KISSsys: Software Add-On for KISSsoft

When a drive train structure gets complicated in sense of kinematic structure or variable internal power flow, KISSsys becomes a very powerful tool to handle the data, calculations and the results of the complete drive train.

KISSsys Functions

Thanks to the flexibility and internal programming possibilities, customisation and adaptations for the standard calculations are possible. The user is able to define company-specific formulas for the calculations. By using a customised user interface table, the operational interface of the model can be adapted.

KISSsys may also be used to run only the simplified calculations for the selected machine elements automatically. This means that calculations are performed quickly and reliable. If strength of the parts has to be calculated, just the access to the specific KISSsoft calculation is needed.

Using the connections between the elements, the power flow of the system can be modified. Afterwards, the complete vehicle gearbox can be calculated with different speed selections. The user is also able to define unlimited load spectrums in the model – whereupon KISSsys will calculate the complete system with the user defined load cycles.

KISSsys Model

A KISSsys calculation model has normally four different parts:

- Mechanical model including the elements and internal structure
- Kinematic calculation for load distribution in the model
- Strength calculation for the selected machine elements
- Programming language for special adaptations

The structure of a drive train can be build as a logical model, describing the mechanical elements and connections in a gearbox. This mechanical structure is utilized to calculate the kinematic of the system with the defined gear ratios and selected speed.

The user can use the access to the KISSsoft calculation interfaces to redefine the geometry, to do modifications or detailed recalculations for the singular elements. When geometrical values had been changed, these values will be automatically transferred back to KISSsys and the
effect of the changes, based on the defined geometries, gets visible directly on the 3D presentation.

In this way, complete drive trains or part of it can be modelled. The user is also able to import housing data to check the collisions in early stage of the design. The KISSsys model, as defined, can be also exported into a CAD system.

**Vehicle calculations**

When a drive train of the vehicle is modelled, the requirements for the special calculation are rather high. E.g. the following functionalities can be used to run the calculation smoothly:

- Coaxial shaft modelling for the pilot shafts, synchronizer gears or axle drive

- Definition of the speeds in the drive train using a logical table

- Load spectrum calculation with consideration of the speed selections

- Differential gears modelling and operation simulation

- Power split between different axles and wheels

- Wheel slip torque definition and consideration

- CVT and hybrid drive simulations

- Efficiency calculations

- Automatic consideration of the shaft deformation in transmission error calculation

- Export and import functions to exchange result and data e.g. between KISSsys and FEM.

Find out more about our comprehensive software package for the design, analysis and optimization of machine elements. The latest version is available by download from our website www.KISSsoft.com.