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KISSsys Instruction:

Using and Manipulating the Table of Variants

1 Introduction

It can be of interest to use one KISSsys model for the calculation of many gearboxes of the same type (variants). Gearbox series can be therefore easily been used with only one model. It is then very easy to calculate all the variants of this gearbox and get data for a product catalogue. KISSsoft AG has developed a template for that purpose. The template is a table in order to have a certain overview over the variants data. The table contains the variable names of the parameterized values and the values of every variant. It is possible with functions to add columns/whole variants, to switch between variants, or to delete unwanted variants.

The screenshot displays the KISSsys software interface for a gearbox model. The main window is titled 'KISSsys - GB_Series.ks'. The interface includes a menu bar (File, View, System, Extras, Window, Help), a toolbar, and several panels:

- Model:** A tree view showing the hierarchy of the model, including Boundary1, Boundary2, GB, gp1, gp2, GP1, GP2, shaft2, shaft3, System, TableOfVariants, UserInterface, and kSys3DView.
- UserInterface:** A table showing kinematic data:

KINEMATICS	Speed [rpm]	Torque [Nm]	Power [kW]	CREATE GEARS
Input	-1500			
Output	-63.045			
Ratio	23.793			
SETUP				
Lifetime	10000			
- TableOfVariants:** A table listing variant configurations:

Layout	_O_GB.gp1.GP1.fileName	_O_GB.gp2.GP2.fileName
5_a56	Z55_109a50 2.z12	Z24_60a56 2.5.z12
6.25_a56	Z20_50a50 2.5.z12	Z24_60a56 2.5.z12
7.75_a56	Z40_124a50 3.1.z12	Z24_60a56 2.5.z12
9.75_a56	Z34_131a50 3.9.z12	Z24_60a56 2.5.z12
- kSys3DView:** A 3D rendering of the gearbox assembly, showing three shafts with gears mounted on them.
- Diagram:** A schematic diagram of the gearbox layout, showing the arrangement of shafts (shaft1, shaft2, shaft3) and gears.
- Templates:** A panel showing the 'TableOfVariants' template.
- Meldungen:** A panel for messages, currently empty.

2 Handling of the Table

The table has to be copied from the templates called „302-TableOfVariants.ks” and then entered into the tree structure of a finished gearbox model. In order to handle the table the user should know what functions are in it, and what they do. The functions are listed in the next chapter.

Function Name	Functionality
DeleteData	Deletes selected data set form the table of variants
Dialog	Asks for the number of columns. Every defined column must contain data
GetData	Takes a selected variant and distributes it values to the target variables
Read_File	Reads a “*.csv” file which can contain a table of variants written in excel and translates it into KISSsys. Data field separator needs to be semicolon (;)
SetData	Sets the current values of the model to a new variant in the table of variants
Write_File	Writes the table into a “*.csv” file

2.1 Defining the Number of Parameters

In order to open the table the first time, right click on the symbol in the tree structure and choose the function “Dialog”. A dialog asking for the number of columns appears. Please enter here the number of your parameters +1. For Example: If you have two bearings with positions changing from one variant to the other, you have to enter 2 into the field “Columns”. “OK” opens the table.



Figure 2.1-1 Definition of two variables

The table shows 3 columns. The first row shows what information is contained in the following rows. Per default there are no layouts defined. In the first place only name “Layout” is defined in the table and no other information.

First we should define the variables we want to parameterize in the variants. As already mentioned this would be the position of two bearings. The whole path to the variable needs to be defined assuring that functionality will work in every case.

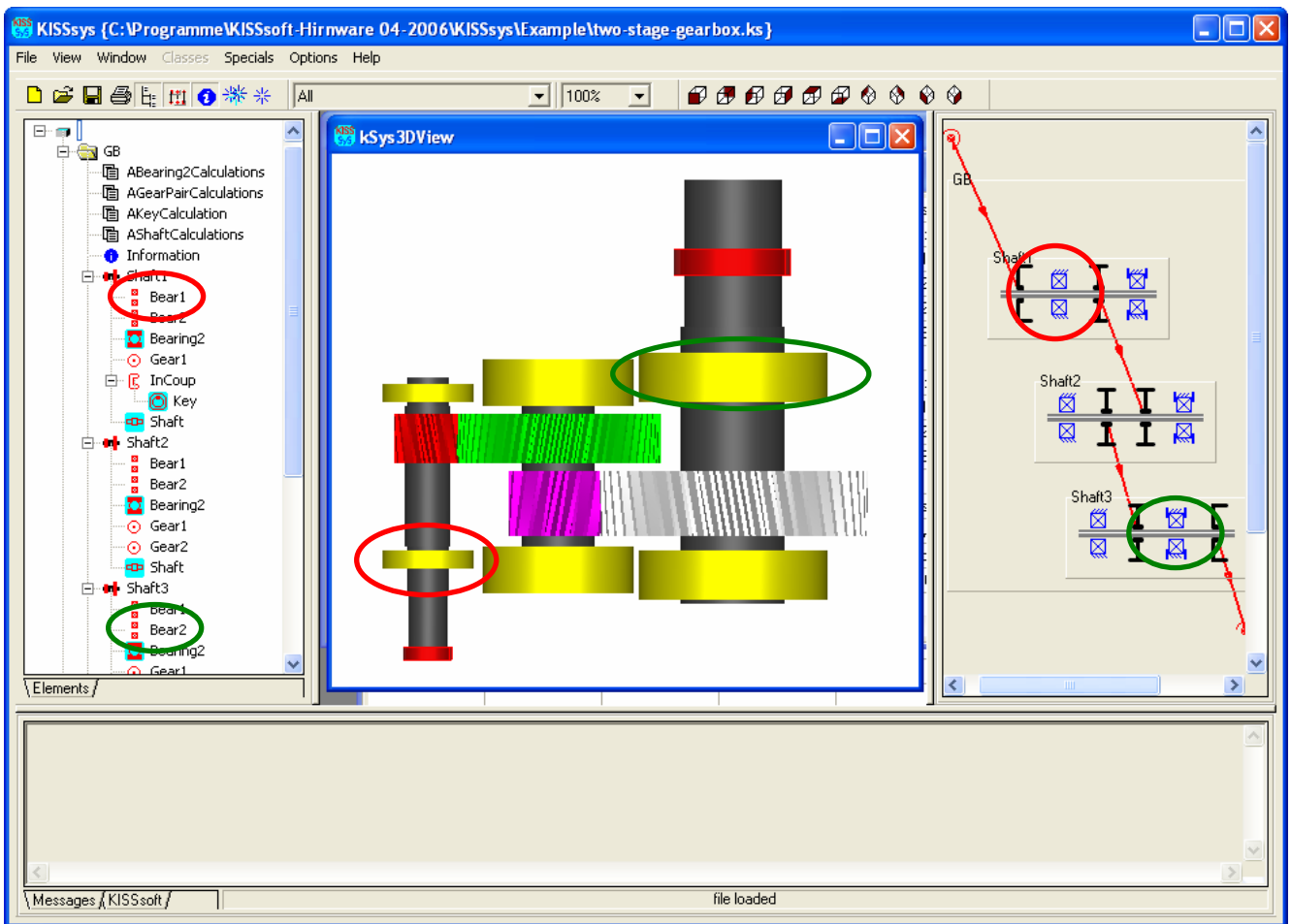


Figure 2.1-2 The bearings used as example

In order to define the position of the two bearings as parameters for the different variants fill in the name of the variables into the first row by simply clicking into the cells in the first row and typing in the definition starting from the top level or root (_O). In the example following lines are used

In top cell of column 2: `_O.GB.Shaft1.Bear1.position`

In top cell of column 3: `_O.GB.Shaft3.Bear2.position`



Figure 2.1-3 Definition of the variables

2.2 Setting Data as a Variant

The variable names for the parameters are now defined. The values for the current variant have now to be defined. The function “SetData” goes through the column and looks for the variables written in the first row of the column. It takes the values of these variables in the model and puts them into the correct column of the layout row.

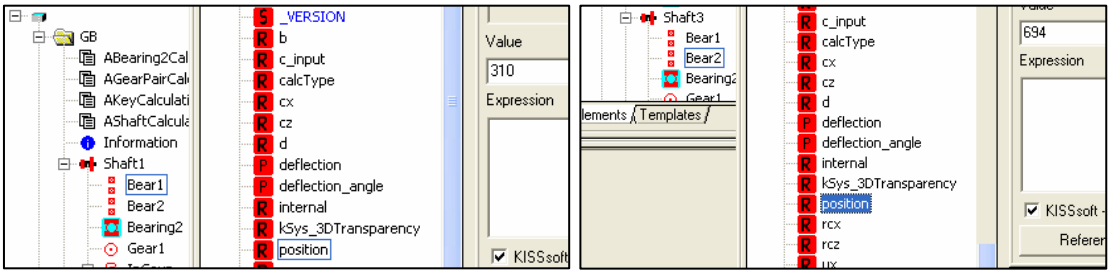


Figure 2.2-1 Position of the two bearings to be set as data for the variant "Test1"

Right click on the table icon and choose the function “SetData”. This opens a dialog, where the name of the variant can be entered. A name which is already existent means that the variant will be overwritten. The function will add a line with the entered name as layout title, when entering a new name.

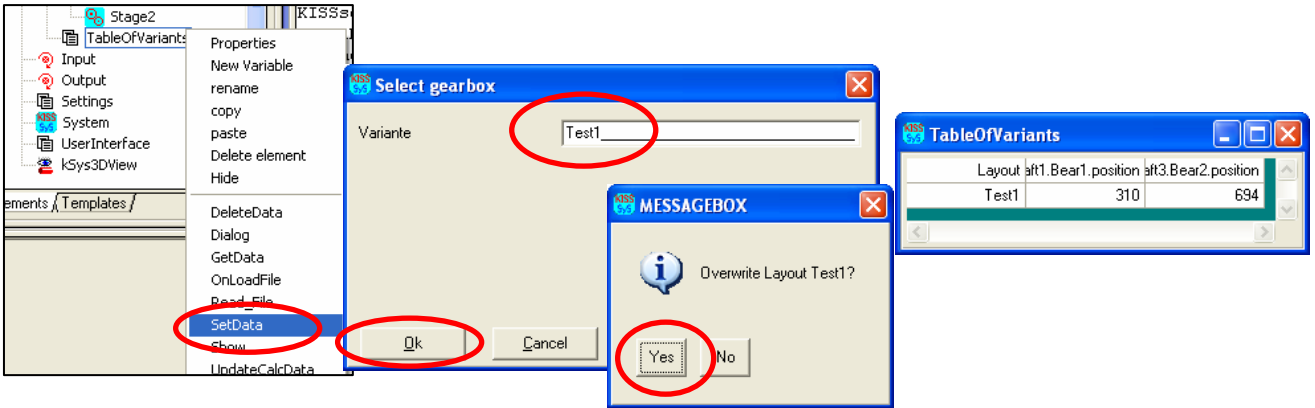


Figure 2.2-2 Setting data from a current model to the variant "Test1" (proceed from left to right) and table of variants

In order to create a new variant with different values change the position of the bearings in the model and execute “SetData”. Call the new set “Test2”.

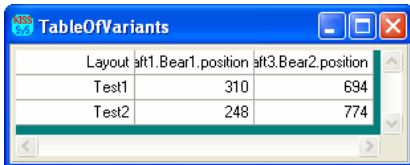


Figure 2.2-3 Table with 2 variants

If a variant with the selected name already exist in the table and you want to overwrite it a question of this will be asked see picture Figure 2.2-2.

2.3 Setting a KISSsoft File as a Parameter

It is also possible to vary the KISSsoft file of a calculation using the “TableOfVariants”. You can vary KISSsoft files of a calculation directly from KISSsys. If you have already defined data in the module, but it is not saved as file yet, please do that first, to save the data. Then right click on the calculation symbol in the tree structure and choose “Dialog”. In the dialog, verify that the options “Save automatically” or “Ask for Saving” are activated. Then run the function “SetFlags” and change the list entry from “Save in KISSsys” to “Save in KISSsoft”. This function saves the calculation data for the first time as a file. These two options guarantee that your calculation file is independently from the KISSsys model saved in a KISSsys file.

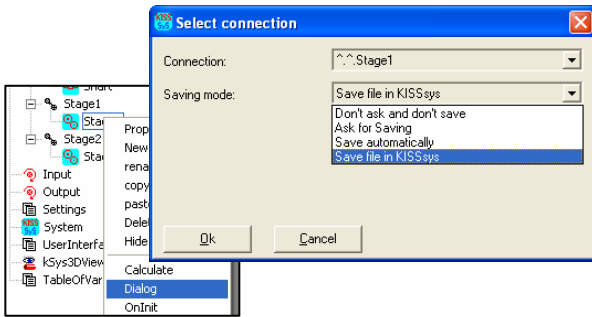


Figure 2.3-1 Setting the Saving Mode of Calculations

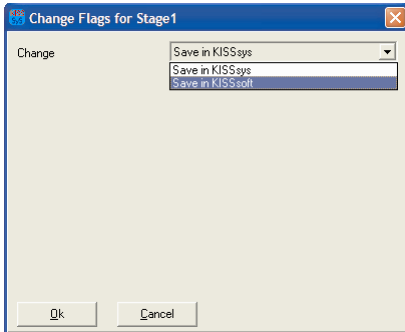


Figure 2.3-2 Setting flags

Then you enter the variable “fileName” in a new column of the “TableOfVariants” and proceed the same way as with other variables.

2.4 Getting Data from a Variant

The function “GetData” can also be called by right click on the table icon. A dialog is opened with a list containing all the variants of the table. One of these variants can be chosen and “OK” has to be clicked. The function then goes through the model and enters variant specific parameters into the variable values of the model. This function makes sure, that the values arrive in the whole model automatically.

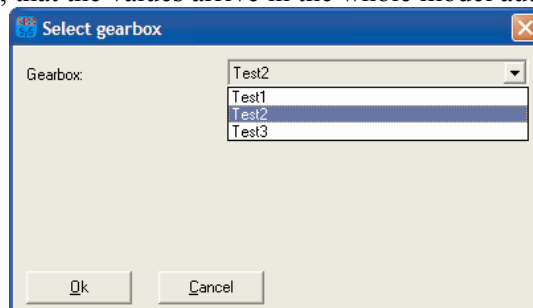


Figure 2.4-1 Choose the desired variant from the list

2.5 Delete a Variant

Whenever a variant has to be deleted, the user can call the function “DeleteData” by right click on the table and click on the function. The function calls a dialog with a list where the user can choose the variant to delete. With “Ok” the chosen variant will be deleted.

2.6 Write File

This function will write the whole table of variants as *.csv file to let user to modify entities manually e.g. in Excel. Using function with right mouse click open a dialog to select name for the file. The default filename “DB_DATA.csv” is shown. It is possible to change this name. The file will be always saved as “.csv” type.

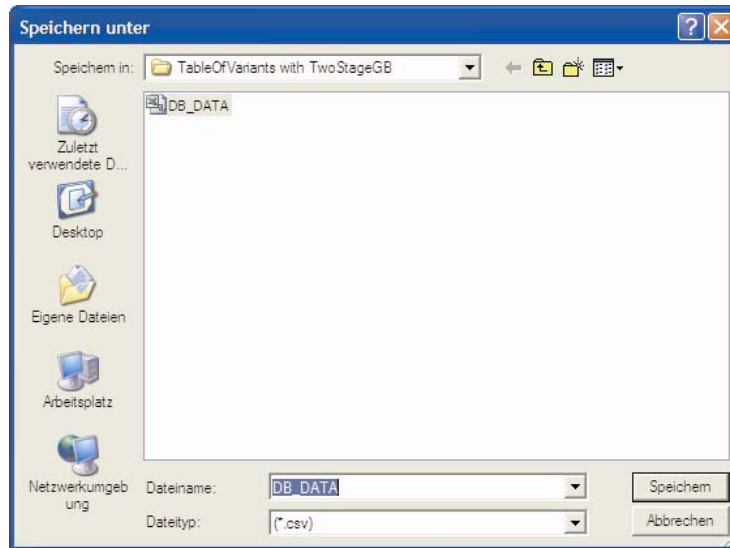


Figure 2.6-1 Write table information in *.csv - file

The file is located to the project folder. It is easy to add now lines and information in the table and then save the file again.

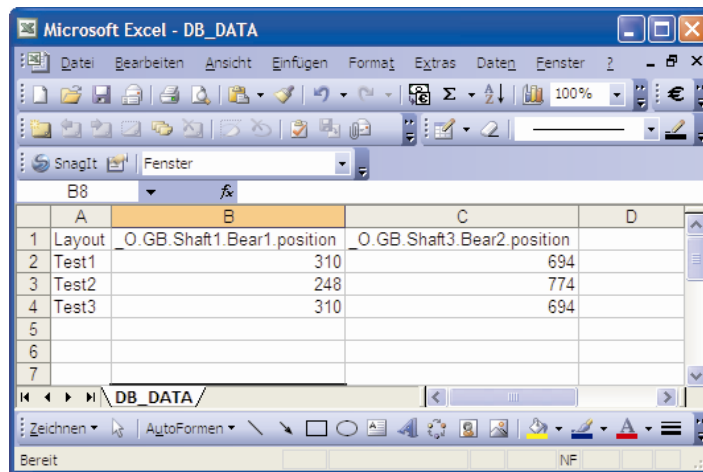


Figure 2.6-2 Data can be easily modified e.g. with Excel

2.7 Read_File

It is also possible to read in a file which contains the variants data. Select function “Read_File” form the table and select a file to read in. All data is automatically set in the table and existing data is overwritten. Table is then shown with this new information.

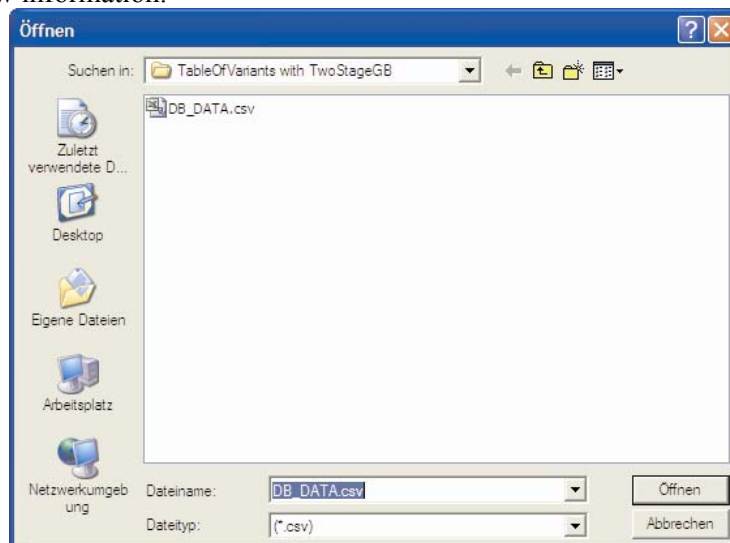


Figure 2.7-1 Read table information from *.csv - file