The Automatic Winding Width Control reduces traversing issues with deformed metal spools

Warped metal spools require frequent adjustment of the traversing width if such spools are to be reused.
This negatively affects the cost efficiency of the production process and the staff productivity. The Automatic Winding Width Control developed by Joachim Uhing KG GmbH & Co. prevents the formation of undesired bulges and dents of wires wound in the flange area of spools and relieves the staff from unproductive monitoring tasks. A project the engineering company headquartered at Mielkendorf is running in the Luxemburg plant of tyre manufacturer Goodyear Dunlop demonstrates the faultless operation of the AVS.

The metal spools on which Goodyear Dunlop winds up the 1-2 mm thick steel cord for the tyres' steel belt are used in several locations of the Colmar-Berg plant. During their service life, some of the spools change their initial geometry considerably, bent flanges being the central issue. As a consequence, many of the traversing systems, even those equipped with sensors, failed to accordingly correct the winding width and required manual intervention by operators. As the responsible staff spent much time monitoring the winding processes, more productive tasks were neglected. This made the plant management search for other traversing solutions.

Goodyear Dunlop therefore also approached Joachim Uhing KG GmbH & Co. who have been supplying rolling ring drives to the plant for years and repeatedly adapted those to new conditions until technological possibilities were exhausted.

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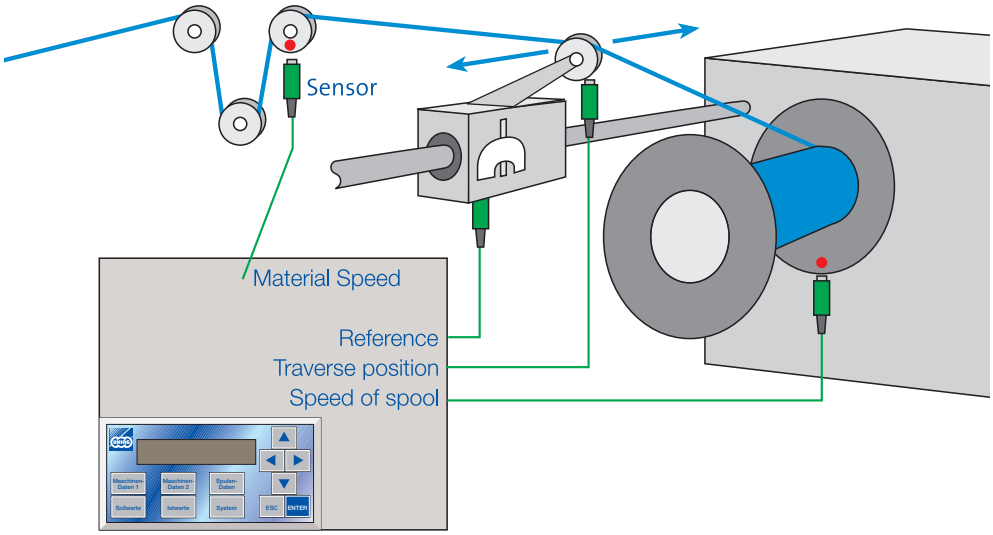
Sensor monitoring corrects winding flaws

Aiming at providing the tyre manufacturer a smooth winding pattern in the reversing area of the traversing system known to be particularly critical, Uhing developed the Automatic Winding Width Control AVS. The underlying principle is easy to explain:



Two sensors monitor the material's line speed and the spool speed. When a dent forms at the end of a stroke, the spool speed slightly increases in relation to the constant material speed. A third sensor identifies the position of the traversing system and reports the faulty stroke end to the controller that accordingly increases the material supply in the dent area by widening the traversing width at this stroke end until the flaw has been corrected.
In case of a bulge, the spool speed would decrease along with the traversing width and consequently the material supply. This results in an optimum pattern on the spool and ensures smooth unwinding later on.

Robust and compatible

The Uhing AVS is extremely unsusceptible to soiling since it lacks optical sensors. Another interesting aspect of the Automatic Winding Width Control: it can be integrated into existing traversing systems as a complete system or in parts only.

Nearly all systems that execute linear strokes - rolling ring drives, threaded spindle or timing belt drives – can be retrofitted with Uhing AVS. Where appropriate sensors are present, they can be easily extended by a PLC and

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respective software only to obtain the full Uhing AVS functions, an extremely promising approach with regard to costs.

Complete delivery in electronics box

Last but not least, the AVS also convinces because it contains standard control components and sensors only. Where comparable systems often use custom components requiring additional stock-keeping of spare parts and binding the operator to the manufacturer, the Uhing AVS features standard components that can be easily procured locally. Because of this vendor independence, the customer can be sure to always purchase the most economical components.

Convinced at first sight

The Uhing AVS had its first public roll out on the “Wire 2008” Fair in Düsseldorf where it made Goodyear Dunlop visitors enthusiastic. Camille Godelet, Team Leader of Goodyear Dunlop, remembers: “I had the chance to closely scrutinise the AVS function and recognised the potential of this system. But due to experience with other systems, I doubted whether the Uhing AVS could measure up to practical application.”

This led to a follow-up appointment in Luxemburg where technical data were collected to adapt the AVS to the local winding requirements and to install the new system. The delivery included the PLC with software, a set of sensors and an electronics box – a switch box with fully wired sensors, traversing unit and PLC.

When installing the first system, Uhing’s AVS experts implemented all the adaptations to customer requirements. Uhing can then configure additional systems to be delivered in the future so that installation and commissioning is possible for the customer at minimum effort.

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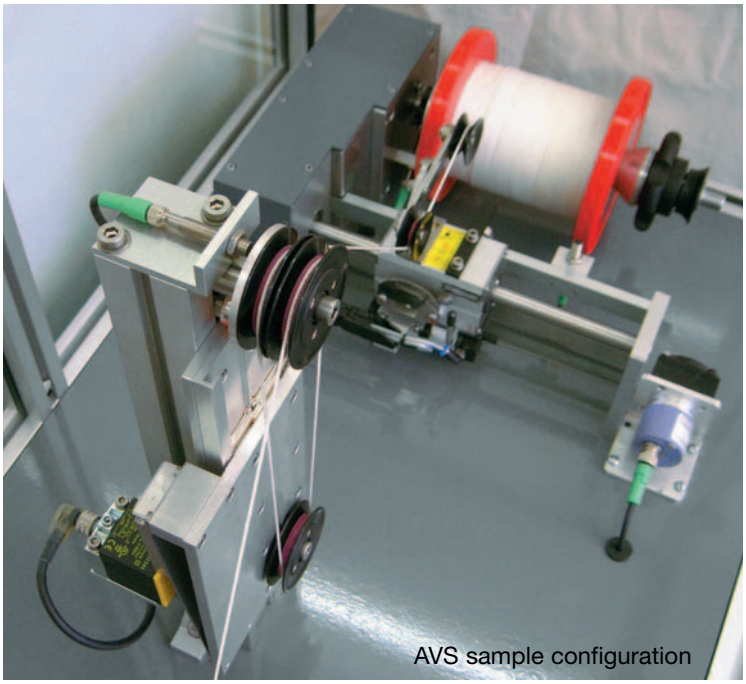
Proven in the field

A practical test phase of six weeks was agreed during which the system was to prove its reliability. “Right from the beginning, the system provided excellent results”, Godelet sums up. Goodyear Dunlop ordered additional systems even during the test period.



AVS sample configuration

“Joachim Uhing KG GmbH & Co. is a customer- and solution-oriented partner. Application of the Uhing AVS lets us meet the high demands on our winding processes and work cost-effectively”, Godelet explains. “Still another positive effect: our staff has more time for productive tasks now.”

The advantages of Uhing AVS at a glance:

- Prevention of bulges and dents forming in the reversing area of the traversing system
- No unwinding issues during further use of the spools
- Even deformed spools can be used
- Increased productivity due to significantly reduced waste
- Can be integrated fully or partially into almost all common traversing systems
- Use of standard components
- Staff is relieved from monitoring tasks

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Goodyear Dunlop is one of the world's largest tyre manufacturers with branches in nearly all regions of the world. Cooperating with international subsidiaries and partners at 60 industrial sites in 26 countries, Goodyear Dunlop develops, produces, markets and sells tyres for many purposes while constantly promoting technological innovation.

Other business areas are: production and marketing of chemicals for the rubber industries, operation of one the largest service centres for trucks including retreading services and operation of more than 1800 tyre and car service stations.

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