Shafts, coaxial shaft systems

General

- Graphical shaft editor for fast modelling
- Calculates stress concentrations from feature geometry
- Add force elements like gears, pulleys or couplings for simple load definition
- Materials, bearings, lubricants databases
- Automatic identification of critical sections

Configurations

- Single shaft or coaxial shaft systems
- Static deformation, modal analysis
- General supports or rolling element bearings, pilot bearings, internal bearings
- Linear or non-linear calculation with Euler or Timoshenko beam model considering temperature effects

Strength rating

- Strength rating along DIN 743, FKM guideline, Hänchen & Decker or AGMA 6101
- For static and fatigue strength, for single load case or load spectrum
- Using material database or own definition for S-N curve, different Miner rules
- Independent load factors and stress ratios for static and fatigue rating

Modal and forced response analysis

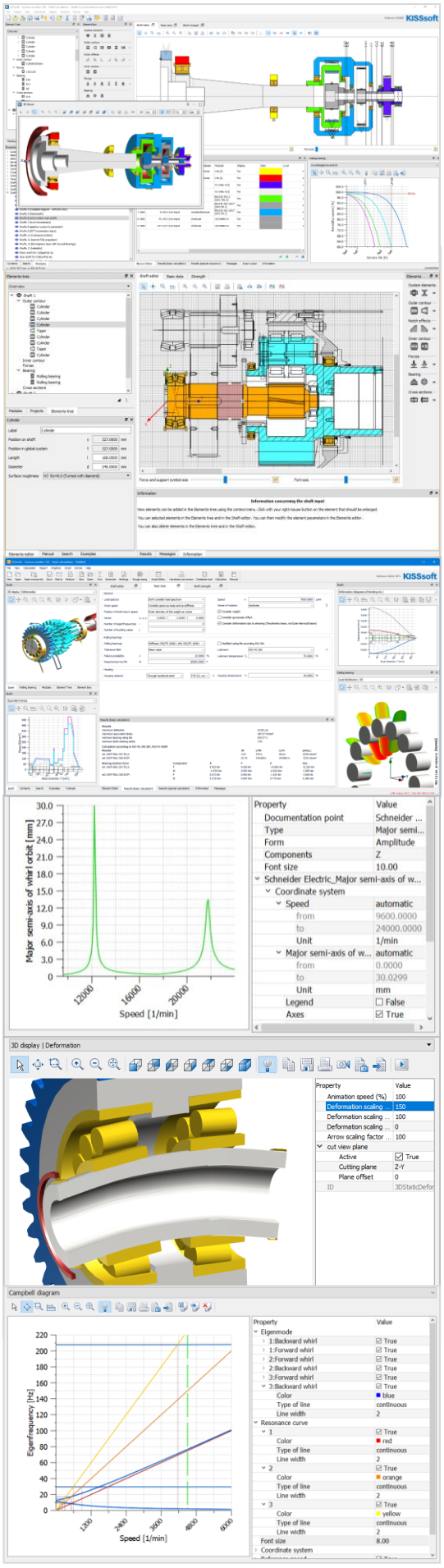
- Modal analysis
- Forced response analysis, with damping
- Considers bearing stiffness

Deformation and stiffness calculation

- Non-linear bearing stiffness is calculated based on inner bearing geometry
- Housing deformation, machining errors and similar may be defined as initial bearing offset
- Any number of loads may be added

Tooth trace calculation

- Calculation of shaft deformation of pinion shaft, calculation of necessary lead modification
- Housing stiffness, bearing stiffness and shaft stiffness may be considered



Bearings

Configuration

- Calculation of single bearing or bearing-shaft system, any number of bearings in system
- With single load or load spectrum
- Sizing function for bearing selection

Bearing life rating

- Basic rating using load capacity numbers
- Modified rating considering lubricant properties
- Reference rating considering load distribution
- Modified reference rating
- Along ISO 281, ISO/TS 16281, ISO 76

Bearing stiffness and clearance

- Based on bearing inner geometry
- Shaft-bearing interaction for shaft and bearing systems
- Considers operating clearance / pre-tension
- Considers bearing, shaft, hub tolerances

Load distribution calculation

- Load distribution among rolling elements
- Contact stresses for balls
- Contact stresses for rollers, considering roller geometry modification (logarithmic)
- Contact stress distribution on raceway

Thermal rating

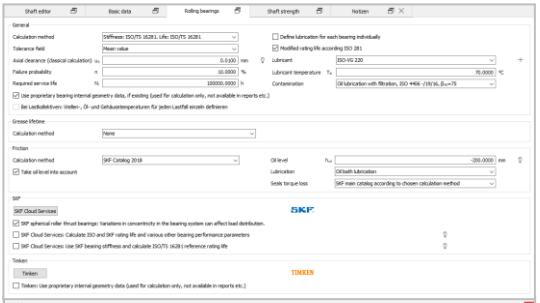
- Along DIN 732

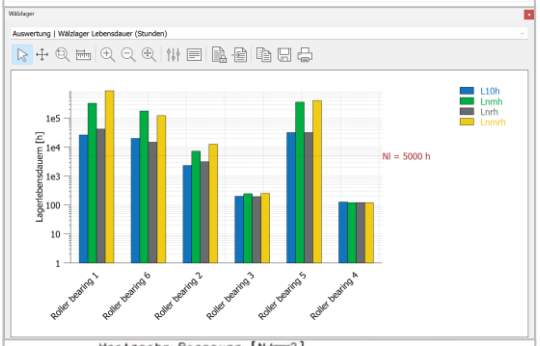
Bearing database

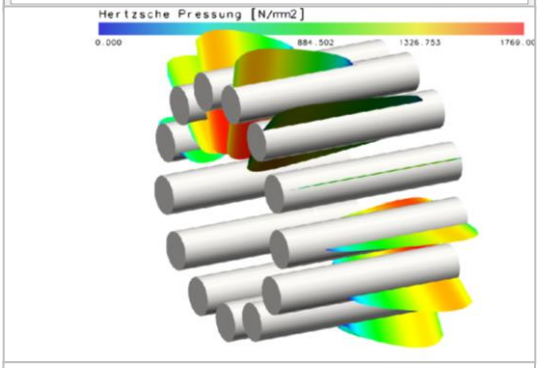
- Bearing data from different bearing suppliers
- For different bearing types
- Basic bearing properties
- Bearing inner geometry, user editable
- Separate database for lubricants, lubricant purity definitions along ISO 4406

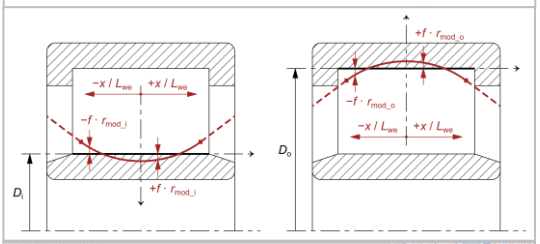
Hydrodynamic bearings

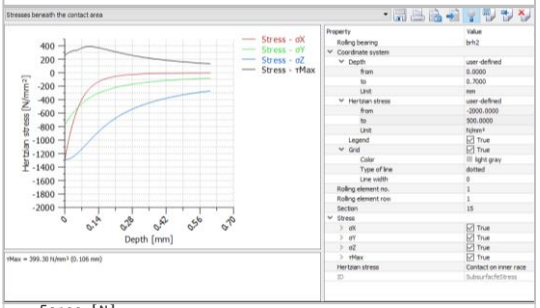
- Axial bearings DIN 31653, ISO 12130, DIN 31654
- Radial bearings ISO 7902, DIN 31652, DIN 31657, Niemann and Spiegel for grease lubricated bearings

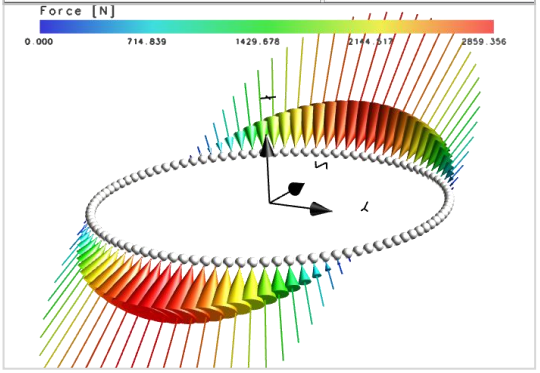












Bearing designer

- Sizing function for bearing inner geometry
- Define ranges e.g., for rolling element diameter, pitch diameter, no. of rolling elements and others
- Software calculates possible bearing designs
- For each design, load capacity and properties of inner geometry are calculated
- Allows for specific, optimized design of bearings, in particular slewing bearings

Load distribution with elastic rings

- Elastic or stiff rings
- Ring deformation influencing load distribution

Calculation by SKF ® and TIMKEN ®

- Cloud based calculation
- Bearing forces are transmitted from KISSsoft to SKF cloud-based tool
- Bearings are rated by SKF, and results are sent back to KISSsoft