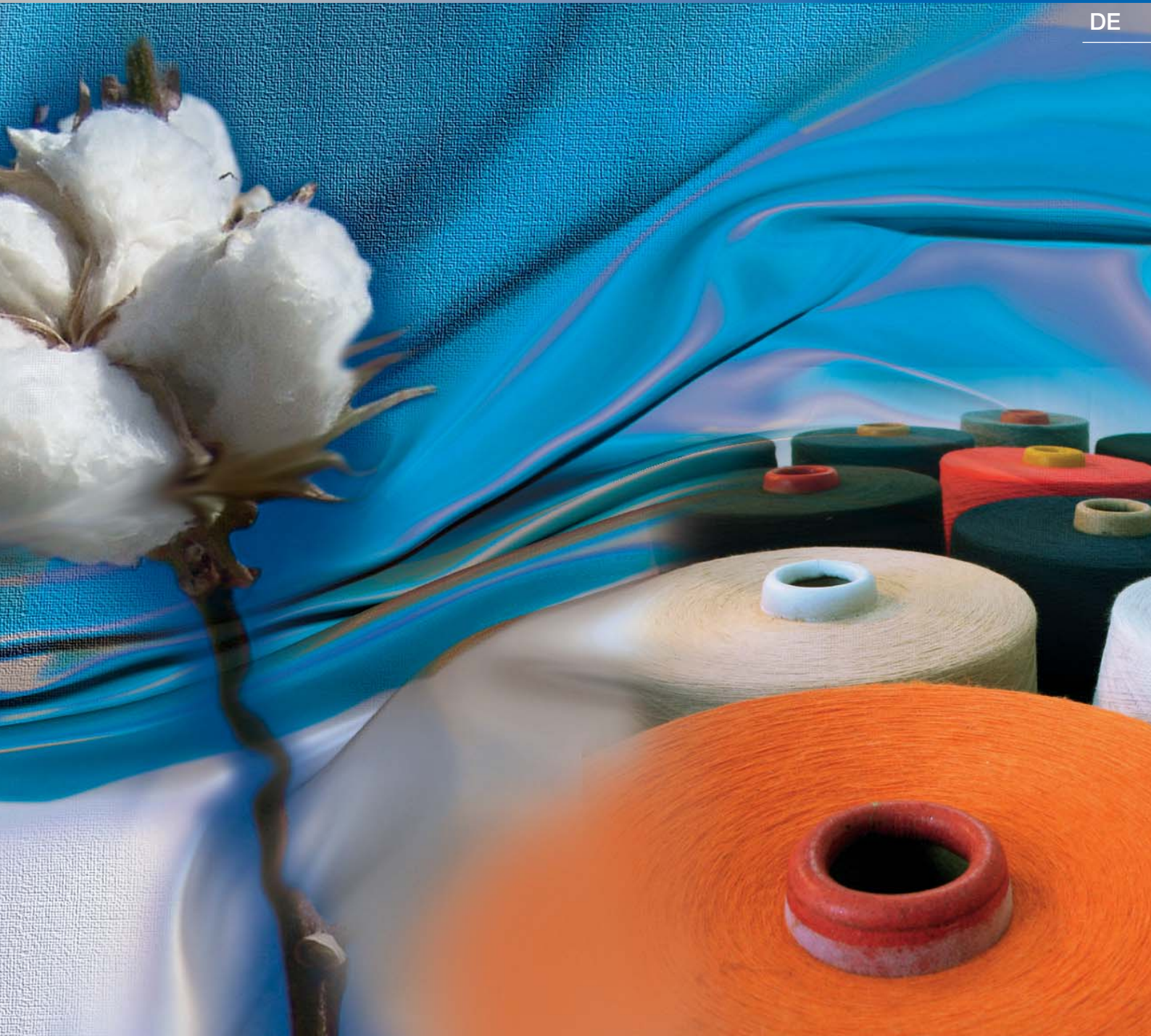


# YASKAWA

## SOLUTIONS FOR THE TEXTILE INDUSTRY DRIVES AND CONTROLLERS FOR TEXTILE MACHINERY

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# Contents

- ▶ 02 About YASKAWA
- ▶ 03 Dedicated Drive Systems for the Textile Industry
- ▶ 04 Our Experience
- ▶ 05 Your Benefit
- ▶ 06 T1000 Inverter Drives
- ▶ 07 Energy Efficient Drive Packages
- ▶ 08 Servo Systems and Machine Controllers
- ▶ 10 VIPA Solutions

## Experience and Innovation

Since 1915 YASKAWA has manufactured and supplied products for machine building and industrial automation. Our standard products, as well as our tailored solutions are well known for their outstanding quality and reliability.

YASKAWA is the leading global manufacturer of inverter drives, servo drives, machine controllers, medium voltage inverters and industrial robots.

We have always been a pioneer in motion control and drive technology, launching product innovations, which optimise the productivity and efficiency of both machines and systems.

Today we produce more than 1.9 million inverters per year. Considering this, YASKAWA is probably the biggest inverter manufacturer in the world.



Furthermore, with a yearly production of more than 1 million servo motors and 25,000 robots we offer a wide range of products for drive automation processes in many different industries. YASKAWA technology is used in all fields of machine building and industrial automation.



Wherever you are –  
Our local Support is near.



Employing more than 14,600 people worldwide

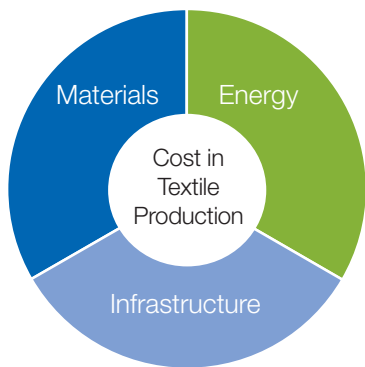
More than 1,350 employees in worldwide service network

More than 1,500 employees in Europe



## Dedicated Drive Systems for the Textile Industry

Textile machinery sets extreme demands on the reliability and robustness of its components. Harsh ambient conditions such as high air humidity, dust and fibres require application specific cooling concepts and solutions.



Strong competition in the textile industry puts enormous pressure of costs on manufacturers and purchasers of textile machinery. Three factors play an important role during the manufacturing process of textile products: Costs of infrastructure, costs of material and energy requirements. With our innovative

solutions, such as the SPriPM drive package, we give our customers new possibilities to increase their competitiveness.

### Reliability and Competence

All over the world, our drive solutions power textile machinery and keep it running 24 hours per day, 365 days per year. Textile machinery disruptions quickly result in enormous production outage losses. Down-times like these need to be

minimised by means of careful engineering and a selection of reliable drive components and systems. Knowing that, YASKAWA is a partner that provides competent engineering teams and high quality products specifically designed for the textile industry.

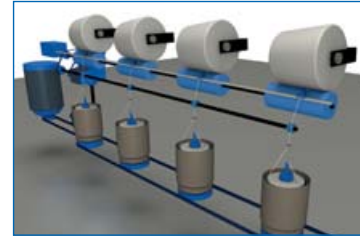
### Expertise and Experience

A complete power range from 0.1 kW to 185 kW is available with standard and specific functionality to cover the application requirements of the textile industry. The T1000 Inverter Series, as well as the Sigma-5 and Sigma-7 Servo Series have been developed with a focus on reliable operation, easy handling and overall cost saving aspects. Controllers, I/O-Systems and HMIs complete our portfolio for the textile industry.



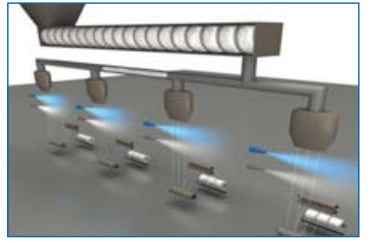
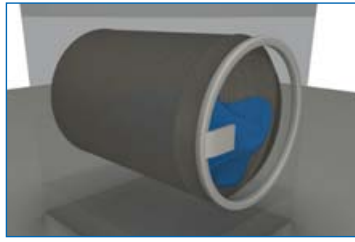
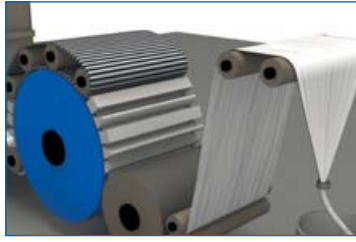
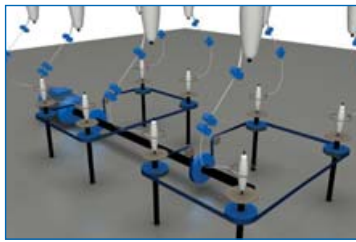
## Our Experience

We provide great experience in the textile industry, derived from long term partnerships. Application-specific solutions ensure high efficiency and profitability for our customers. From bale opening to the weaving machine, from extruders to winders – YASKAWA knows the specific application requirements.



## Process Flow

Process	Requirement	YASKAWA Solution
Fiber Preparation	Resistance to Fibres and Dust	Cold Plate Drives to adapt to Heat Sinks suitable for Textiles
Combing	Energy Saving Functions	
Draw Frame	Deceleration of High Inertia Loads	Speed Synchronisation as Standard
Winding	Control Accuracy	
Carding	Synchronisation	Power Loss Ride-through Function
Spinning	Speed Accuracy	
Weaving	High Torque at Zero Speed	Textile specific Drive Design
Knitting	Chemical Aggressive Environments	
Texturing	Resistance to Power Supply Outage	24h Non-stop Operation
Sliver Production	Multi Axis Synchronisation	
Refining	High Torque	PCB Coating
Printing	Energy Efficiency	
Smoothing		SPRiPM Drive Packages
Washing, Dying, Bleaching		
Extruding		
Weft Knitting		
Finishing		



## Your Benefit

### Coated PCBs

T1000 Series Inverter Drives are equipped with specially coated PCBs which enhances their protection and improves the service life of the drive in moist, aggressive and dusty working environments.



### Cold Plate

The Cold Plate feature enables the drive applications to be run with external cooling systems, such as water cooling or convection cooling in standard or custom systems.

### Momentary Power Loss Ride-through Function

Our T1000 Inverter Drives ensure continued production without allowing the motor to coast. Should a power outage occur, our inverter drives prevent a standstill of the motor, therefore reducing production losses caused by deceleration and restart, to a minimum.

## T1000 – Solutions for the Textile Industry

The T1000 series of inverter drives has been developed with a focus on reliable operation, easy handling and overall cost saving aspects. They are available with standard and specific functionality to cover the application requirements of the textile machine industry, with a complete power range from 0.1 kW to 185 kW.

- ▶ Heat sink and cold plate versions for water cooler mounting available (finless = fanless)
- ▶ PCB coating suitable for textile production – for highest reliability in typical textile applications
- ▶ Traverse function – for optimised yarn winding
- ▶ Power loss ride-through function – safe operation status at all times, including for synchronised drives with shared DC link
- ▶ Designed for 10 years of maintenance-free operation



Designed for applications in the textile industry

### T1000A

#### High Performance Inverter Drive

The T1000A is a high performance vector control AC drive specifically developed for textile applications. Special hardware and software features make this inverter drive especially suitable for the needs of the textile industry.

- ▶ Pulse train output and pulse train speed reference – easy and effective synchronised line speed
- ▶ High precision open- and closed loop control of induction and permanent magnet motors

### T1000V

#### Compact Inverter Drive

The T1000V is the compact little brother of the T1000A, perfectly suited for open loop vector control applications in the textile industry. With its compact size it can be used almost anywhere.

- ▶ Sensorless control of induction and PM motors
- ▶ Compact design with a power range of up to 18.5 kW
- ▶ 1-phase model available

## SPRiPM Drive Packages– The Solution

The SPRiPM package is a plug-and-play combination of an inverter drive teamed up with a permanent magnet motor that exceeds IE4 efficiency requirements and provides premium efficiency even in partial load conditions. Thus SPRiPM opens new potentials for saving energy in pump, fan, or other variable torque applications that still commonly use IE1 and IE2 motors.



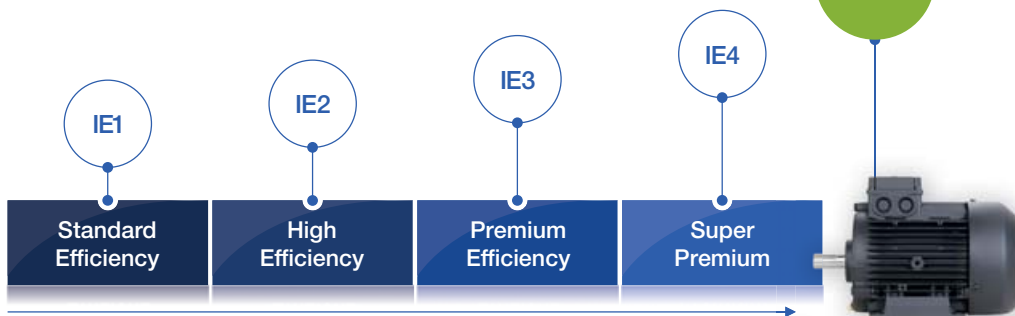
Inverter Drive  
A1000 or V1000

+



SPRiPM  
Motor

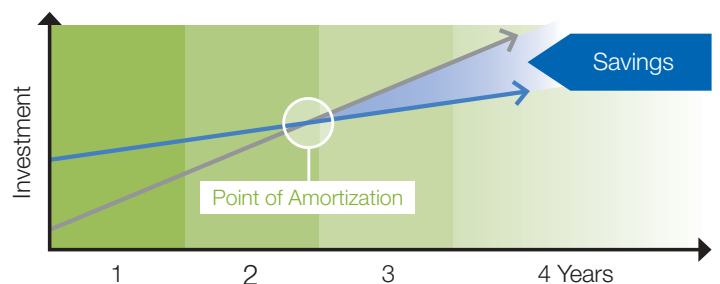
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## The Advantage of the SPRiPM Package

Even if the package of SPRiPM motor and an A1000 or V1000 inverter drive requires slightly higher initial investment than a solution with IE2 motor and inverter drive, it pays for itself within a stunningly short time in a broad range of applications – very often in less than 2 years. From this point of amortization onwards, the SPRiPM drive package saves a significant amount of money.

— SPRiPM motor and V1000    — IE2-motor and inverter drive



## Servo Systems

With more than 9 million servo systems in the field, YASKAWA has a lot of experience and technical know how in Motion and Control. The Result: Excellent performance and an extremely low fault rate.

Best in class  
for stability  
and control  
precision

### SIGMA-5

Precise, scalable and highly dynamic



The Sigma-5 series offers standard rotary motors as well as linear and rotary direct drives and linear sliders. This broad variety of drive systems covers all market demands with regard to compact size, high dynamics, high efficiency, low maintenance and outstanding reliability.

- ▶ Advanced auto-tuning for maximum machine performance
- ▶ One-parameter tuning for fine adjustments
- ▶ Quickened response for reduced settling time for positioning
- ▶ High-resolution encoder for high-precision positioning and microfabrication (Resolution: 1,048,576 pulses/revolution)
- ▶ Enhanced vibration suppression
- ▶ Network Options: MECHATROLINK, CANopen, EtherCAT, POWERLINK, PROFINET
- ▶ Motion Control Options: Indexer, MP2600iec

### SIGMA-7

Next generation servo systems

With the new Sigma-7 series, YASKAWA has managed to create a masterpiece in reliable precision performance. Thanks to its new features, start-up is possible in just a few minutes. Quick, application specific drive adjustments and maximised product output are guaranteed.

- ▶ New amplifiers in book style for side-by-side mounting
- ▶ Embedded Fieldbus: EtherCAT
- ▶ Single and double axis amplifier
- ▶ Functional safety in compliance with SIL3, PL-e, CAT3
- ▶ New technology features for quick start-up and application specific adjustments
- ▶ Compact motor design
- ▶ High torque, small size
- ▶ New generation 24-bit high resolution encoder
- ▶ Protection class IP67





## Machine Controllers

YASKAWA machine controllers manage complex systems with servo and inverter drives. High-speed communication provides high-performance and high-accuracy motion control, even for complex movements.

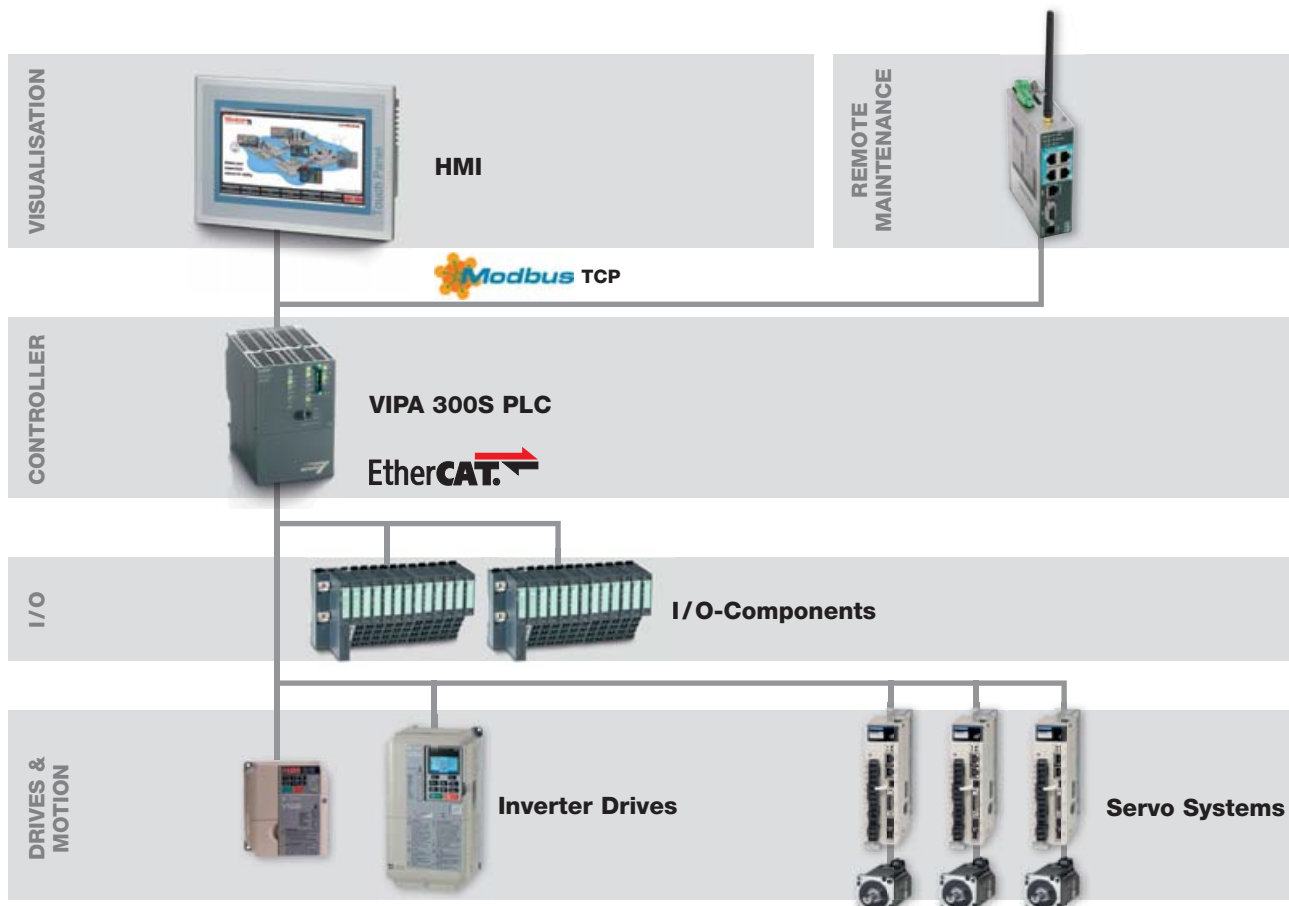
### MP3200 IEC & MP3300 IEC

High performance machine controller for automation technology

- ▶ Up to 62 axes
- ▶ Communication: Modbus TCP/IP, MECHATROLINK-III, Ethernet (100 Mbps)
- ▶ PLCopen function blocks
- ▶ Reusable code library



## Inverter Drives and Servos controlled by one of the fastest PLCs on the Market



## VIPA SLIO

### Compact and Smart I/O System

SLIO is an extremely compact I/O system, once again setting new standards in the automation industry. By means of the modular and extremely compact SLIO, the realization of almost every automated solution will from now on be simpler and especially more economical. It is universally combinable and deployable with every established VIPA system and nearly all those of other producers.



- ▶ Compact and space-saving design
- ▶ Clever labeling and diagnostic concept
- ▶ Installation and maintainability
- ▶ High performance



## VIPA 300S PLC

### The CPUs with SPEED7 Technology

300S, powered by SPEED7 makes this system one of the fastest and most efficient,  $\mu$ Controller based systems, programmable with SPEED7 Studio from VIPA.

- ▶ SPEED7 forms the basis of all existing and future systems
- ▶ The SPEED7 technology is completely in the hands of VIPA and ensures sustainability. This guarantees that all VIPA products are, and will continue to be, perfectly coordinated with each other
- ▶ The SPEED7 chip guarantees the highest performance, the most flexible communication and intelligent memory management. Therefore SPEED7 is...
  - ... a flexible automation platform
  - ... one of the fastest STEP7 PLC processors of the world
  - ... a guarantee for maximum speed and highest clock rates
  - ... an upgrade of existing installations to the most modern level

## VIPA Touch Panels

VIPA professional touch panels with display sizes from 4.3" to 12.1", operating system Windows Embedded CE 6.0 and Runtime Movicon 11 can be used universally. VIPA eco panels in 4 different display sizes from 4.3" to 15" are designed for maximum reliability and flexibility, as well as longevity and quality.



## SPEED 7 Studio

SPEED 7 Studio – the new VIPA engineering software helps you to use all SPEED7 controllers even more economically and efficiently. The new, intelligent hardware configuration, the intuitive user interface and the open system concept make SPEED7 Studio the powerful and easy to use tool it is, for: Optimizing automation tasks, reducing development efforts to a minimum, saving cost and time intensive software training.

Users can focus on their actual engineering tasks. The process image calculation makes SPEED7 Studio a highly efficient tool, integrating all products of the SPEED7 world.



- ▶ Supports 11 different types of cam disks
- ▶ Can write IEC 61131-3 code, and generate cam disk tables during runtime
- ▶ Supports advanced cam disk and gear functions

## Drive Options

### Inverter Drives

#### Braking / Filters

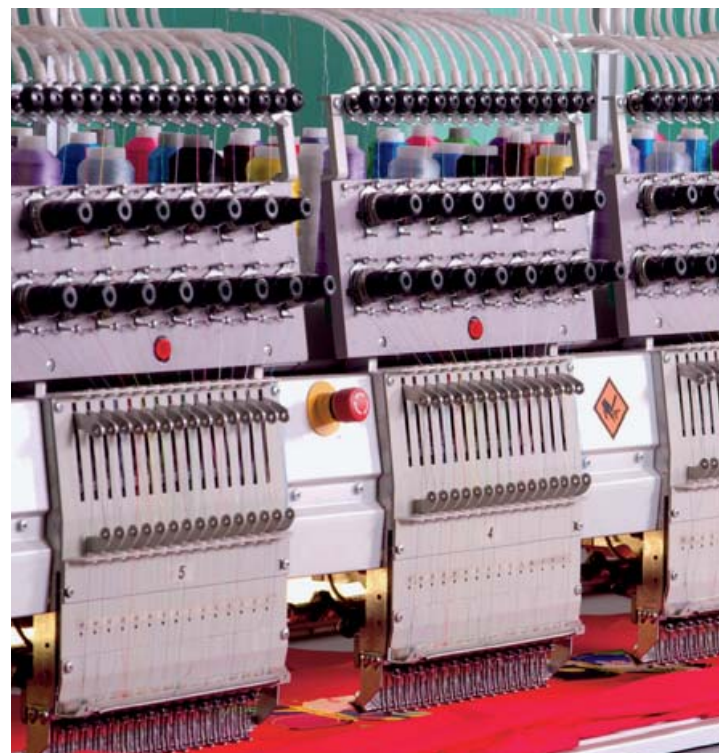
- ▶ AC chokes, reducing harmonics
- ▶ EMC-Filters
- ▶ Output noise filters
- ▶ Braking choppers and resistors

#### I/O, Communication Options

- ▶ Analogue and digital input/output option cards (T1000A)
- ▶ Speed feedback options for incremental encoders (T1000A)
- ▶ Field bus options: DeviceNet, CC-Link, CANopen, MECHATROLINK, PROFIBUS-DP, EtherCAT, POWERLINK and Ethernet IP

#### Human Machine Interface

- ▶ 8 Language LCD clear text display
- ▶ Parameter copy unit



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