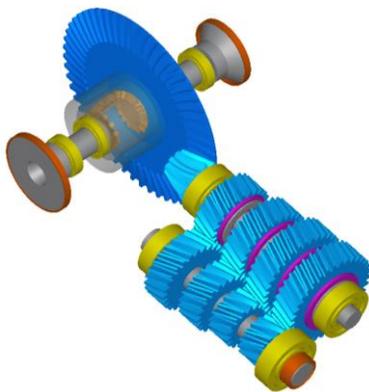


## Complete Gearbox Design with KISSsys

### KISSsys applications

- Complete gear units and drive trains
- Wide variety of application areas
- Kinematic analysis

KISSsys is KISSsoft's system add-on that enables the user to model complete gear units and drive trains. KISSsys is used in many different sectors, such as: automobile and wind power industries, manufacturing of agricultural machinery, power tools, industrial gear units and many more.

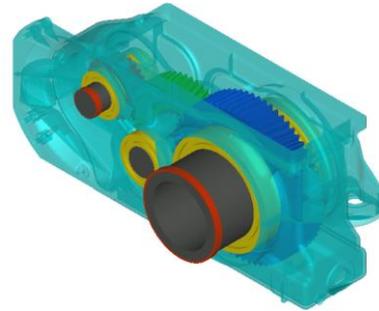


KISSsoft calculates the service life and strength of the different machine elements, and transfers the results to KISSsys, where they are displayed in clear overviews. To achieve this, KISSsys brings together kinematic analysis, service life calculation, 3D graphics, userdefined tables as well as dialogs, and enables to define own tasks and calculations with its integrated programming language.

### Thermal analysis

In KISSsys, it is now possible to calculate efficiency and perform a thermal analysis according to ISO/TR 14179: When performing the efficiency calculation, you can now also adjust the power losses on the basis of measurements using your own factors.

A number of options, such as calculating the cooler power, have also been added to the thermal capacity evaluation. The calculation can be used for any gear unit type.



### Dynamics of shaft systems

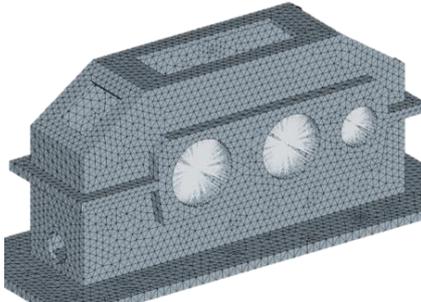
Eigenfrequencies and modes can be calculated for drives with more than one shaft in the system. The meshing stiffness of all gears can now be taken into account. Purely torsional vibrations can be calculated, as can coupled vibrations with every possible degree of freedom.

The existing vibration calculation function has been extended, with the addition of Campbell diagram analysis and the calculation of the forced response. To enable the vibration calculation to be performed with external software, a new interface to MSC Adams has been added. With it, shaft, tothing and bearing geometry data can be transferred from KISSsys in the required input format.

### Housing stiffness consideration

In static system analysis, the deformation of the housing is considered, and therefore its effects on the bearings. The resulting displacements of the bearing outer rings, deform the shaft to a greater or lesser extent, and therefore have a decisive effect on the tothing contact analysis, in particular, when resilient housings and powerful forces are involved.

To perform the calculation, a stiffness matrix for the housing is imported. This stiffness matrix can now be loaded directly into KISSsys in the formats used by the ABAQUS, NASTRAN, Code\_Aster, ANSYS, and Opti-Struct FE programs.



### New features in the Release 03/2018

- Reliability evaluation
- Enhanced load spectrum calculation
- Bevel gear displacements and GEMS®

KISSsoft enables you to evaluate the reliability of gear units, individual gears and bearings.

The reliability of gears is evaluated using tooth root fracture and pitting as the criteria, whereas the service life methods specified in ISO 281 or ISO 16281 are used to evaluate the reliability of the bearings. The results are displayed as a graphic. The calculation is performed according to Bernd Bertsche, and the 3-Parameter Weibull distribution is used for the statistical evaluation.

Using the appropriate template, the load spectrum calculation can be combined with all existing system calculations, such as the efficiency calculation or modal analysis, or take into account the housing stiffness. Here, it is also possible to output the results for each load stage to userdefined output files. For example, you can generate torque- and speed-dependent fields with results for vehicle gear boxes.

KISSsys now has a new template, which determines the bevel gear displacements under load, and displays them. It can be used together with the interface to GEMS®, Gleason's bevel gear calculation software platform. Displacements are determined on the principle of the perpendicular line between the two shaft

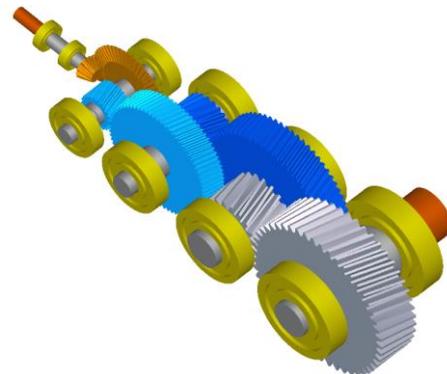
axes (pinion and bevel gear) and can be set with the E/P/G/Sigma or V/H/J/Sigma parameters.

Using the new interface between KISSsys and GEMS®, it is easy to exchange data between the KISSsys design software and the GEMS® manufacturing and analysis software. The geometry data for the bevel and hypoid gears is transferred along with the displacement values. In GEMS®, a tooth contact analysis under load is performed using the finite elements method. The results for the transmission error and contact pattern are then displayed in KISSsys.

### "GPK" gearbox calculation package

- 18 base gear unit models
- Price calculation and collision check
- Easy handling without programming

GPK is a gear unit calculation package, based on KISSsys, which provides the user with 18 base gear unit models, which he can use as templates.



It includes a multitude of functions, for example: Sizing of gears, shafts and bearings on the basis of the operating data. Optimizations can be determined directly, using the price calculation functions, or the collision checks between the elements or with the housing. GPK includes the KISSsys system add-on, but without the option of modifying the kinematics and programming.

If you are interested in acquiring a test license, please contact us at [info@KISSsoft.AG](mailto:info@KISSsoft.AG)