Wrap Angle Correction Calculator DCM

Scope of Supply

Electronic unit in DIN Rail Mount enclosure with plug-in terminals, programmed as an angle correction calculator

Variant 1

- 1 dimensional standard sensor

Variant 2

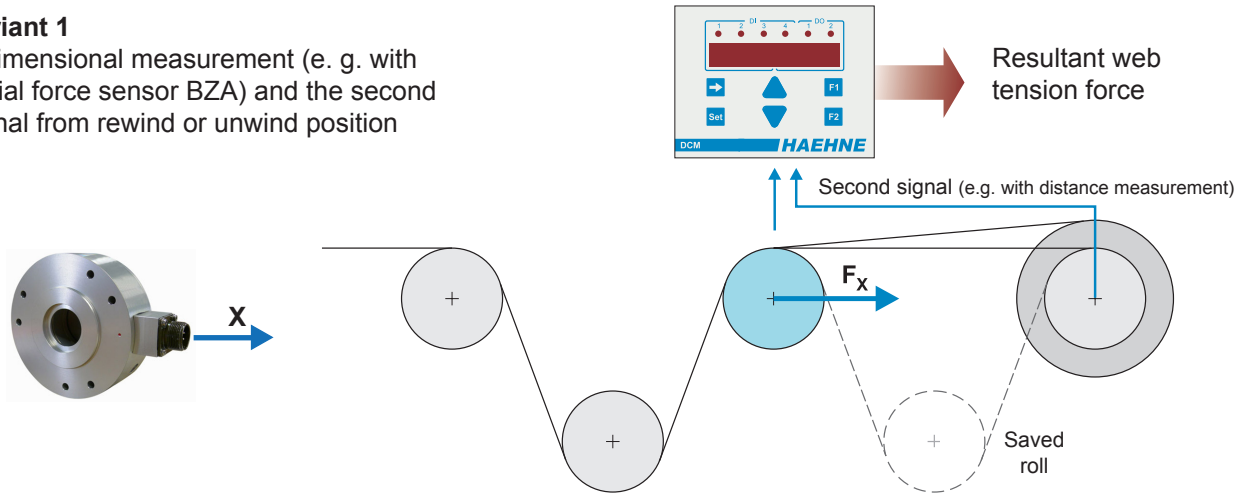
- 2 dimensional XYR sensor

Special Features

- Precise Web tension measurement without constant web geometry
- Space saving web geometry by saving idler roll
- Retrofitting of web tension control systems with fewer mechanical changes

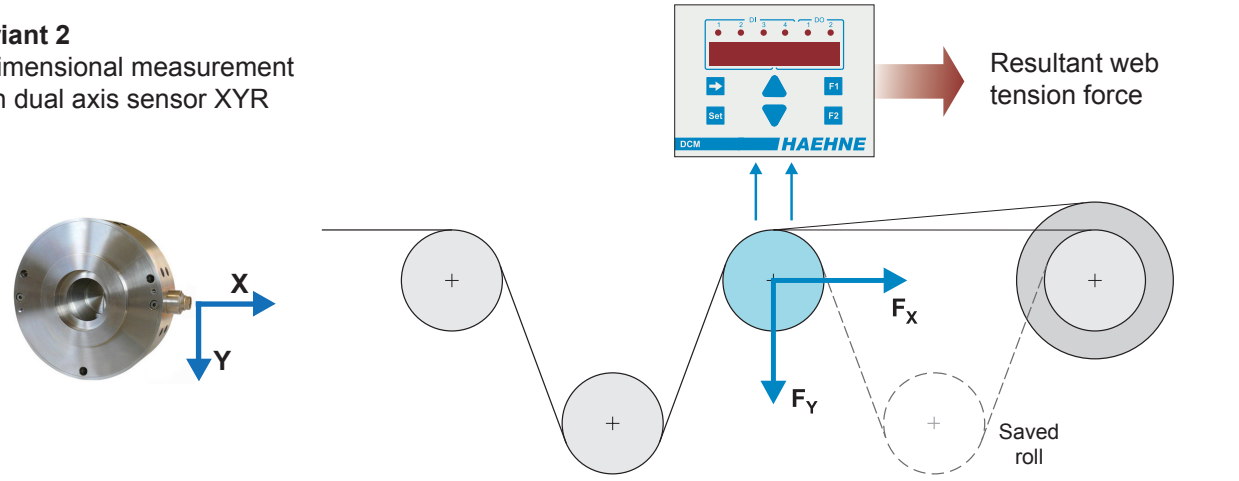
Variant 1

1 dimensional measurement (e. g. with radial force sensor BZA) and the second signal from rewind or unwind position



Variant 2

2 dimensional measurement with dual axis sensor XYR



Retrofitting Applications

Retrofitting of converting and other web treatment lines with web tension controls can result in substantial productivity increases and quality improvements. This objective requires often substantial mechanical redesign, especially if it is necessary to integrate additional idler rolls for creating constant web geometries. The DCM wrap angle correction calculator enables retrofitting with considerable less mechanical effort.

New Machine Designs

The DCM wrap angle correction calculator enables the design of machines with fewer idler rolls for providing constant web geometries, which results in the following advantages:

- Reduction of equipment size resulting in a minimum footprint with lower factory space requirements
- Saving of materials not only for the idler rolls but also for not required machine and equipment components

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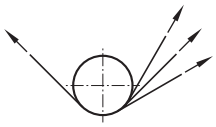
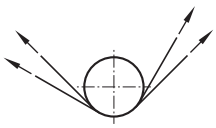
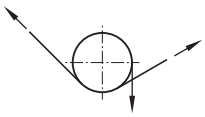
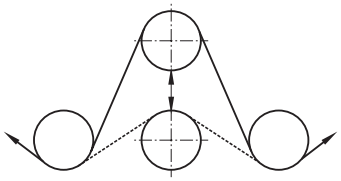
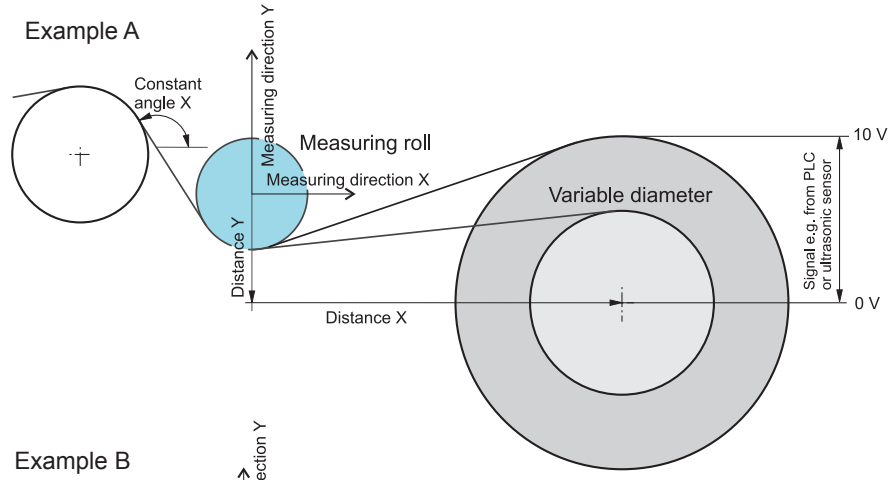
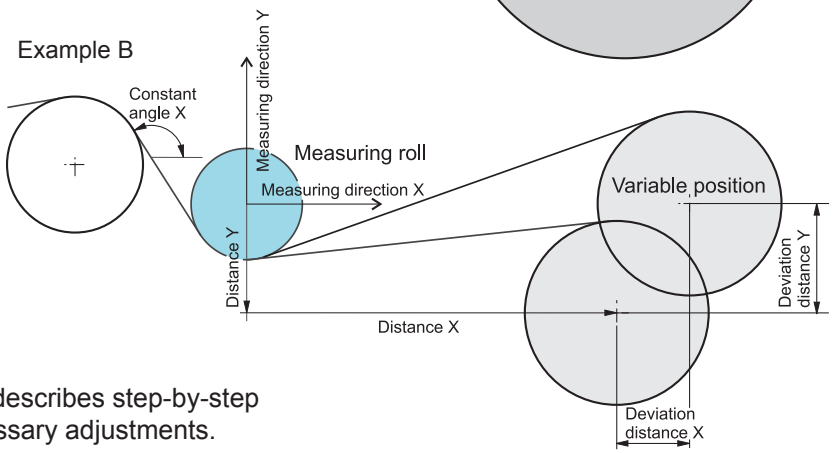
Angle Geometry	Sketch	Application	Versions
Angle geometry 1 Changing angle geometries on the intake or runout side		Rewind or unwind position	**Version 1:** 1 dimensional measurement with 2nd signal from winder, e.g. distance measurement **Version 2:** 2 dimensional measurement with sensor XYR
Angle geometry 2 Changing intake and runout angles with constant wrap angle		Changing angles in the web	**Version 2:** 2 dimensional measurement with sensor XYR
Angle geometry 3 Constant geometry, but changing forces		Driven or braked rolls	**Version 2:** 2 dimensional measurement with sensor XYR
Angle geometry 4 Symmetrical geometry, but changing angle		Measuring roll with variable position	**Version 1:** 1 dimensional measurement with 2nd signal from winder, e.g. distance measurement

Web tension measurement in the running webs by measuring the forces acting on the roll bearings is normally only possible, if the intake and runout angles are known and remain constant. With geometric functions and the knowledge of the web geometry the tension forces acting in the measuring directions can be calculated. However, in rewinding and unwinding stations with constantly changing wrap angles this results in continuously changing forces acting in the measuring direction. In order to ensure that the DCM issue the correct force signal it is necessary to adjust the signal with wrap angle correction calculations in the DCM.

In Version 1 the DCM can compensate for two different sources of single-sided changing geometries. For one there is the change of the roll diameter (Example A) and on the other hand there is the change of the roll position (Example B). The correction factor is determined by the DCM with an additional signal which in Example A is proportional to the roll diameter and in Example B to the change of distance of the rolls. The optimal location of the sensors or the measurement roll is one that results in the lowest correction factor. The *HAEHNE* company can provide this information if the details of the application are known.





The Operating Manual of the DCM describes step-by-step the program selection and the necessary adjustments.

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