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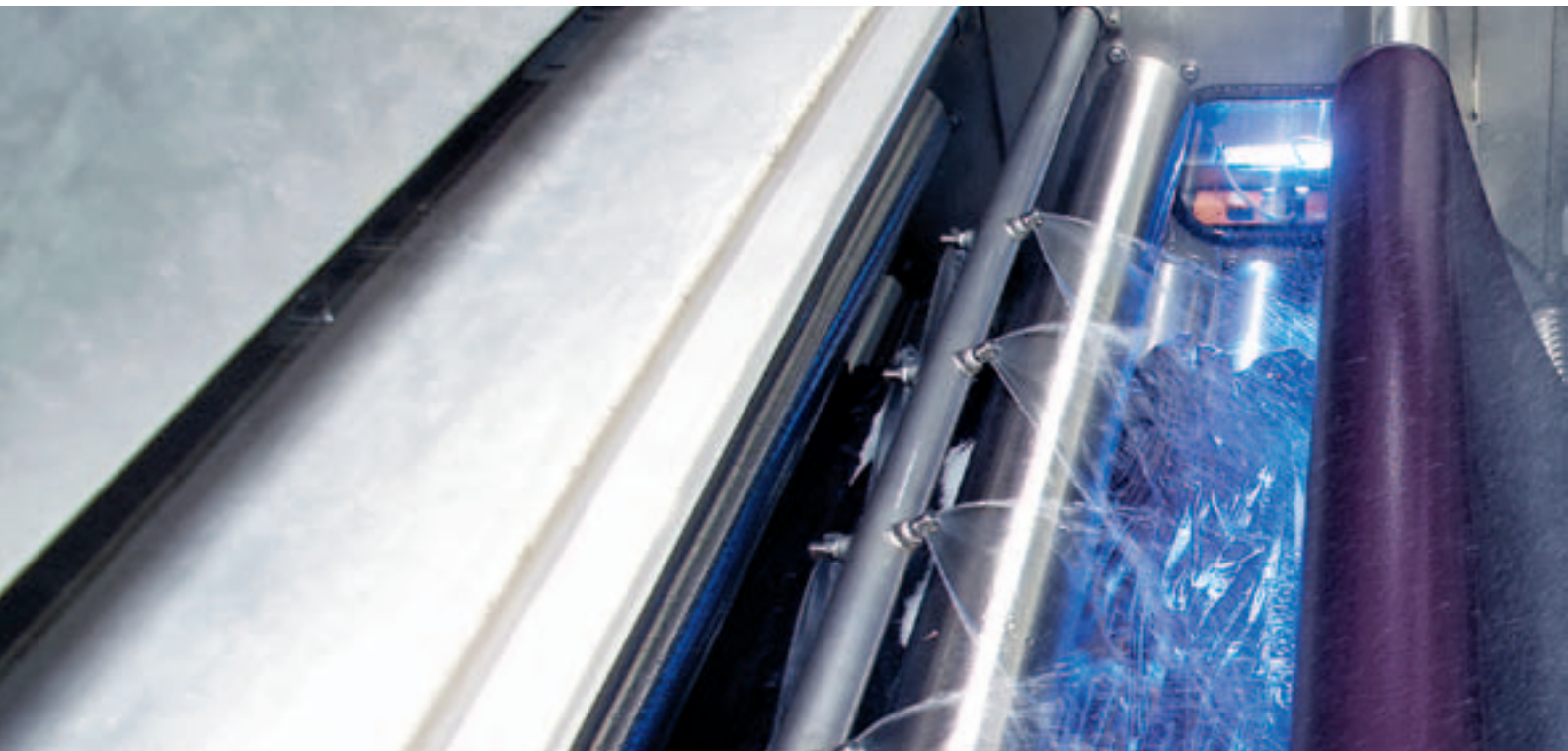


Perfect textile finishing
solutions in record time

Finishing Toolbox: Solutions for finishing
continuous material webs

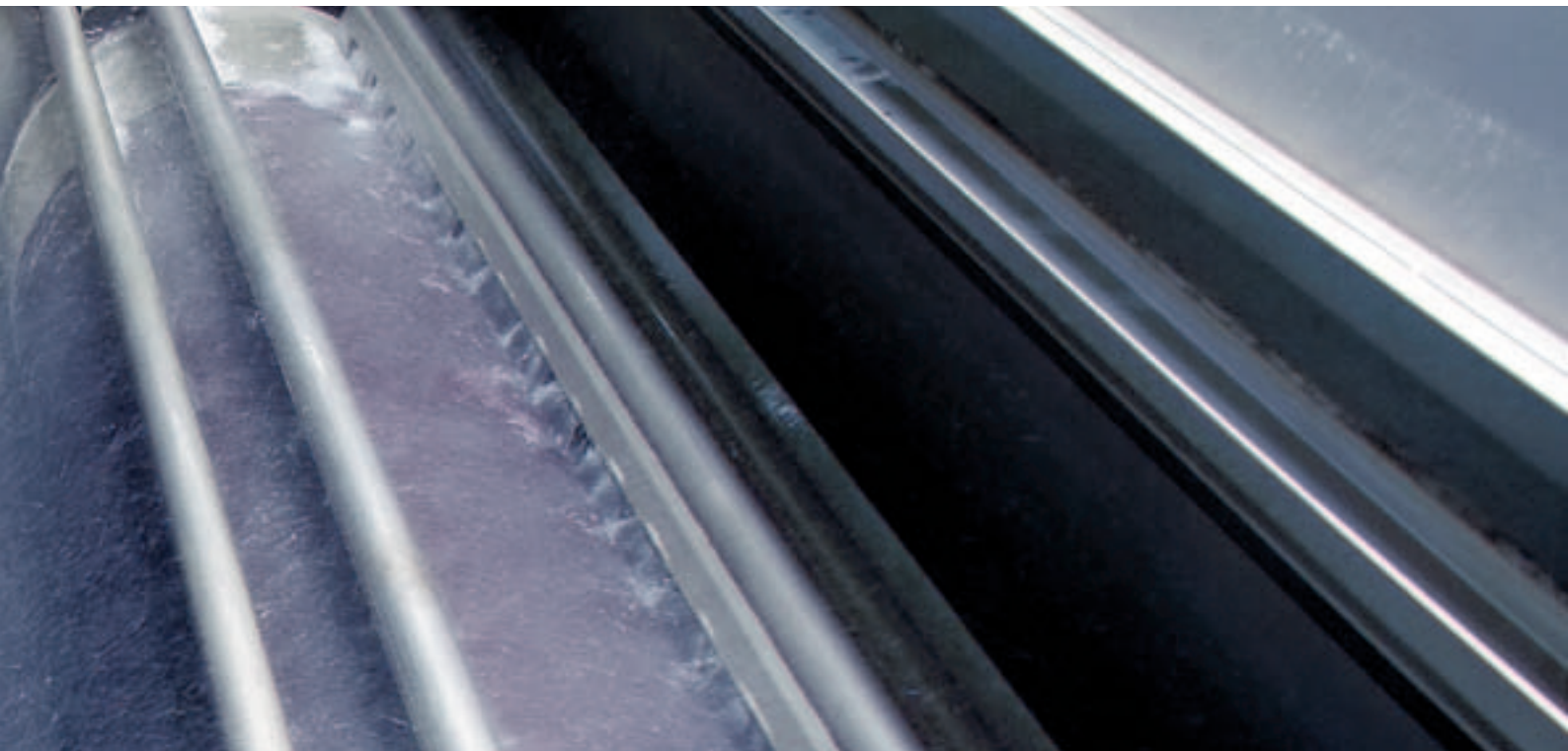
Solutions for Textiles

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Tailor-made solutions for textile finishing – with minimum effort: the Finishing Toolbox

The textile industry is increasingly facing the challenges posed by rising production rates, maximum availability, high flexibility, optimum product quality and minimum lifecycle costs. In parallel industry specific technologies are placing ever increasing demands on the automation. Therefore, concepts with which you as a machine builder in the textile industry can continuously optimize the productivity of your solutions are in demand.



Totally convincing: the comprehensive portfolio from Siemens.

As a system supplier, we address the complete range of machines for finishing continuous material webs, with our portfolio for automation and drives technology. As a machine builder, you can depend on the latest state-of-the-art technology, customized functions and outstanding quality with our products, systems and services. For instance, our mechatronically optimized machine concepts ensure a high degree of flexibility, increase the cycle rates, shorten changeover times and reduce maintenance costs. Advantages that pay-off – day in, day out.

Typical applications for our solutions:

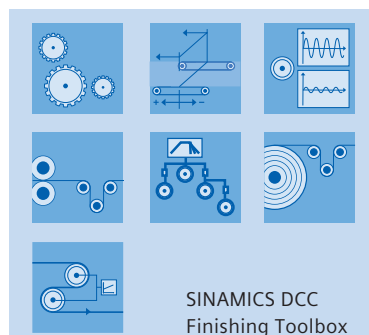
- Classic textile finishing: washing, bleaching, mercerizing, dyeing, drying
- Textile printing
- Calendering
- Heat-setting
- Thermo bonding
- Coating and laminating of non-woven materials and technical textiles
- Adhesive application
- Powder coating
- Impregnating viscose, glass and carbon fibres
- and many more

Outstanding: the SINAMICS DCC Finishing Toolbox

The Finishing Toolbox – a standard library of SINAMICS DCC application blocks that can run on the SINAMICS S120 motion control drive system and that have been specially created for you. This means that you can profit from fully functional solutions and tested know-how – perfectly documented and tested in advance.

The Finishing Toolbox significantly simplifies material web finishing applications - allowing for more margins when it comes to pricing and deadlines. It includes open, parameterizable blocks, which optionally can be combined with the SINAMICS S120 Safety Integrated functions.

With these pre-configured functions and applications you can realize perfectly tailor-made solutions in the shortest time.

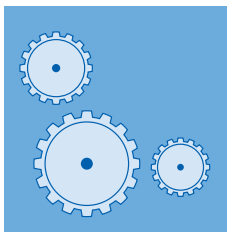


Getting there faster – with the Finishing Toolbox applications

Graphic programming with SINAMICS Drive Control Chart (SINAMICS DCC) in the SINAMICS S120 drive system allows the drive functionality to be adapted to specific machine configurations and technology-specific features to be added. With its Finishing Toolbox, Siemens offers a library with tried-and-tested blocks – specifically for applications in the textile industry – with which individual automation solutions can be quickly and reliably created.

SINAMICS DCC and the Finishing Toolbox offer you the following advantages:

- Quick and reliable implementation of automation and drive solutions using pre-configured and tested parameterizable blocks
- Adaptation to individual requirements as blocks can be freely combined to supplement or modify your own application-specific blocks
- Blocks with machine builder specific know-how can be protected



SINAMICS DCC Electronic Gearbox

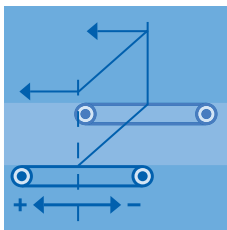
The SINAMICS DCC Electronic Gearbox application is used to realize angular synchronous gearing with freely selectable ratio between several axes. It can be used universally for continuous material webs.

With the SINAMICS DCC Electronic Gearbox application, two or more axes can be operated with precise angular synchronism without requiring a mechanical coupling.

This application is suitable for continuous material fabric and non-woven material webs as well as for fibres and yarn.

General properties:

- A real or virtual master can be used
- Gear ratio can be input as a rational number
- Integrated runtime correction



SINAMICS DCC Separate Chain

The SINAMICS DCC Separate Chain application was specifically created for the control of transport chain drives in stenter frames. In this application two chains guide the material web in angular synchronism through the machine to achieve precise alignment of the material web at thread level.

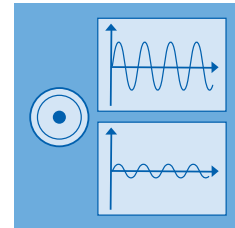
This application is based on the SINAMICS DCC Electronic Gearbox, and enables angular synchronous gearing between two endlessly rotating rotary axes with a fixed ratio of 1. During synchronous operation a relative offset between the synchronous axes can be set.

SINAMICS DCC Harmonic Wave Compensation

The SINAMICS DCC Harmonic Wave Compensation application can be used to counteract harmonics. The advantages: relieves the speed controller and reduces speed ripple.

Application features:

- Can be flexibly adapted for a particular machine
- Independent compensation of up to three sinusoidal, periodic torque harmonics



SINAMICS DCC Line Tension Control

The SINAMICS DCC Line Tension Control application was developed to create a flexible, parameterizable solution for tension or dancer roll based control tasks with SINAMICS S120 as a higher-level controller. It is suitable for web-type materials in the textile industry.

To set the required material tension and/or to ensure correct material transport through the machine, the standard SINAMICS DCC Line Tension Control application includes various closed and open-loop control modes:

- Tension control using torque limiting
- Tension control using speed adaptation
- Dancer roll position control using speed adaptation

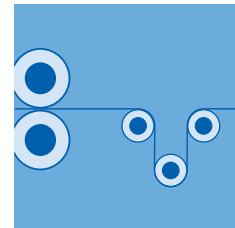
Open-loop control mode:

- Indirect tension control (tension pre-control) using a torque limit
- Draw control (ratio between speeds)

Additional functions:

- Torque pre-control (tension, friction, acceleration)
- Line operation, without closed-loop control

Typically the components involved in the closed-loop control are part of a larger system/machine, which may include several tension zones and also winders.



SINAMICS DCC Setpoint Cascade

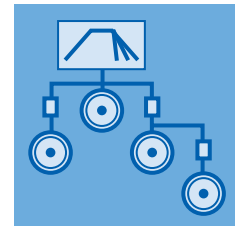
The SINAMICS DCC Setpoint Cascade application allows a velocity cascade to be calculated in the drive. This is designed for larger production lines involving a minimum of eight drives.

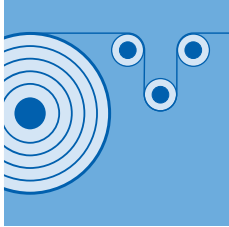
The setpoint cascade application comprises of system ramp-function generator and setpoint cascade function blocks. The system ramp-function generator operates as a central ramp-function generator for the complete production line and is coupled to the higher-level controller.

Communication to the PLC can be realized via PROFIBUS or PROFINET. To control the overall cascade a separate setpoint cascade is used for each drive.

Function overview:

- Group setpoint
- Supplementary setpoint for catching up or closed-loop dancer roll control
- Individual operation



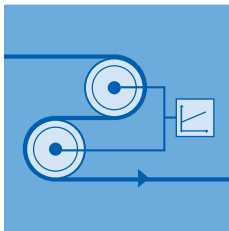


SINAMICS DCC Winder: Solution for winder applications

The SINAMICS DCC Winder application is directly implemented in the drive and addresses a wide range of winder applications with one single application software package. As a result of its openness, the application can be configured or if necessary modified as required. The application allows a winder or unwinder to be implemented for the widest range of applications – also in textile machines. Machine builders can optimally incorporate their existing know-how – and profit from the fact that the look & feel is similar to that of a function chart.

The following winder functions are available:

- Closed-loop control mode: closed-loop dancer roll position control with speed correction, closed-loop tension control with torque limiting, closed-loop tension control with speed correction and open-loop torque control (indirect closed-loop tension control)
- Integrated diameter calculation using the ratio between the material web velocity and winder speed
- Optional: tension reduction for winders (winding hardness characteristic)
- Torque pre-control (tension, moment of inertia compensation, friction)



SINAMICS DCC Load Sharing Control

Coupled axes are used in a large number of machines. The coupling can either be rigid (direct) or flexible (through the material web itself). In such cases the load must be distributed between the coupled drives.

The SINAMICS DCC Load Sharing application offers the following features:

- Torque de-coupling
- Overcontrol and torque limiting
- Droop and compensation

Advantages of a correctly adjusted load distribution:

- Energy efficiency
- Less heat is generated



Value-added for machine and plant

Whether talking about productivity, flexibility, costs, safety or shorter times to market: our comprehensive portfolio can play a decisive role for you in setting new standards with your solutions – and so helping you to sustainably improve your competitiveness. Our portfolio precisely addresses the issues that allow you to fulfill the continuously increasing challenges in your industry.

Complete portfolio from a single source

As your partner, we can offer you all of the components that you need to realize first-class solutions for finishing continuous material webs:

SIMATIC S7-300: This modular controller is the optimum solution for applications in central and distributed topologies. In addition to standard automation functions, safety technology and motion control can also be integrated.

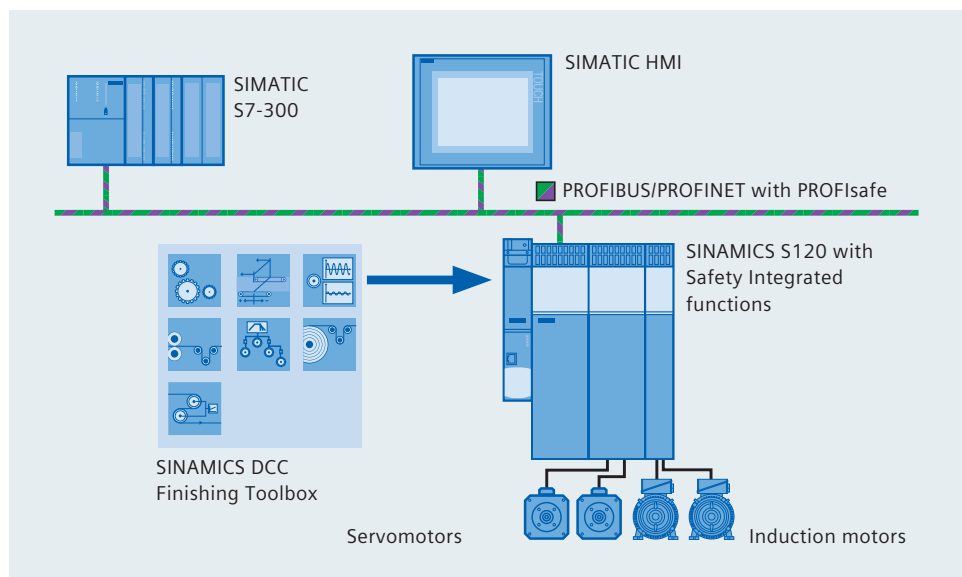
SIMATIC HMI: The globally-leading, complete and seamless range of products and systems for all tasks involving operator control and monitoring.

SINAMICS S120: This modular drive system is the first choice for high-performance motion control applications in industrial machine building and plant construction.

Powerful and high-performance motors for motion control applications:

From our extensive motor portfolio, you can select the optimum motor that is precisely matched to the SINAMICS S120 drive system for your application. Especially our 1LE1 induction motors, MOTOX geared motors and 1FK7 servomotors have admirably proven themselves in textile machine applications.

In addition to their outstanding properties and their perfect interaction, our components set themselves apart through the consequential use of well-proven communication standards such as PROFIBUS and PROFINET.



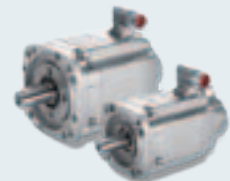
SIMATIC HMI



SIMATIC S7-300



SINAMICS S120



1FK7 servomotors



1LE1 induction motors



MOTOX geared motors

Additional information:
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