Complete automation solutions from one company

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How ABB can help you

Customized packages for manufacturers of plastics production machinery
– From control systems to the motor shaft
– From speed and torque to motion control
– From planning to commissioning and servicing

Energy efficiency
– High efficiency motors and drives
– Energy optimized control procedures
– Process optimization

Ease to use
– Commissioning assistant
– Uniform engineering tool

Connectivity
– Wide range of communication systems – Remote monitoring, parameterization and diagnosis of all components via ABB’s PLC

For more information please contact your local ABB representative or visit:
www.abb.com/drives
www.abb.com/plc
www.abb.com/motion

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Energy efficiency
ABB solutions are designed to use energy more intelligently - helping our customers both save money and reduce their environmental impact.

Flexibility
ABB offers a complete range of control solutions, from simple dedicated systems through state of the art modular systems. ABB’s solutions can be easily adapted and extended to meet the changing needs of your business.

Reliability
ABB customers are able to draw on our unrivalled global experience gained from thousands of applications in drives, controls and robotic systems for a wide variety of industrial applications.

Your global partner
ABB’s global support network ensures the fastest possible delivery times and the responsiveness on site service anywhere in the world.

Complete service from concept to commissioning
ABB’s wide portfolio solutions is backed by all the necessary support services to ensure that the system is up and running through design, development, delivery and commissioning. We also provide comprehensive site services to keep the equipment in peak operating condition.

Experience
ABB customers are able to draw on our vast global experience gained from many decades of implementing motors, drives, controls and robotic systems for a wide variety of industrial applications.

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Power and productivity for a better world

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Different AC and DC solutions are employed depending on the plastics process, type and size of the extruder. Different ranges of drives are available: efficient, high-performance (low-inertia) AC, high-performance DC, standard-type DC solutions, asynchronous and synchronous reluctance solutions. Drives are used to control various motors in an energy-efficient way, as well as for environmentally and cost-responsible solutions. Motors of all sizes also provide dynamic process control for the extruder systems, including active or passive temperature regulation. For the extruder heating systems, process control can be adapted to gear motors, AC and DC motors, as well as permanent magnet motors.

The melt pump promotes the flow of the raw plastic material and builds up the process pressure. The film must unwind under constant tension. This calls for torque control, which can be achieved by feedback from the extruder load power range suitable for plastics machinery. These are typical drives applications, from speed regulation to motion control. Using highly efficient ABB drives and motors enables machinery to operate with maximum energy efficiency as well as exceptionally reliable and energy-efficient operation. Even tension is vital for the plastic film and calender production. ABB drives maintain the tension within the process pressure. ABB's dynamic control of asynchronous, PM servomotors and ABB synchronous reluctance motors make load correction possible without feedback measurement. ABB's adaptive motor model provides high torque accuracy and high efficiency. ABB's dynamic control of asynchronous, PM servomotors and synchronous reluctance motors enables the rapid correction of load-side disturbances. ABB drives with direct torque control (DTC) provide speed and torque control without sensors. The AC500 enables centralized and decentralized motion control and provides the appropriate platform for more complex safety and security requirements. The Safety-SPS AC500-S also provides the appropriate platform for more complex safety and security requirements.
Optimized for you

- Speed/Torque control
  DTC technology facilitates the precise regulation of motor speed and torque at any time, with or without feedback. ABB’s ABBdrive features a high degree of programmability, including a dynamic control of asynchronous, PM servo motors.

- Adaptive motor model
  Each zone of the heating system, individually and precisely regulated. An adaptive motor model with an auto tuning module with an auto tuning module enables the adaptive setting of the thermostat with set points for normal and standby operation.

- Adaptive thermostat
  Accuracy is increased as required, either by the drive's PID controller or by a trained operator. The drive has built-in pressure-regulated operation (The drive has built-in
  Each zone in the heating system is individually and precisely regulated. An AC500 PLC controller with an auto tuning module with an auto tuning module enables the adaptive setting of the thermostat with set points for normal and standby operation.

- Pressure recording
  Pressure recording is carried out as required, either by the control or locally through the drive's PID controller.

- Synchronization control
  The AC500 enables centralized and decentralized motion control via the PLCopen motion control protocol, and ABB's motion control products: MotiFlex e100, NextMove, MicroFlex e100 and e150. Various sensors are supported. Cyclical correction, such as to combat mechanical slip or for print mark control is also possible.

- Print mark control
  - Energy efficiency
    - High efficiency
    - Direct torque control
    - High speed
    - Low speed
    - Full torque at very low speeds without speed feedback
    - Fast acceleration
    - Operation of the motor will be difficult if efficiency variances

- Control Builder Plus
  - DTC
    - Speed/Torque control
    - Adaptive motor model
    - Adaptive thermostat
    - Pressure recording
    - Synchronization control
    - Print mark control

- Motion control
  ABB's Drive Builder Plus is ABB's unique integrated engineering tool for control systems, networking, control, diagnostic, data analysis, and commissioning. With its built-in configuration, programming, diagnostic, and logging of the entire automation process, it’s ideal for the scanner or Inverter/motor test setup.

- Printed circuit board
  ABB products for automation solutions

- Operating and control technology
  The ACS580 DTC drive can be configured as a stand-alone controller for individual extruders, or as a part of a larger automation system. The ACS580 DTC drive can be used to control both standard IEC asynchronous motors and PM servo motors.

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Extruders

- DC and AC drive solutions
- Servo driven parallel and convergent movements, high mobility
- Speed controlled drive with speed-torque control
- Pressure regulated operation (two-fold speed control)

Mid zone

- Sensorless operation

Filter regulator

- Motor speed control
- Torque and techo control

Winder

- Built-in safety functions module in the drive. Standardized safety functions also in encoderless mode.

Film/calender

- Safety PLC
- Built-in safety functions module in the drive. Standardized safety functions also in encoderless mode.

Power processing

- Motion control
- Print mark control

Pressure regulator

- Pressure recording is carried out as required, either by the control or locally through the drive’s PID controller.

Melt pump

- Pressure-regulated operation

DTC

Direct torque control

SBB’s dynamic control of asynchronous, PM servo motors and ABB synchronous reluctance motors make real-time motor control possible. Using highly efficient ABB drives and motors enables machinery to operate with maximum energy efficiency. Braking energy can also be recovered and used in intelligent concepts such as DC link connections or regenerated back to the supply network.

Advanced motor control

- ABB’s dynamic control of asynchronous, PM servo motors and ABB synchronous reluctance motors makes real-time motor control possible. Using highly efficient ABB drives and motors enables machinery to operate with maximum energy efficiency. Braking energy can also be recovered and used in intelligent concepts such as DC link connections or regenerated back to the supply network.

Post processing

- Speed regulator
- Flying shear

Automation programming made easy

Control Builder Plus is ABB’s unique integrated engineering tool for control systems, drives, spindles, motors, field buses, network and web services. It integrates tools for configuration, programming, diagnostics and monitoring of almost every automation project via an intuitive user interface.
Applications in plastics processing machinery

Functions in plastics processing machinery

ABB products for automation solutions

Optimized for you

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**Applications in plastics processing machinery**

Optimized for you

- **AC and DC drive solutions**
  - Speed and torque control
  - Adaptive thermostat
  - Pressure-regulated operation

**Processing**

- **Melt pump**
- **Extruder 1**
- **Die head**
- **Extruder 2**
- **Accessory drive**
- **Winder**

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**Functions in plastics processing machinery**

- **Melt pump**
  - The melt pump promotes the flow of the raw plastic material and builds up the process pressure. The pump is typically driven at a speed controlled by a speed controller in an external process loop.

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**ABB products for automation solutions**

- **Speed/Torque control**
  - Full torque at zero speed, even without encoder feedback from the motor shaft.
  - High efficiency
  - Operation of the motor at the ideal efficiency curve
  - Direct torque control
  - ABB's dynamic control of asynchronous, PM synchronous and servo motors ensures precise control of the motor's speed and Torque. ABB's Dynamic Torque Control (DTC) provides speed and torque control without sensors.

**Control Builder Plus**

- **ABB drive and control technology**
- **Extruder 1**
- **Extruder 2**
- ** die head**
- **Accessory drive**
- **Winder**

---

Automation programming made easy

- **Energy efficiency**
  - ABB's drives and control technology are highly efficient, reducing energy consumption for optimal performance.

---

ABB drive and control technology

- **Energy efficiency**
  - ABB's drives and control technology are highly efficient, reducing energy consumption for optimal performance.

---

ABB automation technology

- **Operating and control technology**
  - The ACS500 (AC500) family provides the appropriate platform for a wide range of applications, from speed regulation to motion control.

---

Applications in plastics processing machinery

- **Extrusion**
  - The extrusion process involves the feeding of raw plastic material into a heated chamber, where it is melted and then forced through a die to form the desired shape.

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ABB products for automation solutions

- **Optimized for you**
  - ABB offers a broad range of drives and control technology for various applications, ensuring maximum energy efficiency and safety.
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