

Successful operation of the FMS-segFORCE® at Bischoff + Klein

The logo for Bischoff+Klein features a stylized blue and white graphic element on the left, followed by the text 'Bischoff+Klein' in a bold, dark blue, sans-serif font.

Bischoff+Klein®

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FMS Force Measuring Systems AG
& Bischoff + Klein

Top packaging producer is one of the first to deploy pioneering tension-measurement roller

In its quest to maintain the highest quality standards, leading film and packaging manufacturer Bischof + Klein has turned to the FMS-segFORCE®, the world's first segmented tension-measurement roller

When you're making packaging for major global brands, quality is critical. It secures your revenue and reputation while maximizing productivity. That's why Bischof + Klein, one of Europe's top suppliers of flexible plastic and plastic laminate packaging and technical films, has recently installed ground-breaking technology from Swiss engineering firm FMS on laminating lines at its main plant in north-western Germany.

Transformative technology

Bischof + Klein decided to deploy the FMS-segFORCE first on one of its triplex laminators. To start with, the dimensions of the laminator and the relevant process data were recorded on site. FMS used this to produce a customized measuring roller consisting of 32 segments. The new FMS-segFORCE was installed on the line in a short maintenance window of just a few hours.

As a result, Bischof + Klein can now monitor the tension across the entire width of the web and spot even small, sporadic deviations.

The special adhesive coating on the surface of the FMS-segFORCE's roller segments increases the friction between the roller and the material so individual segments rotate easily even with low web tension. This is important to Bischof + Klein because its triplex laminator operates at a tension of just 40 to 100 newtons. To keep the breakaway torque of the segments as low as possible, FMS uses special, smooth-running roller bearings.

Decisive data

Bischof + Klein's Daniel Webers says: "The FMS-segFORCE helps us definitively assess the properties of our material webs. The measurement and display of a tension profile over the entire web width gives us information about the tension distribution within the web.

With the data from the segmented measuring roller, we can identify disturbance factors and eliminate their causes. The clear display enables us to exclude faulty material from further processing. In this way, we ensure consistently high product quality and save valuable machine capacity at the same time."

Learn more about the FMS-segFORCE.

<https://www.fms-technology.com/en/our-solutions/web-tension/segmented-tension-roller>

How does it work?

The unique design of the FMS-segFORCE

The FMS-segFORCE measuring roller features a rigid axis on which individual, movable segments are arranged. The segments are locked pneumatically via a central connection. Each segment consists of a force sensor, an integrated measuring amplifier and a roller bearing with the rotating shell.

Segments are supplied with power and signals via the axis. The roller is connected to the machine frame on both sides via functional side brackets that also contain all the electronics, fully protected from dirt and other environmental influences.

Ethernet connectivity (PROFINET or other) enables data transmission to a PC or the machine's master controller.

FMS's own software provides a clear read-out of the measured tension values, which are recorded for analysis and optimization. The intuitive user interface allows easy configuration of the roller.



Illustration 1: The FMS-segFORCE features up to 50 independent force sensors that measure the smallest tension deviations between the segments. It is particularly suitable for processing elastic and sensitive materials.

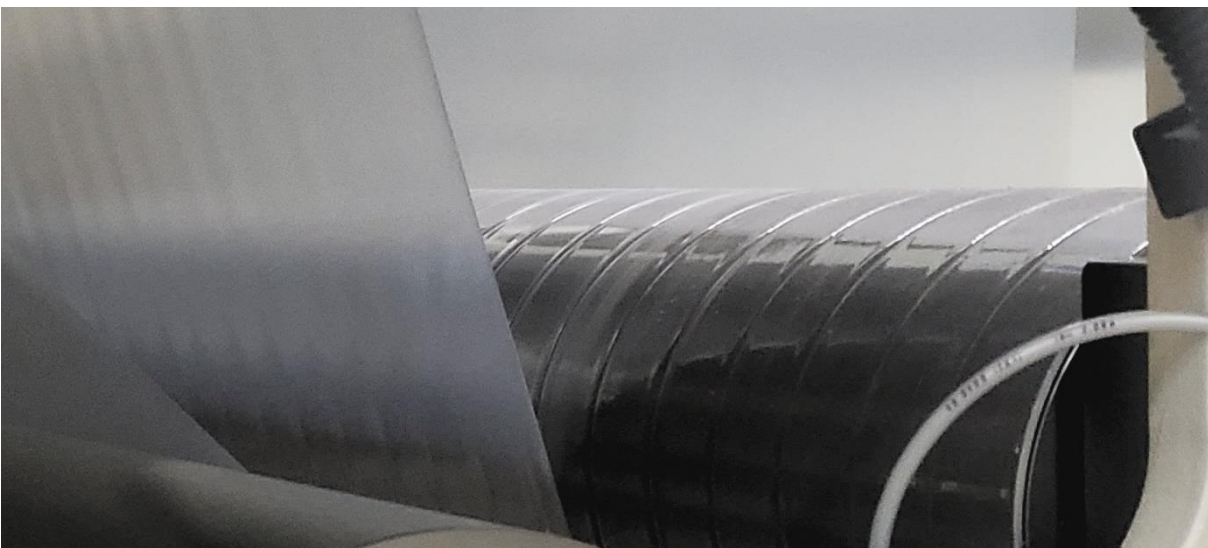


Illustration 2: Detailed view of the FMS-segFORCE with foil. The glossy adhesive coating to increase friction is clearly visible.

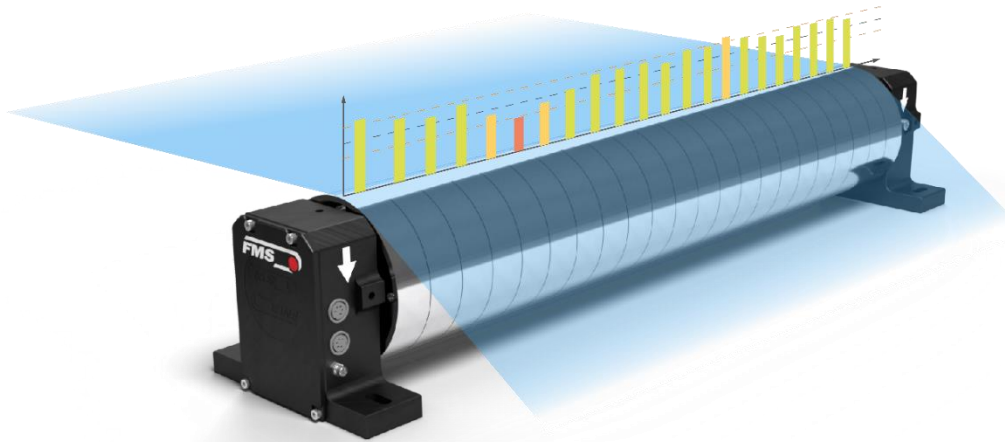


Illustration 3: Fully equipped segmented measuring roller for measuring the tension profile over the entire web width

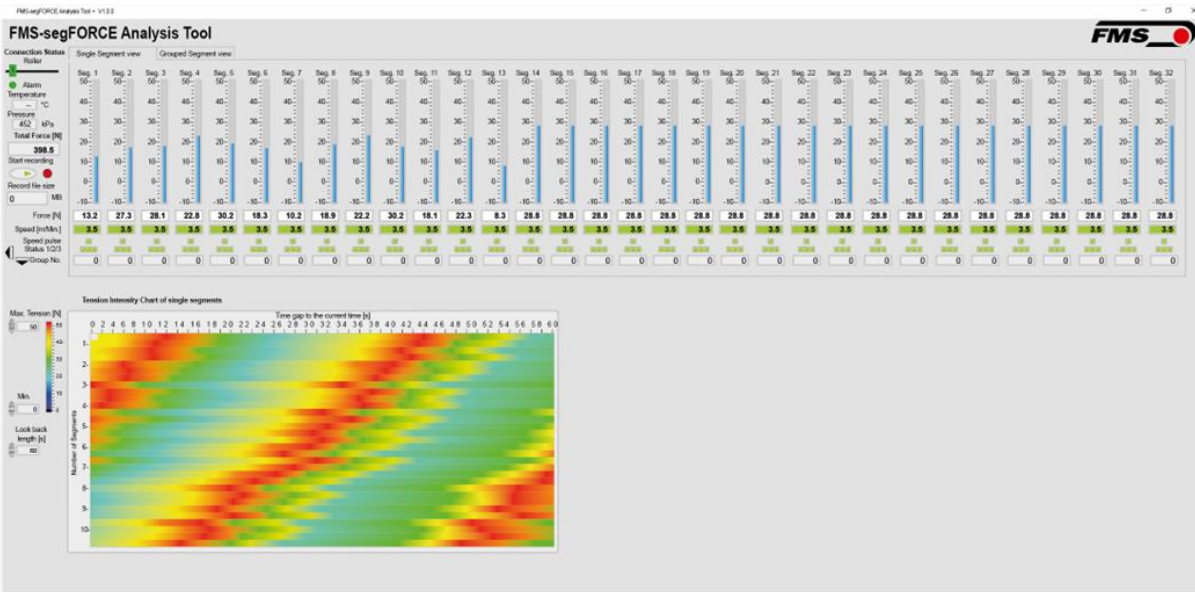


Illustration 4: FMS-segFORCE software. Top: Individual measured values of the segments. Bottom: Tension profile with repeating fault pattern. Conventional tension measurement technology cannot detect this type of fault pattern, or can only do so with difficulty.

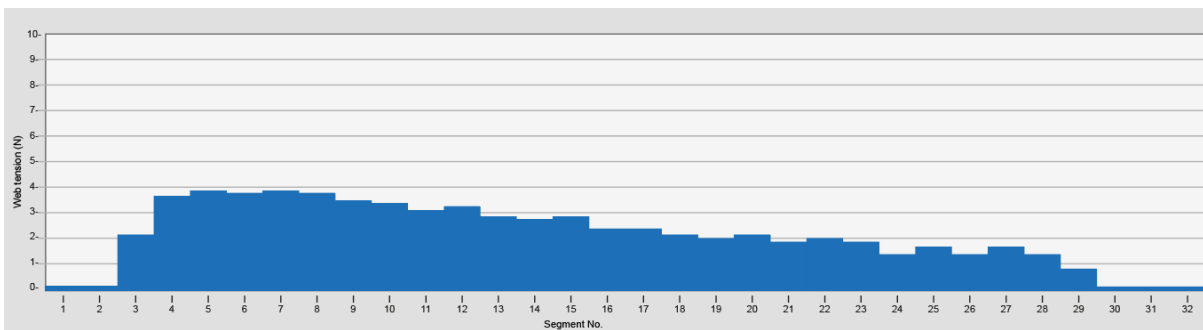


Illustration 5: Tension profile with strong one-sided tension. The low web tension of 40 N/m web width results in a tension of 3 Newton per segment, which is measured here.

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