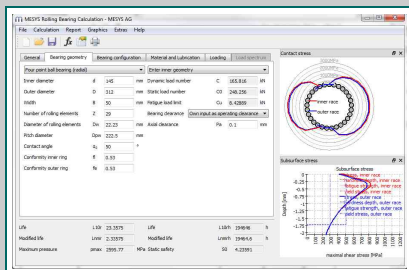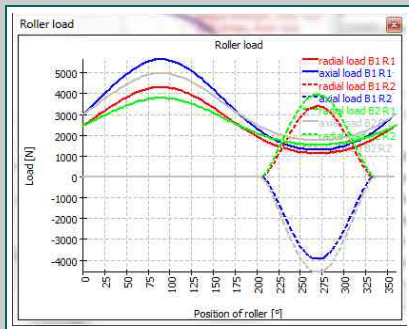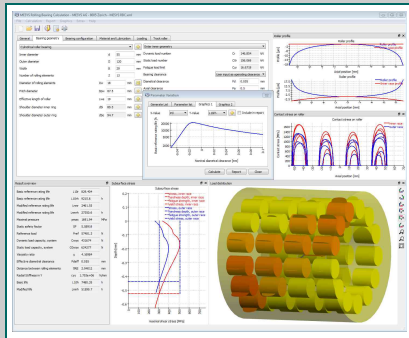# Rolling Bearing Calculation According to ISO/TS 16281
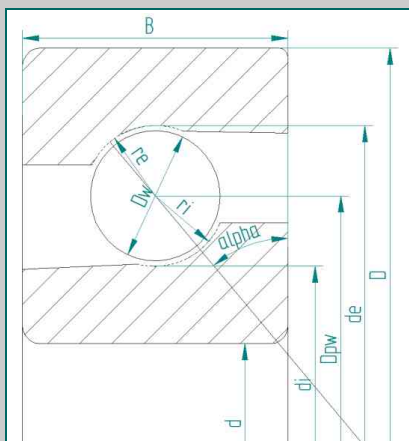
Bearing Life Calculation

The rolling bearing analysis software is calculating the life of rolling bearings according ISO/TS 16281 considering the inner geometry of the bearing. The software is considering the following effects:

- Bearing clearance
- Change of clearance through thermal effects
- Change of clearance due to fits
- Centrifugal loads
- Life reduction due to reduced hardness
- Lubricant
- Lubricant film thickness
- Load spectra
- Bearing sets (of several bearings)
- Hybrid bearings with ceramic balls
- Reliability
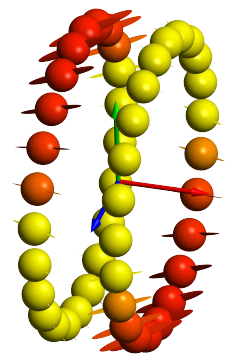
The inner geometry of the rolling bearing is provided by the user, but it can also be approximated from the load capacities by the software. The calculation returns the pressure distribution between the rolling elements and the reference life according ISO/TS 16281 for a given loading (force and moment or tilting).

Results

The results of the bearing analysis are shown in a text report and as graphics. As results you will get:

- Load distribution in the bearing
- Hertzian contact stress
- Stresses below the surface for choosing the required harness depth
- Load dependent friction moment for ball bearings
- Contact angle under load
- Displacement and tilting of the bearing
- Minimal film thickness
- Spin-to-roll ratio, ...

Single Bearing Under Tilting Moment

For roller bearings the influence of tilting on the load distribution or life can be checked.

Sets of Angular Contact Bearings

Using the software the load distribution, life and stiffness can be calculated dependent on the pretension of the bearing set. The pretension can be individually set for each bearing. This also allows checking if the pretension is large enough and the bearings get load in each load case. A combination of cylindrical roller bearings in a planetary gear can determined as well.

Influence of Clearance and Pretension

The influence of bearing clearance and pretension of bearing life and load distribution can be evaluated. The nominal clearance can be selected according C2..C4 according to standards or directly provides as number. The bearing tolerance class can be selected as P0..P2 and the tolerances of the shaft and housing according ISO 286.

High Speed

Mostly the bearing inner race is higher loaded then the outer ring. For high speed this can change because of centrifugal load. The contact angle will be changed, too.

Slewing Rings with Four Point Bearings

The configuration with one or two row four point bearings can be analyzed using the software. Important results are the contact stresses, the friction torque, and the shear stress below the surface to determine the necessary hardness depth. Several load cases can be considered in one calculation using load spectra.

See For Yourself!

For further information, please feel free to contact us by phone +49 (0) 531 129 399-0 or email info@gwj.de. If you would like to learn more about our products, please do not hesitate to contact us for a free web presentation.