

# SIEMENS

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At the press conference on  
November 26, 2002 in Nuremberg, Germany

Ladies and gentlemen,

I too am very pleased to welcome you.

Shortly before the previous SPS/IPC/Drives, my colleagues Mr. Gierse and Mr. Trummer presented Simotion. This motion control system for applications requiring complex motion complements the familiar and successful Simatic and Sinumerik systems in our Totally Integrated Automation system. Today Simotion is one year old, and I'd like to present Simotion D – the third hardware version of our motion control system.

But first I'd like to say a few words about Simotion and its market entry to-date: Simotion integrates complex motion control and simple logic functionalities within a single unit. With this system we can provide our customers with a unique customer benefit.

Simotion scalably integrates the management of complex motion functions within a single motion control system – on several hardware platforms and with a common engineering system. This gives our customers much greater flexibility than ever in machine planning and design.

### **Trends in the machine building industry**

Several general trends have been important in shaping the development of Simotion: The advances in microelectronics provide new opportunities in the design and construction of machines – especially in applications with complex motion control. At the same time, both drive systems technology and intelligent motion control are gaining enormously in importance. Innovative concepts are boosting the productivity and are significantly improving the profitability for machine builders. The objective in the development of Simotion has been and continues to be the comprehensive implementation of the following market requirements in machine building:

- The replacement of inflexible mechanical machine designs by intelligent servo technology and mechatronic software components, such as the synchronous control of gears and cams, or other cam functionalities
- The integration of motion control, logic and technology functions into a single motion control system
- A uniform engineering system optimized for maximum user friendliness in configuring and programming as well as in start-up and diagnostics
- Excellent scalability and great flexibility of both software and hardware, and support of modular machine designs through distribution of the control components and high-speed bus communications
- Hardware-independent user programs and consequent freedom in the choice of the hardware platform: controllers, industrial PCs or integrated into the drive.

## **Simotion's first year on the market**

The Simotion system has now been on the market for one year and has already established its success. In the twelve months since the previous SPS/IPC/Drives we have implemented various applications in several industries in conjunction with our customers.

Some examples in the following industries:

### **1. Packaging:**

- Wolf: Vertical forming, filling and sealing machine  
13 such machines are already in use.
  - Software-shifted image
  - Flexible adaptation to new sizes
- SIG Cantec: Lid stamping machine. Key customer benefits:
  - Maximized materials utilization
  - Enhanced dynamics and precision
  - Modularization of the machine

### **2. Metalforming:**

- Schuler: Conveyor system with cutting press
  - Up to 60 cycles/minute with an accuracy of 0.05 degree
  - Simple dimension change (length) from a few centimeters up to three meters
  - Sheet-metal cutting system for automobile production

### **3. Plastics:**

- Bekum: Stretch-blow forming machine
  - Up to 12,000 bottles per hour (reheat and blow)
  - All in one compact machine
  - Typical products: PET bottles, shampoo, pharmaceutical articles etc.

## **Simotion C and P**

We started a year ago with two hardware versions: Simotion C – controller-based in Simatic S7 design, and Simotion P – industrial PC-based. Today we are pleased to present to you Simotion D, which is drive-based – the third hardware platform of Simotion. What's new in Simotion D is the integration of the familiar Simotion functionality with the drive software in a single control module. In this approach, the machine control has migrated entirely into the drive and forms a compact unit that's especially well suited for modular machine designs with multiple – even time-critical – axes.

### **Simotion D: Integration of Simotion functionality with the drive software in a single control module**

Simotion D is the result of the customers' need for ways of designing the machine control and drive technology with a high degree of functionality and performance, yet as compact as possible. The axis grouping in Simotion D consists of power circuits for controlling the motors, a power feed that provides electricity for the power units via an intermediate circuit, and – at the core – the Simotion D control unit, which can steer not just a single axis but an entire group of axes.

### **Simotion relies on Profibus and Ethernet.**

Of course the appropriate interfaces that are normally provided in a PLC or in a motion control unit must also be available. Simotion uses mainly Profibus and Ethernet for this purpose.

A Simotion D axis grouping typically provides the following connection options:

- All distributed I/Os from the Simatic spectrum, if necessary in isochrone mode.
- Visualization systems (HMIs)
- Coupling of several Simotion D axis groupings to create modular machines

- Connection to higher-level control systems
- And of course connection to an intranet or the Internet

### **Scout engineering system of Simotion**

Simotion D is completely integrated into the Scout engineering system of Simotion. In this context, “completely” means the integration of all components from actuators/sensors and motors/converters to closed-looped and open-loop control systems to connections with other control and visualization systems – all in a single engineering interface.

### **Simotion-Scout functionalities:**

The essential functionalities of Simotion-Scout are:

- Selection and ordering of the components: From defining the mechanical tasks to the appropriate motors/sensors, converters, controls, I/Os.
- Configuring and parameterization of the motion control axes – from servo controls to electronic gearboxes
- Graphical programming of the machine application
- Graphical design of electronic cams
- Optimized fault detection and convenient trace functions

In Simotion, Siemens has created a multipurpose motion control system that meets the increasingly challenging requirements for motion control in production machines in a single, integrated system. The attributes of this system bring significant advantages to our customers.

## **Advantages of Simotion:**

The three Simotion hardware platforms give our customers greater flexibility combined with a reduction in engineering overhead when planning a new machine. In addition, Simotion reduces the number of hardware components during a platform change. What's more, the integrated and user-friendly engineering system and the integration into TIA cuts engineering costs. The use of industry standards increases market acceptance, protects the engineering investment and minimizes long-term support costs. These benefits, including market acceptance, are enhanced by the global support of Siemens.

## **Which market does Simotion D target?**

Simotion is particularly well suited for series production machines. We are essentially the supplier of automation technology – and responsible for the intelligence of a system. Simotion gives our partners a simpler way of applying their technology know-how selectively. The machine builder no longer needs to be concerned with the integration of drive and control components from different manufacturers, nor with overcoming discontinuities in the technology. By solving these tasks with Simotion, we provide our customers with an important advantage: We save them the often substantial costs of integrating heterogeneous manufacturing worlds into a functioning system.

Simotion is targeted mainly at industries that are involved in packaging, printing, textiles, plastics, metalworking, or in processing wood, glass, stone and ceramics. In view of the extremely compact design and comprehensive functionality – combined with superlative performance – we anticipate that Simotion D will be used in the above-mentioned industries mainly in machines, in which its functionality must reside directly in the drive and where compactness is essential. In addition, we expect Simotion will be used in high-performance machines for motion control requiring

high-speed I/Os. Also in applications where motion control ranging from simple positioning to complex motions must be managed and that require designs for modular multiaxis machines with high-speed coupling in isochrone mode.

Ladies and gentlemen,

Simotion expands Totally Integrated Automation by adding motion control functionality for complex motion control. As a result, additional user groups can benefit from the advantages of this uniquely complete range of automation and drives technology from a single source.

Thank you very much for your attention!