

Subject: Winder Overview	Product: G7 or F7 Drives	Doc#: AO.AFD.68
Title: Winder		

Application Challenges:

- Control of a motor under dynamically changing requirements
- Acceleration to a fixed speed, deceleration to zero speed
- Changes in speed and torque during operation
- Detailed sequencing for flying slices and roll changing
- Speed and torque need to be controlled
- High process speed
- Wide speed range
- Changes in processed material

Yaskawa Products:

Product	Feature	Benefit
G7 Drives or F7 Drives	PID Control Mode	Line velocity control and diameter consistency can be achieved using the drives PID Mode with dancer position sensors, velocity sensors or diameter sensors.
	Cooling Fan On/Off Control	Controlling the number of times the drive fan is switched on and off increases the lifespan of the cooling fan and reduces the need for maintenance.
	Flux Vector Control and Torque Control Mode	Both torque and constant tension control are possible by using Closed loop Vector Control and Torque Control Mode.
	Zero Servo Mode	The Zero Servo Function in Closed Loop Flux Vector keeps the wire from becoming slack, eliminating the need for a mechanical brake.
	Kinetic Energy Braking (KEB)	KEB braking function can decelerate the application to stop without damaging the load, even when a power outage occurs. Simply coasting to stop can cause the wire to build-up or break.
	Torque Detection	Undertorque Detection senses wire breaks so that the drive can automatically stop the application immediately.

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Application Details:

The winder drive supplies the necessary torque at a controlled speed to accomplish material windings. Different materials require different tensions during winding, with plastic films very light and cable and steel very heavy tensions. Some materials such as plastic films and papers will elongate and separate if over-tensioned.

Winder drives are classified by their method of control and include:

- Constant Tension Center Winder (CTCW)
- Line Speed
- Dancer Position (pot or transducer)
- Torque Regulated Speed Follower (TRSF)
- Hyperbolic or Differential

Typical processes or sectional machines that include winders:

- Printing press in paper and film
- Wire insulation line in wire
- Galvanizing line in metals
- Casting or extruding line in film