# Web demo Shafts and Bearings Calculation

## KISSsoft software module list

### Basic package for Shaft and Bearing Calculation

<table>
<thead>
<tr>
<th>Modules</th>
<th>Description</th>
</tr>
</thead>
</table>
| WPK     | Shafts and bearing standard package  
Calculation of deformations also for statically overdetermined systems / multiple supports, and line loads, Input of linear bearing stiffness,  
Shaft rough sizing  
3D display of forces and diagrams of bending  
pressure angle and transverse shear  
Mirror shaft  
Read-in of a background drawing and show millimeter grid  
Plain bearings for shaft support  
Rolling bearing service life (ISO281, L10)  
Bearing power loss  
One shaft strength calculation, either as specified in DIN743, in FKM Guideline, Hänchen&Decker, AGMA 6101-E08 or AGMA 6001-E08  
Smith and Haigh diagram |

### Modules for Shaft Calculation

<table>
<thead>
<tr>
<th>Modules</th>
<th>Description</th>
</tr>
</thead>
</table>
| WA1     | System of shafts composed of various coaxial shafts  
Calculation of the deformation in the shaft system  
Taking into account the bearing offset, bearing clearance, thermal expansion, linked shafts, nonlinear bearing stiffness calculated from the internal geometry  
Approximation or the internal bearing geometries with optional input of the number of rolling bodies  
Radial bearing can be calculated either with or without an inner or outer ring |
| WA2     | Tooth trace modification  
Calculation of longitudinal deformation  
Load distribution with and without modification  
Sizing of the optimal tooth trace modification  
Take into account gear body deformation  
Implementation of the displacement matrix from the gear body deformation calculated in DPK Calculation of the displacement matrix with DPK |
| WA3     | Buckling (for beams and shafts) |
| WA4     | Critical speeds and frequencies  
Torsions-, bending-, longitudinal frequencies  
Campbell diagram |
| WA5     | Strength calculation according to Hänchen & Decker  
Shaft design regarding constant equivalent stress and maximal deformation |
WA6  Strength calculation acc. to DIN 743, 2012 edition
Shaft design regarding constant equivalent stress and maximal deformation

WA7  Strength calculation acc. to FKM, 2012 edition
Shaft design regarding constant equivalent stress and maximal deformation,
Endurance limit calculation for surface treated parts according to section 5.5
Options for coefficient Kf according to sections 4.3.2 and 4.3.3, determining of the core
hardness from the tensile strength Rm

WA10  Strength calculation based on AGMA 6101-E08 and AGMA 6001-E08

WA8  Load spectra for shafts and bearings
Calculation for shaft limited life- and endurance strength
Bearing calculation with load spectra
Setting of separate temperatures for each load bin with consideration in the
 calculation of bearing clearance and lifetime according to ISO/TS 16281

WA11  Forced vibration
Vibration on the shaft calculated on basis of the unbalance response
Compensation for imbalances by defining the angular position in the "eccentric mass"
force element

Other Shaft-Specific Module

<table>
<thead>
<tr>
<th>Modules</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPK</td>
<td>Gear body deformation</td>
</tr>
</tbody>
</table>
|         | For asymmetric gear bodies, the resilience of the gear body is calculated using the
|         | integrated FE Software Code Aster (flexibility of gear rims and webs in axial plane).
|         | Precise determination of the gear flank misalignment.
|         | Display of the results of the deformation calculation in the software Salome. Output of
|         | the stiffness matrix Also for internal toothing.
|         | Gear body geometry for inclined webs Display the gear body in a preview, and check
|         | independently of the FE calculation

Bearing Calculations

<table>
<thead>
<tr>
<th>Modules</th>
<th>Description</th>
</tr>
</thead>
</table>
| WB1     | Enhanced bearing calculation (L10m, Lnm)
|         | Influence of lubrication according to ISO 281-1
|         | Thermally permissible service speed acc. DIN 732
|         | Definition of the impurity for each rolling bearing individually
| WB2     | Reference service life calculation according to ISO 16281 (L10r or Lnmr if combined with
|         | Module WB1)
|         | Diagram of the load distribution in the bearing
|         | Diagram of the load distribution over the rolling bodies and races
|         | User specified input of roller profiles
|         | Works for thrust needle roller bearings
|         | Graphic showing stresses under the contact surface
<table>
<thead>
<tr>
<th>Module</th>
<th>Description</th>
</tr>
</thead>
</table>
| WB3    | Plain hydrodynamic bearings  
Hydrodynamic radial plain bearings: Oil or grease lubricated, according to DIN 31657, DIN 31652 and Niemann  
Hydrodynamic axial plain bearings: Calculation of pad thrust bearings, tilting-pad thrust bearings, according to ISO 12130 |
| WB4    | Calculation of a single bearing with internal geometry according to ISO/TS 16281  
Own input of the inner and outer ring deformation (possible without the WPK)  
Deformation of bearing rings through external load  
Input loads from the planetary stage calculation  
Tilting of elastic bearing rings is taken into account |
| WB5    | Rolling bearing fine sizing  
Optimization of the internal geometry of bearings through variation calculation  
Variants are displayed in a list, or graphically (needs the WB4 module) |

Do you wish to test these calculation modules? Or do you need a complete list of all available modules? Please contact our sales department: +41 55 254 20 53 or info@kisssoft.ag