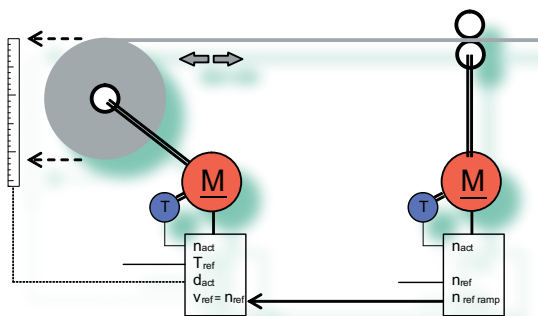


## Different winder types

Winder configurations can be classified by different control structures.

### Indirect tension control

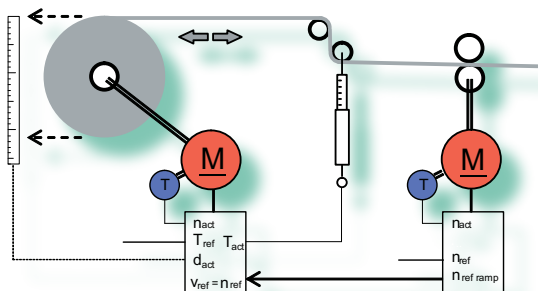
The web tension is calculated by motor speed and not measured. This is the most popular winder because hardware sensors are not required. It provides a very robust control behavior and is the basis for all more sophisticated control structures.



Indirect tension control regulation scheme

### Direct tension control

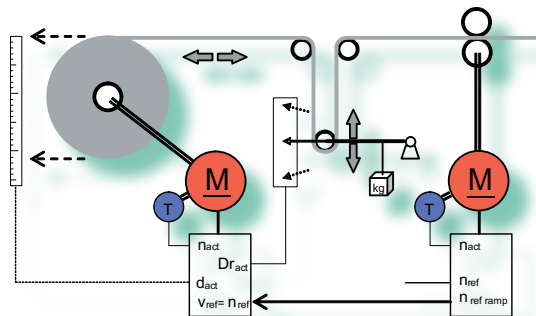
The difference between indirect and direct control is the tension feedback. To get an accurate tension signal, a load cell is needed to measure the actual tension.



Direct tension control regulation scheme

### Dancer roll controlled winder

Best winding quality is possible with a dancer roll system. The dancer roll balances inaccuracies and ensures a precise tension of the web. For dancer control the dancer needs a separate controller which regulates the position of the dancer.

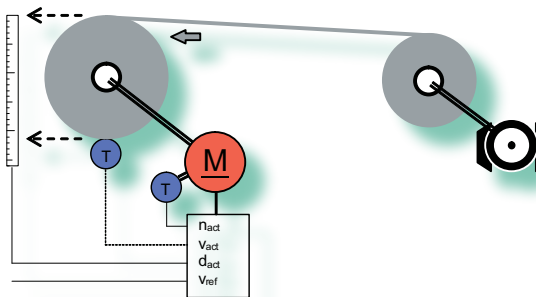


Dancer control regulation scheme

### Velocity control

If wrapping from one roll to another is required, the unwind roll must be equipped with a mechanical brake. This brake defines the web tension. The velocity will be affected by the winder motor.

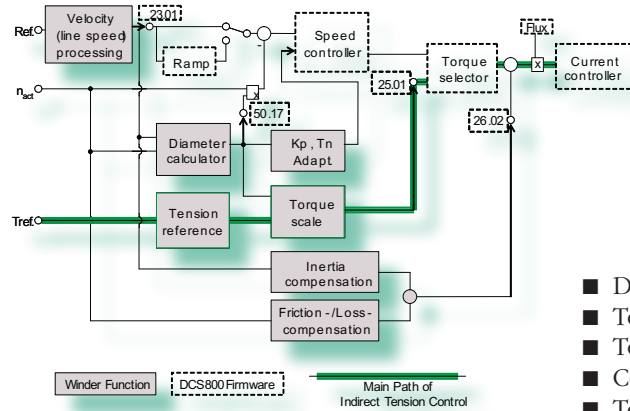
During the wrapping it is possible to split the web with a cut.



Velocity control regulation scheme

## DCS800 winder control

The DCS800 Winder Wilt1.1 is used with indirect tension control. The controller calculates coil diameter. The calculated diameter is used to adapt gain and ramp times and to calculate the tension reference.



The speed controller is used as line speed controller and operates in window mode. Additional features include inertia compensation during ramp-up and ramp-down and compensation for

mechanical losses. The control structure fits well with the accurate torque behavior of DC motors in the field weakening range. The winder control functionality is an add-on to standard firmware with additional parameters in groups 60 to 69.

The control interface for the customer can be classic hardware I/O or serial communication or even a mixed structure. Of course all other DCS800 features (e.g. DCSlink communication, master-follower communication and 12-pulse control) are available as well.

### List of features

- Diameter calculation
- Tension calculation based on diameter
- Torque reference calculation
- Control gain is adapted based on diameter
- Tension compensation for mechanical losses
- Inertia compensation for speed ramp-up and ramp-down
- Wide diameter ratio (up to 1:10)
- Wind and rewind logic included

### Two different packages are available

#### Ready programmed SDCS-MEM-8 Wilt1.1

Order code:

- Id code 3ADT200007R02 (separate) or
- ready programmed drive pluscode (+S202, +S203)

The winder function is handled by the additional parameter groups 60-69 and DriveWindow standard PC-tool (SDCS-COM-8 required for commissioning). The winder manual, publication no. 3ADW000308, provides information about winder basics and internal calculations of control function as well as commissioning information. Small functions can be added by adaptive program.

#### Requirements

- DCS800 training
- DCS800 winder training (available as eLearning)
- Drive Window PC tool + DWL assistant



#### DCS800 Control builder template of Wilt1.1

The template is the function block program of SDCS-MEM-8 Wilt1.1. This includes the project file and the winder library.

With control builder template new functions can be added, existing connections can be opened and cycle times can be changed. Testing of new function in lab environment is strongly recommended.

Extended winder manual, publication no. 3ADW000253, provides additional information about the winder blocks (diameter calculation, tension controller, etc.)

#### Requirements

- DCS800 training
- DCS800 winder training (available as eLearning)
- DCS800 ControlBuilder training (available as eLearning)
- Drive Window PC tool + DWL assistant

### Customer benefits

- Flexible structure
- Standard commissioning ABB tool
- Wide power range
- Based on standard firmware function
- E-learnings for certification available



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