Solid
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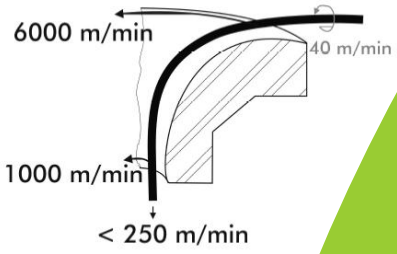

- we prefer the optimum –

Ceramic Surfaces in Textile Processes

Ceramic fiber and yarn guiding components are an essential part of a textile machine. In many applications, they provide the only point of contact with the textile material and must accommodate every movement and change in direction of the yarn or fabric - at high speeds and under demanding mechanical and thermal conditions.

The image on the upper right illustrates the extreme conditions involved, using the yarn contact at the surface of a draw-off nozzle in OE- rotor spinning as an example: At a rotor speed of 120,000 rpm, yarn with a diameter of 0.1–0.4 mm slides and rotates across the draw-off nozzle at a frequency of more than 2 kHz. At the outer edge of the nozzle, relative speeds reach approximately 360 km/h.

Understanding this highly complex tribological interaction is where BROELL's expertise comes in. An optimally engineered surface can protect fibers and yarns, reduce wear and yarn breaks, extend cleaning intervals, and enable higher processing speeds.

Ceramic yarn guiding components therefore influence not only the productivity of textile machinery, but increasingly the quality of the finished textile product. Higher productivity and an expanding range of applications - including recycled fibers - while maintaining consistently high quality place increasing demands on textile machinery.

This results in several key requirements for surfaces in contact with fibers and yarns:

- consistent coefficients of friction throughout the entire service life;
- defined coefficients of friction across a range of fiber materials (e.g. cotton, viscose, polymers, recycled fibers),
- consistent coefficients of friction under changing twist conditions;
- no electrostatic charging in contact with textile fibers;
- high thermal conductivity;
- minimal wear.

We see ceramics as an integral part of the textile process - and engineer their surfaces to bring quality, service life, and productivity into balance.

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** Tribology is an interdisciplinary field focused on improving mechanical systems by minimizing friction- and wear-related energy and material losses. (Horst Czichos, 1992)*

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