

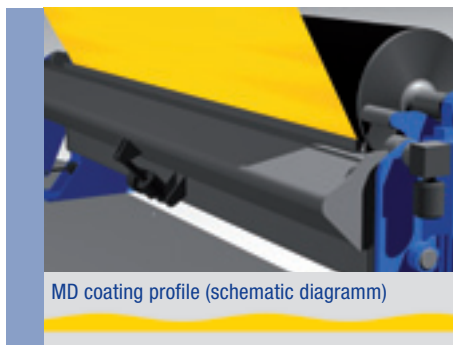


3DG grinding machine

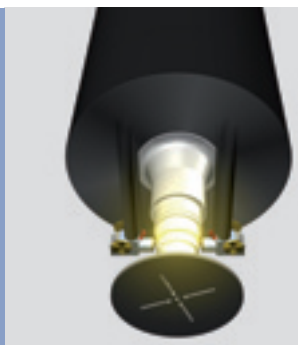
3DG – an innovative Voith Paper Rolls grinding concept

Roll grinding in the third dimension

Rolls ground by 3DG attain such unsurpassed precision that they run better than ever before. The days when eccentricities were transmitted to the roll surface are definitely over.



Lengthwise coating thickness variations caused by coater backup roll eccentricity



Measurement of roll journal geometry

Eccentric rolls can vibrate heavily – and these vibrations are transmitted to neighboring structures and components such as doctor beams and backup rolls. This results in a chain reaction, that affects entire control loops, causing additional loading on the components involved.

The running characteristics of rolls in direct contact with the paper, such as coating or calender rolls, significantly influence product quality. Any deviation in roll concentricity or geometry can cause serious fluctuations in coating thickness or sheet thickness.

3DG can stop this chain reaction at the source by practically eliminating roll vibrations. The neighboring components are no longer affected; resulting in consistent high paper quality.

How does 3DG work?

The procedure starts with high-precision measurement of the roll surface

contour and journal geometry. Compared to conventional grinding concepts far more measuring points are used for determining the roll surface contour. And by measuring the journal geometry, any eccentricities can be fully compensated by the control system and no longer transmitted to the roll surface. That is why this concept enables such high concentric precision.

The roll contour measurements are then processed into a 3-dimensional representation of the surface topography, which was previously not possible. This 3D image can, in combination with MD an CD sheet profiles, easily locate errors.

In the subsequent grinding process, the roll surface contour is trimmed to the ideally concentric geometry previously determined. Deviations are corrected by a grinding disk with high-dynamic control. The result is a perfect roll geometry.

Advantages

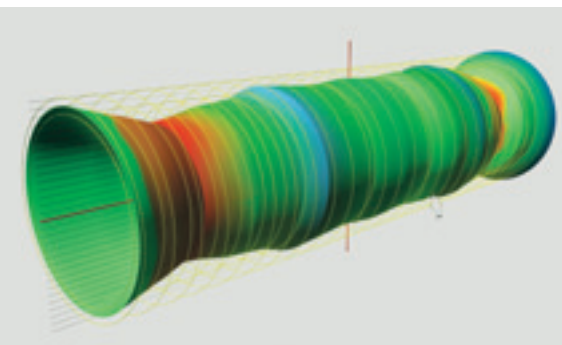
- Roll-induced vibrations are practically eliminated
- Lengthwise coating thickness variations are practically eliminated
- The MD-2Sigma coating thickness value is almost constant, thus saving coating
- Barring problems are practically eliminated
- Roll life is longer thanks to geometrical precision
- Fault analysis is simplified by high-resolution surface geometry imaging.

3DG has already been successfully used at the Wimpassing and Laa-kirchen Voith Paper Rolls service centers in Austria. This innovative grinding technology will soon be installed in other service centers as well.

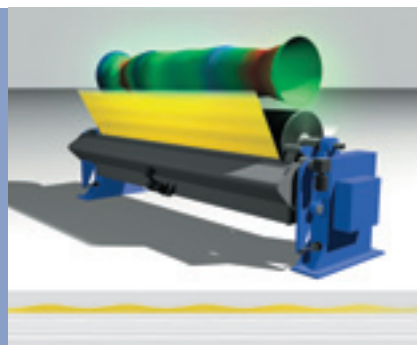
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3D roll surface imaging



Uneven coating thickness with a conventionally ground roll



Uniform coating thickness with a 3DG ground roll