain. All of this significantly increases efficiency and shortens the time-to-market thanks to shorter commissioning times.

Fewer components – lower costs

Standardization of components reduces the complexity of your line: A smaller assortment of components means simpler maintenance, fewer spare parts and lower stock inventories, and therefore shorter system downtimes. You also save on training, maintenance and engineering, and you can always work with one or just a few equipment partners. All of which adds up to lower costs over the long term.

Automatic supervision of line efficiency

Since line efficiency can be supervised automatically, it's possible to identify bottlenecks with respect to quality, performance, and downtimes right down to the machine and module level. Accordingly, you can initiate targeted actions and make changes. Greater line efficiency means less downtime and improved quality.

High reliability and usability

Uniform operation and continuous engineering systems ensure good usability across the entire line for operators and maintenance personnel. That also means fewer service calls and thus reduces overall life-cycle costs. Potential downtimes are shorter and the need for version control and updates is reduced. Furthermore, it is easier to comply with legal regulations, such as provisions regarding audit trails and user management.

Siemens AG
Industry Sector
Motion Control Systems
P.O. Box 3180
91050 ERLANGEN
GERMANY

www.siemens.com/packaging

Subject to change without prior notice
Order No.: E20001-A590-P620-X-7600
Dispo 06372
21/8339 MK.MC.20.VERP.52.8.01 WS 04082.
Printed in Germany
© Siemens AG 2008

The information provided in this brochure contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.

Future-oriented, holistic, totally integrated: automation solutions for the packaging industry



Whether standard products or totally integrated motion control solutions: as an experienced partner in automation systems, we can offer a unique and comprehensive portfolio of solutions and products for future-oriented packaging machines and lines. We apply innovative concepts based on a common automation and communications standard, modular design, and international standards such as PROFINET and OMAC. And we offer you the best examples of totally integrated and scalable hardware and software: the SIMOTION® motion control system, the SINAMICS® drive family, as well as ready-to-use applications. The advantages provided by such totally integrated automation: simplified commissioning, flexible adaptation, cost-effective production, shorter time-to-market, and maximum productivity. As a reliable partner at your side, we provide consulting and support throughout the complete lifecycle of your packaging machine. We have a global presence – why not see for yourself?