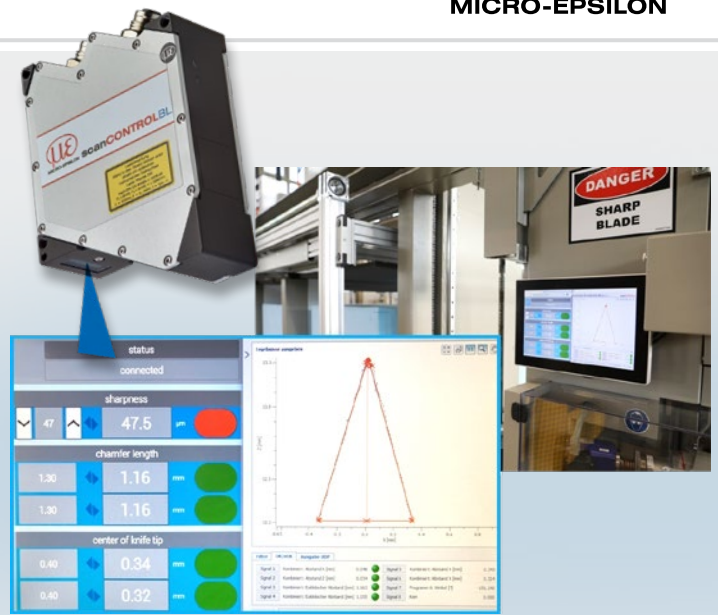




Testing the sharpness of band knives

Foam cutting machines have a high cutting quality, which is due, among other things, to the perfect condition of the cutting blades. Laser profile scanners from Micro-Epsilon are used to test the knife sharpness.

Foam cutting machines use band knives whose cutting blades typically wear out over the course of their use. In order to ensure high efficiency in the cutting process, the knife sharpness test is carried out during operation. A Micro-Epsilon laser profile scanner of the scanCONTROL 2910-10/BL series measures the front side of the knife. The sensor is installed in the cutting machine and directly connected to the control system. During measurement, the sensor detects, among other things, the width of the knife tip. This loses its uniformity in the event of wear, but this is only visible in the micrometer range. Since the LLT2910/BL laser profile scanner has a resolution of up to $7.8 \mu\text{m}$, it can detect even the smallest deviations on the knife. The precisely measured change in thickness of the tip allows conclusions to be drawn about the degree of wear of the knife. The thickness values are transmitted directly from the sensor to the plant. In case of increased wear, a grinding device is activated which sharpens the knife during operation.

Only the automated inspection by the Micro-Epsilon laser scanner provides the grinding device with the values for an optimum grinding setting. This optimization increases product quality and reduces wear and material consumption, as the knives are neither over- nor under-ground.

The scanCONTROL 29xx series impresses with its compact size and low weight. With a laser line of only 10 mm, the LLT2910-10/BL model detects the smallest structures and details. The high profile resolution in combination with the blue laser line enables maximum precision for a wide range of applications.

Requirements for the measurement system

- High resolution required for narrow knife tip
- Measurement on mat and shiny metals
- Belt speeds up to 8 m/s must be measured
- Direct installation in the machine
- Transmission of data via Ethernet UDP to a panel PC for visualization by the operator

Ambient conditions

- Industrial production plant

System design

- scanCONTROL LLT 2910-10/BL
- Software: scanCONTROL Configuration Tools

Advantages

- High precision measurement of the knife tips
- Direct feedback on knife sharpness
- Quick intervention reduces blade wear
- Ensuring optimum knife sharpness leads to high cutting quality



"Detecting knife sharpness with the Micro-Epsilon sensor enables our customers to detect a blunt knife in good time before the cutting quality deteriorates. The operator can take appropriate action and sharpen the blade with precision fit without generating too much blade wear due to excessive grinding frequency."