

Drives and control technology

# Automation solutions Plastics processing machinery

Power and productivity  
for a better world™



# Complete automation solutions for the plastics industry from one company

Plastics processing requires versatility and precision. Through customized solutions, ABB meets your specific needs. Our complete range of packages include AC and DC motors, drives, controls and engineered safety features.

Through this unique approach, all your drive, motor and controls needs are met by a single source.

## How ABB can help you

Customized packages for manufacturers of plastics production machinery

- From control systems to the motor shaft and beyond
- From speed and torque to motion control
- From planning to commissioning and servicing

### Energy efficiency

ABB solutions are designed to use energy more intelligently helping our customers both save money and reduce their environmental impact. These include:

- High efficiency motors
- Energy optimized control procedures
- Process optimization

### Easy to use

- Commissioning assistants
- Servicing assistants
- Uniform engineering tools

### Connectivity

- Analog and digital input and output extensions
- Remote monitoring, parameterization and diagnosis of all components
- Speed feedback interfaces for precise process control
- Automation network compatibility via a wide range of field-bus protocols

### Flexibility

ABB's full complement of products and technologies allow design and delivery of solutions tailored to meet individual needs and optimize investment returns.

### Experience

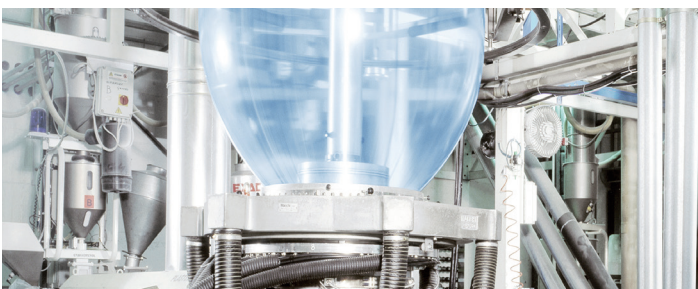
Plastics processing customers are able to draw on our vast global experience gained from many decades of implementing motors, drives, controls and complete systems across a wide variety of extrusion types including: sheet extrusion, film extrusion, blown film, coating, tube/hose/pipe, co-extrusion and compound extrusion.

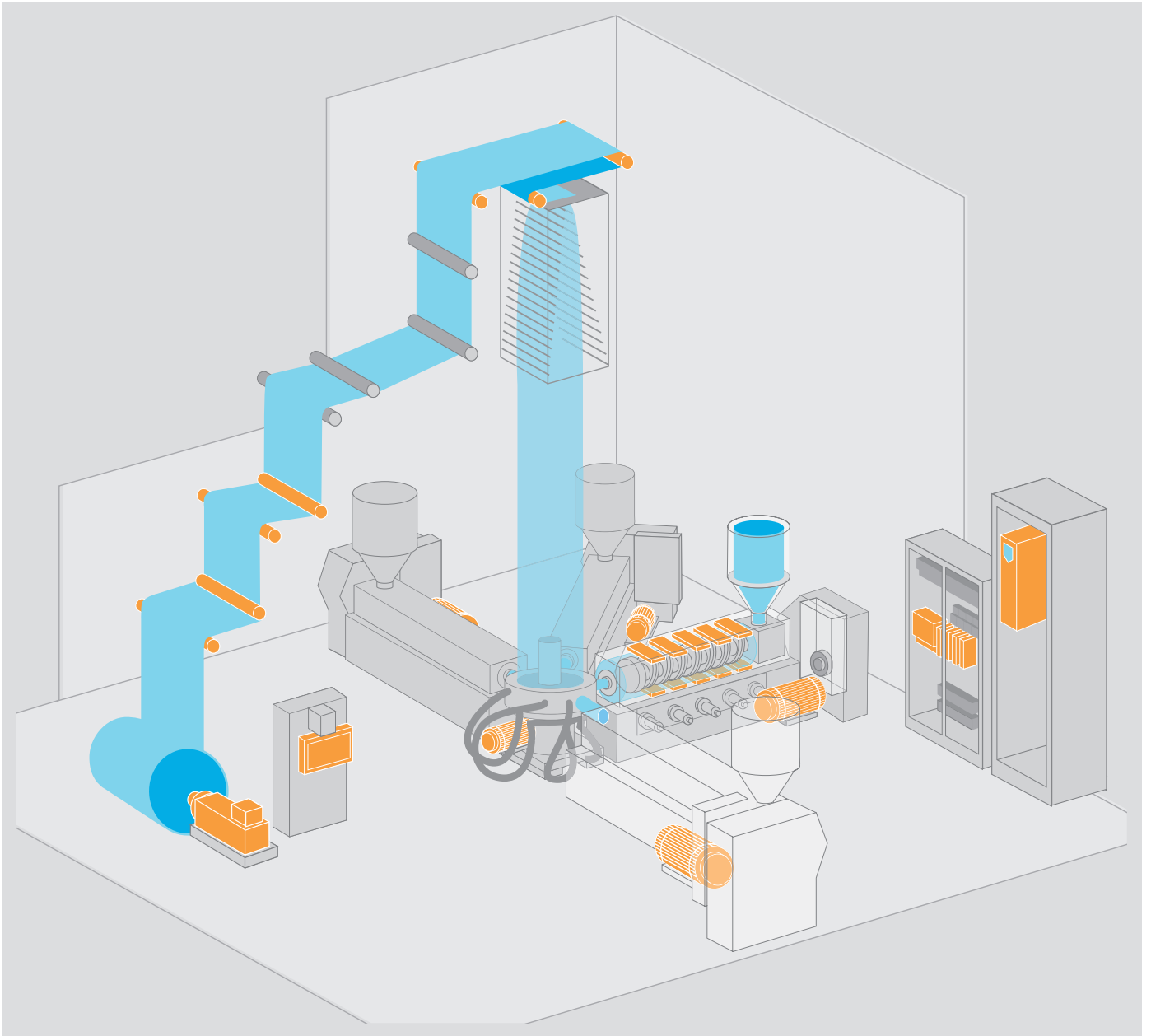
### Your global partner

Our global support network ensures the fastest possible delivery times and comprehensive on-site service anywhere in the world.

### Complete service from concept to commissioning

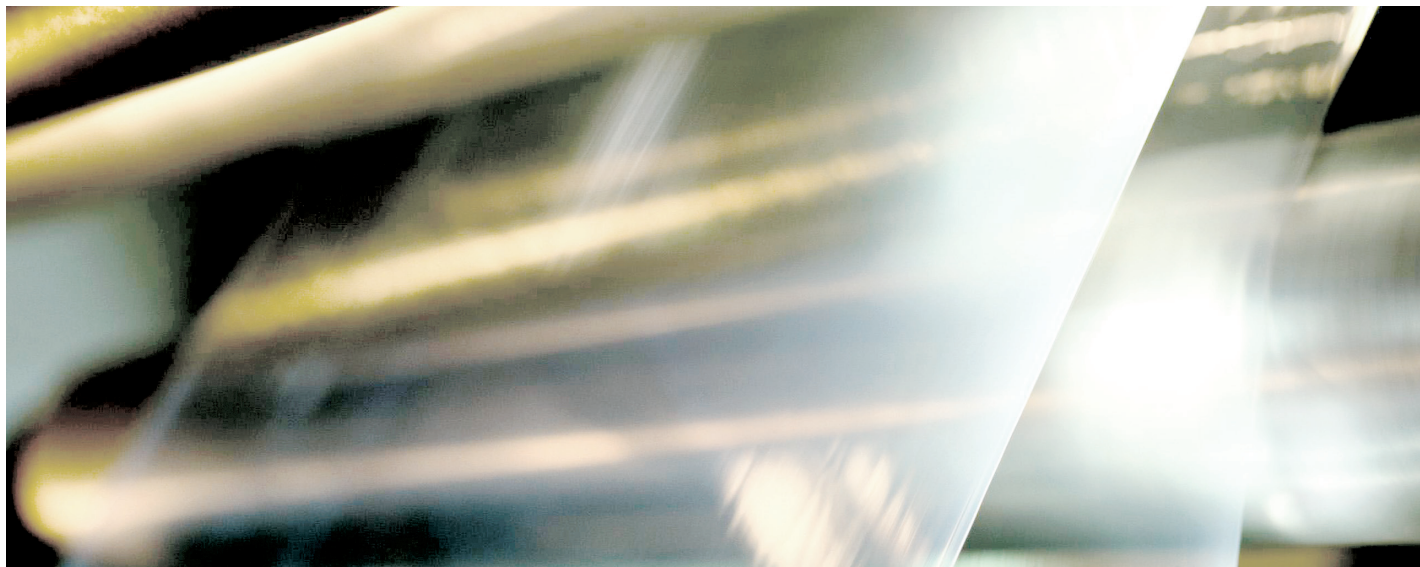
We work with you to support every project stage, from providing consultancy to develop the initial concept through design, development, delivery and commissioning. We also provide complete life cycle services to keep the equipment in peak operating condition.







# Applications in plastics processing machinery



## Extruders



Specific AC and DC motor and drive solutions can be applied dependent on the type of end plastic product being produced as well as the type and size of the extruder. Motor types typically used include AC induction (enclosed or laminated frame designs), DC, servo or permanent magnet.

Variable speed drives are used for precise motor control and increased energy efficiency, as well as for environmental and cost reasons. Drives also provide dynamic torque limit for protection of the extrusion screw without speed or position feedback devices, resulting in lower initial investment and installation costs and higher operational reliability.

## Downstream machinery



Various types of downstream machinery may be present to facilitate necessary cooling, take-off and/or other discrete handling of the extruded material, such as cut-to-length, slitting, stacking, coiling, etc. These are in general typical drive applications requiring drive performance characteristics ranging from speed or torque regulation to simple motor control.

## Melt pump



The melt pump is fed by a speed-regulated, pressure-controlled extruder which provides precise control of the molten plastic output flow, optimizing the consistency of the flow delivery rate.

## Film processing



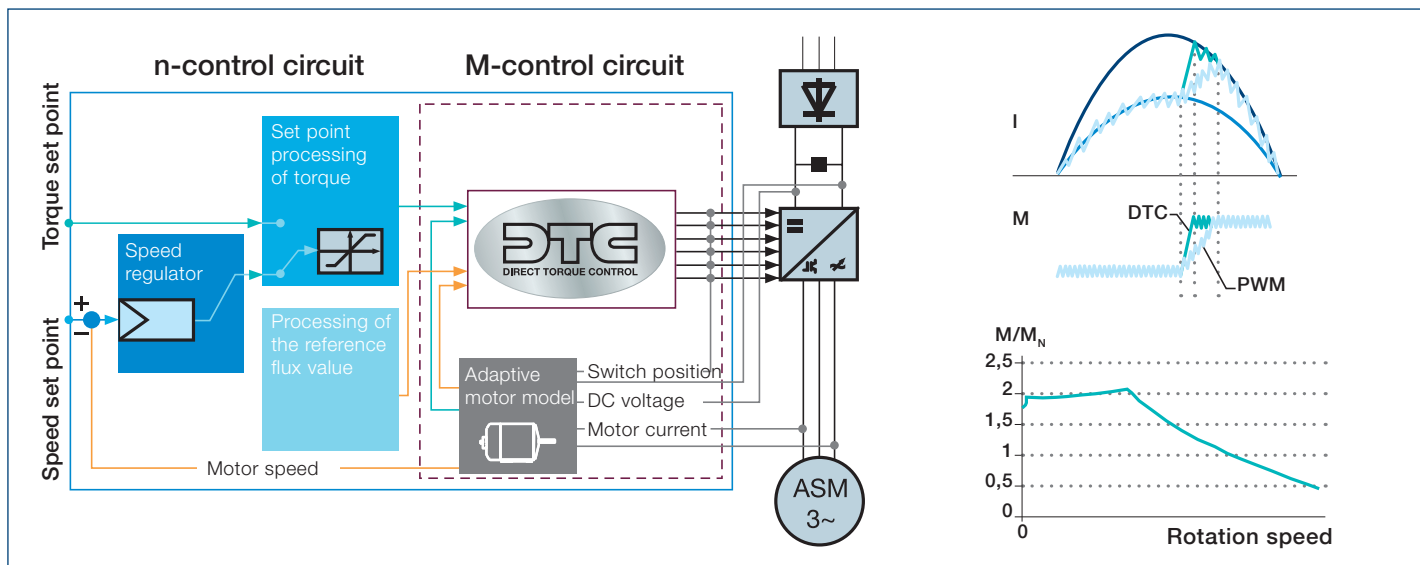
Precise tension control is vital for plastic film processing. The superior speed regulation of ABB drives maintains the tension within the established limits and the fast, accurate drive-to-drive line speed communication provides precise synchronization of take-off roll sets.

## Winder



Film must be wound under constant tension, requiring torque regulation of the winder motor, which must continually adapt to ever-changing roll diameters. This can be achieved either by using an ABB drive with winder software or integrating a separate PLC into the control system.

# Direct torque control

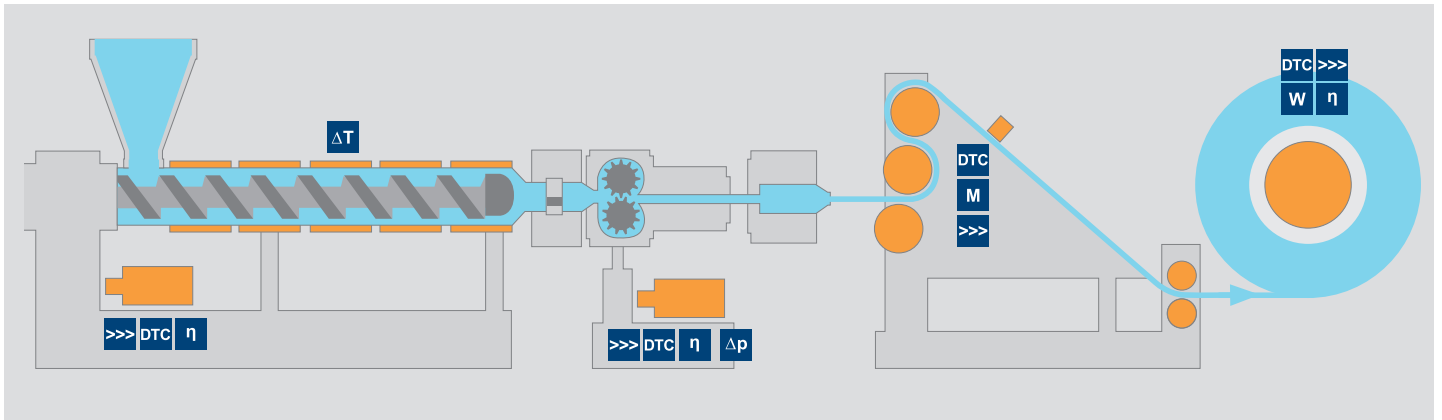


ABB's dynamic control of asynchronous and PM servo motors enables the rapid correction of load-side disturbances. ABB drives with direct torque control (DTC) provide speed and torque control without sensors.

## Advantages

- Superior dynamic performance and full torque at zero speed without feedback encoders
- Dynamic torque regulation for precise control of full torque throughout the entire speed range enables high starting torque and reduces mechanical stress
- Accurate torque limits for optimized drivetrain protection even above base speed
- Superior control accuracy for improved product quality, reliability and throughput
- Operation of the motor at the ideal efficiency curve

# Functions in plastics processing machinery



## **DTC** Speed/Torque control

DTC technology facilitates the precise regulation of motor speeds and ensures full torque at zero speed, with or without rotary encoder feedback from the motor shaft.

## **$\Delta p$** Pressure regulator

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

## **W** Winder

ABB drives offer a built-in winder control program for the most frequently used winder types. Winding machine functions are available in addition to rewinding tension regulation (with or without feedback) and dancer roll control. These functions include: diameter calculation, web tension control, friction and inertia compensation and web-break detection.

## **M** Motion control

The AC500 enables centralized and decentralized motion control via the PLCopen motion control modules, the ACSM1 motion control drive 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.

## $\ggg$ Remote monitoring

Remote access to ABB drives and controls is available either directly or through the AC500

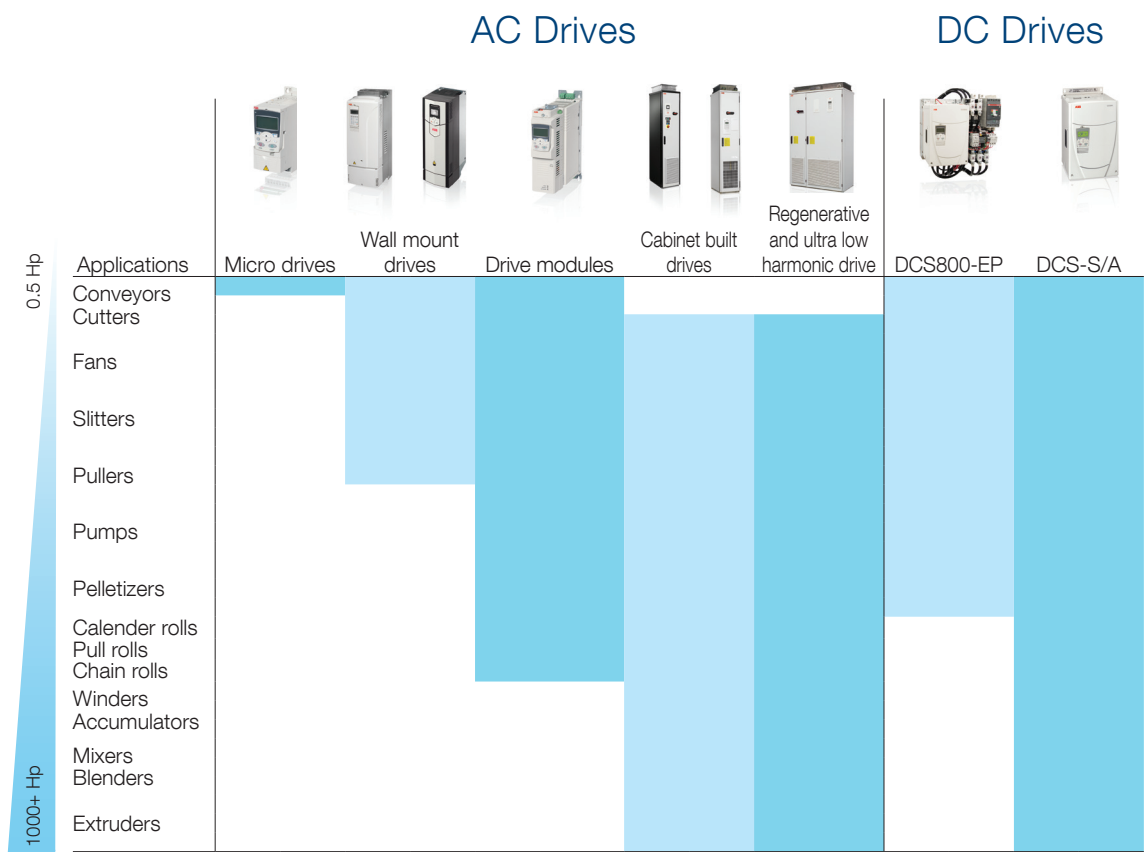
## $\eta$ Energy efficiency

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.

# ABB products for automation solutions

## Optimized for plastics processing

### Low Voltage Drives



### Low Voltage Motors

#### RPM AC



RPM AC Inverter and Vector Duty motors have been developed specifically for use in variable speed PWM controller applications. They are up to three frame sizes smaller and are lighter than NEMA frame motors; ideal for size and space are important issues.

#### DMI DC



DMI DC motors also feature a laminated steel frame and are designed specifically to meet IEC standards. This advanced DC motor design is ABB's most power dense design ever offered, making DMI motors an ideal choice for new applications or replacements.

#### IEC



These motors are especially suited for continuous duty applications. They meet all the energy efficiency requirements defined in IEC Technical Specification IEC/TS 60034-31 and draft IEC standard 60034-30 edition 2.

#### NEMA Baldor



A wide selection of premium efficient, NEMA frame motors, available from stock, manufactured and sold by a company committed to building better products for industries worldwide. Baldor-Reliance is recognized as the leader in energy efficient industrial motors.

### Motion Control Products

#### HMI



ABB operator panels can be distinguished from their competitors by their easy functionality, making comprehensive operational information for production plants and machines available at a single touch. This enables an operator to intervene manually at any time to stop or modify the production process.

#### PLC



There are a multitude of choices for small equipment control applications to complex systems like web presses and distributed systems. These PLCs are some of the fastest and most reliable available.

# Contact us

For more information please contact  
your local ABB representative or visit:

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