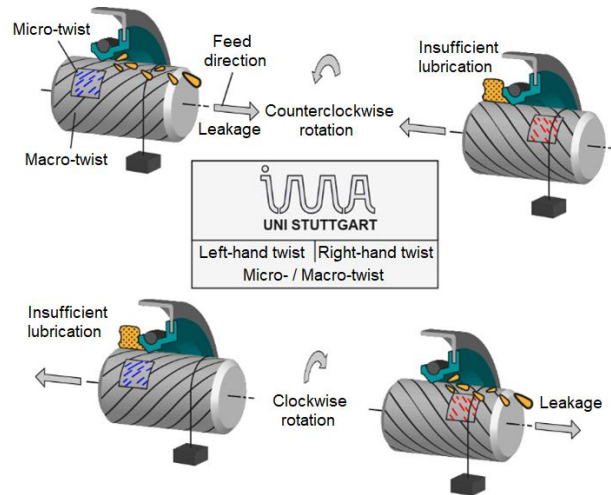
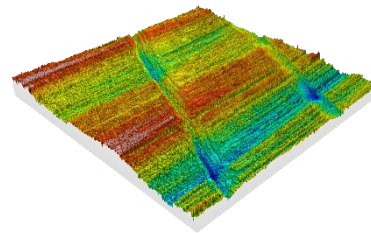


Description:

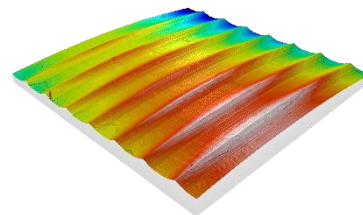
In sealing technology, the term lead (or shaft lead) is used to describe surface structures on seal counter surfaces that lead to an unwanted fluid pumping effect due to the rotation of the shaft during operation of a radial shaft sealing system. This occurs in particular if directional surface structures are present which have an orientation deviating from the circumferential direction of the shaft. Depending on the structural orientation, a further distinction is made between so-called right and left-hand lead. During operation of a radial shaft sealing system, the lead-induced fluid pumping effect of the seal counter surface can lead either to immediate leakage or to inadequate lubrication and therefore to an associated thermal damage to system components. A definition of the lead orientation, as well as a representation of the lead-related effects as a function of the shaft rotation direction, are shown on the right.



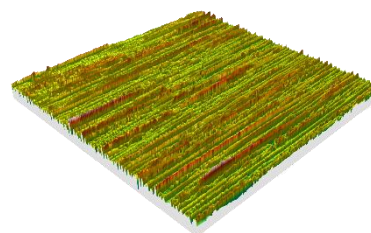
Definition of twist orientation and effects on the radial shaft sealing system



Scratches / defects



Macro-twist



Micro-twist

Lead Categories:

According to the formation mechanisms and structural characteristics, lead is further divided into different categories:

- **Scratches / defects**
- **Macro-lead** (axis-periodic, macroscopically revolving structures)
- **Micro-lead** (*stochastically distributed, grinding grooves*)

All three lead categories can occur on a seal counter surface in superposition and are independent of each other in their characteristics. To ensure the function of a seal counter surface, all three lead categories must be measured and evaluated.

Available Measuring Methods:

- Microscopic visual analysis
- Macro-lead measurement according to MBN31007-7
- IMA-Microlead® Analysis