

## KISSsoft - 3D geometry (STEP interface)

### SP 7 - **Tooth thickness of worm wheel 3D geometry**

In the 3D geometry of worm wheel, the tool addendum is wrongly treated and gives wrong tooth thickness when it has root diameter tolerance.

Now it's fixed to give correct tooth thickness regardless of the tolerance field setting.

## KISSsoft - Bearing calculation

### SP 7 - **Documentation of bearing local stiffness $dFr/dur$ and $dMr/drr$**

The local bearing stiffness  $dFr/drr$  and  $dMr/drr$  documented were wrong, due to internal exchange of the x-coordinate with the z-coordinate values. The calculation results were unaffected.

## KISSsoft - CAD interface

### SP 7 - **SolidWorks 2015**

Interface to SolidWorks version 2015 is implemented.

### SP 7 - **NX: some worms weren't generated correctly**

Changing the generation of the worm gear model in NX.

### SP 7 - **NX 10.0 interface**

Interface to NX 10.0 is implemented.

### SP 7 - **ProE/ Creo: Own parameter with one space**

Own defined parameters, which are defined in KISSsoft, are set in ProEngineer/ Creo as variables. The problem was, that by own defined parameters a space was added.

### SP 7 - **Interface to Autodesk Inventor 2016**

Interface to Autodesk Inventor 2016 is implemented.

## KISSsoft - Gear calculation

### SP 7 - **Reading hardness data file**

When the user defines the hardness data file without the header, the calculation of the flank breakage leads to a crash of the program.

In addition, when the data file is defined with redundant spaces before the line break, the reading of the data is wrong.

Now both problems are fixed to read the data correctly.

### SP 7 - **Proportional scaling of axis misalignment was not working properly**

The proportional scaling option of misalignment for planetary systems at module specific settings was overwritten by the proportional scaling option at axis alignment of the contact analysis.

### SP 7 - **Load spectrum calculation of planetary gear with zero frequency bin**

In the load spectrum calculation of planetary gear, the calculation gives a wrong error message if the load spectrum has zero frequency bin.

Now the checking condition is fixed and the calculation proceeds without any problem.

#### **SP 7 - Hypoid gear assembly drawing**

In the 2D assembly drawing for hypoid gears, the pinion in the top view was in some cases not in the correct position, but shifted in the x-coordinate.

#### **SP 7 - Worm gear calculation (ISO or DIN) with Power-on time less than 100%**

Worm gear calculation (ISO or DIN) with Power-on time less than 100%: Life factor ZH for flank safety was calculated wrongly.

#### **SP 7 - Problem with contact analysis and left flank in contact**

The contact analysis didn't consider left flank contact correctly for cylindrical gears and planetary systems. This affected the display of the buttressing effect in the 3D graphic.

#### **SP 7 - KHb calculation according ISO6336-1 annex E with different Kgamma**

When KHb calculation according ISO6336-1 annex E was used with duty cycles having different Kgam for every bin, then the calculation was always performed with the global Kgam. This is now fixed.

#### **SP 7 - Root form diameter for gears with constructed involute**

Root form diameter dFf of gears generated with constructed involute was wrong calculated in the main report (radius rofP\* instead of rofP\*\*mn was used).

#### **SP 7 - Coefficient of friction in Module Specific Settings not saved (Bevel/Hypoid gears)**

The coefficient of friction of bevel/hypoid gears (in Module Specific Settings -> Tab Calculations) was not saved when the file was closed and then reopened.

#### **SP 7 - Planetary gears: Contact analysis and KHβ calculation according to ISO 6336-1, Annex E, with shaft files**

When shaft files are used for contact analysis or KHb calculation (ISO 6336-1, Annex E), the bending of the gears is defined from the corresponding shaft file (if defined). In planetary systems, the bending of all components (sun/planet/ring gear and carrier) needs to be expressed in a common coordinate system. However, this operation was not performed properly for the bending components of all gears. This affects the load distribution along the face width in both meshing (sun-planet, planet-ring).

#### **SP 7 - AGMA925 for planetary stages**

Until now the absolute speed of the sun was used. Now the relative speed of the sun = sun speed - carrier speed is used.

For the ring, the relative speed of the planet vrel multiplied with dwPlanet / dwRing is used.

#### **KISSsoft - General**

#### **SP 7 - IGES-format: save curve from a graphic wasn't working**

If you saved a curve from a graphic (IGES-format) then KISSsoft crashed.

#### **SP 7 - Decimal numbers are not shown correctly in graphic properties**

For some language or country settings (localization) decimal numbers are not shown correct in graphic properties.

#### **SP 7 - Chamfer at tooth end was not considered by contact analysis**

Chamfer at tooth end was not considered by contact analysis. This reduces the effective common tooth face width. This is now fixed.

#### **SP 7 - Checking condition error in linear drive calculation**

The checking condition for number of threads is fixed.

Also, the problem in saving the tightening and loosening angles are fixed.

#### [KISSsoft - Graphics](#)

#### **SP 7 - 2D Graphic root stress**

For internal gears, the contact analysis graphic for the root stress in 2D didn't show any results.

#### **SP 7 - Problem with load distribution graphic**

In some cases the graphics 'Normal force distribution (line load, length of path of contact)', 'Safety against micropitting (ISO TR 15144) on tooth' and 'Stress distribution on tooth Gear A/B' where wrong or misleading. They are now deactivated and will be replaced at KISSsoft 03-2015.

#### [KISSsoft - Shaft calculation](#)

#### **SP 7 - Shaft is crashing in single load spectrum calculation**

The shaft calculation was crashing when load spectra were defined and the calculation input was "Consider only one element of the load spectra" (tab "Basic data"->"Strength"->"Load spectra"). This was accidentally introduced in the previous patch.

#### **SP 7 - Improvements in new shaft calculation solver**

General improvements on the stability and performance of the new shaft calculation solver.

#### **SP 7 - Load spectrum calculation of shaft with stiff connections**

In very rare cases, the load spectrum calculation with stiff connections could crash the software.

#### [KISSsys - General](#)

#### **SP 7 - Portuguese language in KISSsys**

The selection of Portuguese language was not possible in KISSsys.

#### **SP 7 - Transparency setting according to power flow in 3D viewer**

The transparency setting according to power flow is now working in the 3D viewer of KISSsys.

#### **SP 7 - Required safety factors for gear calculations are not connected with KISSsoft variable correctly**

The required safety factors for gear calculations are not connected with KISSsoft variables correctly in the translation table.

Now the table is fixed and the data transfers correctly.

#### **SP 7 - Contact analysis from KISSsys**

When the shaft data is used for the ExecuteContactAnalysis(), it was working only with the KHb flag with ISO 6336 Annex E calculation.

Now it's fixed to perform the contact analysis for all settings.

## **KISSsoft Changelog Version 03/2014 - Service Pack 6**

#### [KISSsoft - Bearing calculation](#)

#### SP 6 - **Wrong lifetime in bearing results window**

In the results window of the bearing calculation (W50 files), there was an error: if the lifetime of the first bearing was infinite (999999999.), then the lifetime of all bearings was shown as infinite as well. However, the values documented in the report were correct.

#### KISSsoft - Bolt calculation

#### SP 6 - **The admitted shear stress of the nut wasn't correctly read**

The admitted shear stress of the nut, when the material was introduced by 'own input', wasn't correctly read.

#### KISSsoft - CAD interface

#### SP 6 - **CoCreate, Creo Elements/Direct Modeling: left hand worm wasn't built correctly**

To build a left hand worm wasn't working, there was built only the cylinder.

#### KISSsoft - Gear calculation

#### SP 6 - **Problem with modification sizing of planetary systems**

KISSsoft was terminated if a detailed report was chosen for a solution in the modification sizing dialog for planetary systems.

#### SP 6 - **Considering partial load in planetary gear contact analysis**

The setting for "Considering partial load" in axis alignment of the contact analysis of planetary gear was always set back to "constant" even if the user changed the setting to "proportional to partial load".

The selection is correctly set now.

#### SP 6 - **Flank twist modification**

There was an error in the application of the flank twist modification to the tooth form. To be able to apply the modification correctly, the tooth thickness of the first manufacturing step has to be increased by the amount of the modification and then removed accordingly. This was not correctly handled when the twist value was negative.

This has an effect on 2D-toothform, 3D-toothform, as well as in contact analysis.

#### SP 6 - **Wrong conversion of load spectrum in face gear calculation**

When the load spectrum is defined for the face gear, not the pinion, the conversion of the speed from the factor to value was wrong.

The conversion was using the speed of equivalent spur gear, not the speed of face gear.

#### SP 6 - **Importing tooth form from dxf**

When a tooth form is imported from dxf and it contains spline elements, there was a small deviation at the end of the curve.

#### SP 6 - **Selection of module in the fine sizing of crossed helical gear**

The selection of module range was not possible in the fine sizing of crossed helical gear.

#### SP 6 - **Crash of contact analysis with shafts**

KISSsoft crashed if contact analysis was used with shafts and partial load was set to 50%.

#### SP 6 - **Work hardening factor**

We corrected two minor bugs in the Work hardening factor  $Z_w$  (ISO6336 and DIN3990): When the pinion had exactly HRC58, the factor of the not hardened gear was not applied (set to 1.0). Same happened, if two not hardened gear with very different hardness were in contact, then also  $Z_w$  was set to 1.0.

#### SP 6 - **Misalignment in planetary stages was not considered proportional**

KHb-Calculation following ISO6336, Annex E, with duty cycles in planetary set: Axis misalignment (in sub-window 'Axis-alignment') of planetary stages were not considered as proportional to partial loads with load spectra (when this was requested under 'Module specific settings').

#### SP 6 - **Sizing of flank line modifications was wrong in case of left flank in contact**

Sizing of the flank line modifications using ISO 6336-1, Annex E, was not working correctly, when left flank is in contact. This is fixed.

### KISSsoft - General

#### SP 6 - **Several improvements in the report template**

The following improvements are made in the report template:

1. The unit [UpM] is replaced to [1/min] in several places in gear and shaft calculation report.
2. The value for " $d_{Nf-dFf}/2$ " in four gear calculation is fixed.

#### SP 6 - **Mass moment of inertia units conversion**

Correction in the conversion of mass moment of inertia units from  $kg \cdot m^2$  to  $kg \cdot mm^2$

#### SP 6 - **Wrong decimal separator in saved files**

Some Windows Versions cause problems with the localization. This can lead to data losses due to wrong decimal separators in the saved files. The patch prevents KISSsoft from writing wrong files and corrects already damaged files.

### KISSsoft - Graphics

#### SP 6 - **DXF-export: special characters**

Special characters were not exported correctly for most dxf-viewers. The problem occurred with some units (e.g. °) or characters in text (e.g. ä).

### KISSsoft - Shaft calculation

#### SP 6 - **Bearing friction loss**

The oil level was wrongly calculated (less than 5% wrong); only when the shaft was inverted ( $\beta = 180^\circ$ ), the error was much bigger.

#### SP 6 - **Importing a planetary gear in shaft calculation (introduced in Service Pack 5)**

The import of planetary calculation files (Z014) in a shaft calculation (W010), as far as the planet gear is concerned, was partially resolved in Service Pack 5: the planet gear was being calculated based on the power, which could give wrong results due to the presence of a planet carrier and its associated speed. From now on, planet gears defined in a shaft calculation and imported by a Z014 file, will be calculated based on the torque and NOT on power. This is the safest method and does not cause any discrepancies in the shaft calculation results.

#### SP 6 - **Improved stability of new shaft calculation solver**

The new shaft calculation solver has been improved in its accuracy, stability and convergence ability (module specific settings -> tab "Calculations" -> check box "Use 2013 Solver" must be unchecked).

#### SP 6 - **Operating clearance of rolling bearings**

When a bearing's inner ring was fixed on the housing, and it's outer ring was fixed on a shaft, the operating clearance of the bearing (taking into account the running speed and tolerances) was

wrong. In addition to that, when taking into account centrifugal effects on connecting rolling bearings, instead of using the absolute shaft speeds on both rings (inner shaft speed on inner ring, outer shaft speed on outer ring), the relative speed difference was used on the inner ring and the outer ring was kept stationary. This affected the bending line and all related results.

#### SP 6 - **Position of eccentric load did not update**

The position of an eccentric load in the element editor did not update when moving the load in the shaft editor.

#### [KISSsoft - Shaft-hub-connections](#)

#### SP 6 - **Cylindrical (multiple) interference fit**

In the cylindrical (multiple) interference fit, the material properties for the outer diameter of each press fit were set wrong (temperature and thermal expansion coefficient). In addition, the tolerance values of the hub were overwritten to 0 in the pressure sizing dialog, when the tolerances of the shaft and hub were given directly as values (eg. +40/+15) instead of s6, for example.

#### [KISSsys - General](#)

#### SP 6 - **Reset positions after 3D graphic simulation**

After running the 3D graphic simulation in KISSsys, the position of the elements were taking the temporary position from the simulation.

Now it's fixed to reset to their original position.

#### SP 6 - **Update KISSsys instructions on the website**

We updated some of the KISSsys instructions and calculation files on our homepage.

The following is the list of the updated files.

##### Tutorial

- GPK Tutorial

##### General Instructions

- Lubrication
- Variable names
- Table adaptation
- User interface
- Text output
- Translation table
- Bearing force export
- Functionalities in KISSsys
- 3DView settings
- Component positioning

##### Templates

- Load spectrum
- Frequencies in gearbox

## **KISSsoft Changelog Version 03/2014 - Service Pack 5**

#### [KISSsoft - CAD interface](#)

#### SP 5 - **ProE/ Creo, NX: \*CAD.out files weren't written**

The files \*CAD.out and \*CADW.out weren't written in the cad-folder.

The files are used to transfer variables to the cad system (only available for ProEngineer/ Creo

Parametric or NX).

#### SP 5 - **Solid Edge ST7**

Interface to Solid Edge version ST7 is implemented.

#### KISSsoft - COM

##### SP 5 - **COM-interface: SaveFile function hadn't working correctly**

The SaveFile-Function hadn't saved the whole file.

#### KISSsoft - Gear calculation

##### SP 5 - **Tooth Thickness modification factor for worm gear**

The tooth thickness modification factor was multiplied with the transverse module, instead of the normal module. This was giving a tooth thickness on the worm wheel which was typically a few micrometers wrong, if the tooth thickness modification factor was used.

##### SP 5 - **Input in diametral pitch in fine sizing of crossed helical gear**

The fine sizing of crossed helical gear was always using normal module.  
Now, the input in diametral pitch is possible in accordance with the basic data.

##### SP 5 - **Wrong sign check of planet pin tilting**

In cases of tilting of the planet pin axis along  $dt$  for planetary systems, the sign of  $dt$  was checked wrong. This didn't have influences onto the calculation itself but triggered only a message to inform the user about his possible wrong entry.

##### SP 5 - **Worm gear report**

Some of the tooth thickness related values were always shown in mm, even if the units system is set to US customary units.

##### SP 5 - **AGMA2001, 2101 etc: YN modified for through hardened steels**

After discussion with the technical committee of AGMA TDEC, the Woehlerline for bending as shown in fig.18 (AGMA2001) is modified for steels with HB other than 160, 250 or 400. Up to now for a steel with HB240, the curve of HB160 was used (to be on the safe side). Now the TDEC confirmed, that it is permitted to interpolate YN static based on the HB-value and then use the Woehlerline accordingly. Therefore in such cases the admitted material values for bending will be increased.

##### SP 5 - **Propositions for profile shift $x$ , when tip rounding is used**

No proposition was presented for  $x$  to get optimum specific sliding, when gears had a tip rounding.

##### SP 5 - **Tooth form by constructed involute: final treatment**

When using a constructed involute, the final treatment (grinding and corrections) were limited to not go below the previously generated root form.

This was now removed and the value set in the tab corrections is considered as is.

##### SP 5 - **Calculation of $d_{Fa}$ improved**

Calculation of tip form diameter  $d_{Fa}$ , when high ramp angle ( $\alpha_{KP}$ ) is used, was sometimes not giving results (which then resulted in not accurate result in the report). This is improved.

#### SP 5 - **Duty cycle calculation with only 1 bin**

Duty cycle calculation with only 1 bin may give not expected results. A Yes/No-Message is now added:

"Duty cycle calculation with only 1 bin is not allowed. Do you want to change the nominal data (speed, torque, power) accordingly and run the calculation?"

#### SP 5 - **Material POM for VDI2637**

Due to a missing information in the material file Z014-POM\_VDI2736.DAT, duty cycle calculations using this material were giving wrong results.

#### KISSsoft - General

#### SP 5 - **Unit conversion between Nm/° and Nm/mrad**

There was an error in the unit conversion between Nm/° and Nm/mrad (factor 1000).

#### SP 5 - **Decimal numbers are not shown in tables**

For some language or country settings (localization) decimal numbers were not shown in tables. Zero was shown instead.

#### KISSsoft - Graphics

#### SP 5 - **Problem in graphical representation of planetary systems**

The planet/rim graphics of the contact analysis for planetary systems which show only a part of the path of contact (the pitch) had a wrongly shifted x-axis. This doesn't effect the calculation. Only the graphical representation lead to misunderstanding.

#### KISSsoft - Shaft calculation

#### SP 5 - **Documentation error: Total axial load**

The "Total axial load" in the shaft report was documented wrong if the user was considering a single case from a load spectrum. The rest of the calculation results are unaffected.

#### SP 5 - **Shaft report error**

Power of forcing elements was documented wrong in some cases in the shaft report, when torque was input by the user. Calculation results are unaffected.

#### SP 5 - **Lifetime of bearings in the results window**

For bearings that are not available with the inner geometry method, the shaft calculation uses (for these bearings only) the classical method automatically. The (reference) lifetime results for these bearings were misleadingly showing a very high value in the results window, even though the result of maximum pressure was 0. In order to make this clear from now on, and only in these cases, the reference lifetime  $L_{nrh}/L_{nmrh}$  will be shown as 0.

#### SP 5 - **Importing a planetary gear in shaft calculation**

When the data of a cylindrical gear in the shaft calculation were imported from an existing KISSsoft planetary calculation file (Z014 extension), and gear was supposed to represent the planet gear, the value for the power/torque was wrongly set to the double of the correct value, because it was neglected that the planet gear has two simultaneous contacts (one with the sun and one with the ring gear).

#### SP 5 - **Campbell diagram with classic bearing calculation**

Due to wrong internal data handling, the plot of the Campbell diagram could show artifact eigenfrequencies which were not actually there. The error was caused when the shaft calculation mode contained a bearing with the classical method.

#### KISSsys - General



#### SP 5 - **2D plot in KISSsys**

The 2D plot class was not working correctly.

Now the axis tick markers and data line labels are shown correctly.

#### SP 5 - **Shaft calculation with shafts and sub shafts**

If a shaft element has sub shafts, for example a planet shaft is modeled under a carrier shaft, the shaft calculation so far included all the elements from the sub shaft.

This was changed to not include all the elements by default. The user can set the variable "includeSubElementsInShaftCalculation" to 1 in order to include the elements.

This does not affect coaxial shaft calculation.

#### SP 5 - **Kinematic calculation in four helical gear constraint**

The kinematic calculation in four helical gear constraints used the efficiency (eta2) for the pair 'gear3 - gear4'.

Now it uses eta3.

#### SP 5 - **Frequency template update**

The frequency [calculation template](#) and the tutorial are updated for download.

## **KISSsoft Changelog Version 03/2014 - Service Pack 4**

### [KISSsoft - 3D geometry \(STEP interface\)](#)

#### SP 4 - **3D STEP-model of bevel gear: blank geometry**

The blank geometry of the 3D bevel gear model (STEP interface) was incorrect.

The mistake occurred on bevel gears with tip alteration at the outside. In those cases, the angle at the back of the gear was slightly wrong.

### [KISSsoft - Bearing calculation](#)

#### SP 4 - **Oil level was wrong defined**

In the calculation modul W050 for bearings, the oil level H was calculated without ring thickness t.

### [KISSsoft - CAD interface](#)

#### SP 4 - **NX: russian ribbon menus fixed**

The russian menu files for the ribbon menu \*.grb, \*.rtb and \*.men were wrong saved.

### [KISSsoft - Gear calculation](#)

#### SP 4 - **Tip relief Ca from semitopping cutter**

The calculation of Ca, when a reference profile with ramp angle is used (semi topping), is more precise now.

#### SP 4 - **Calculation of tip form diameter from tooth form**

In rare cases, namely in internal gears with small normal modules ( $m_n < 0.5$ ) and profile corrections, the calculation of the tip form diameter from the tooth form was incorrect.

#### SP 4 - **Tooth form by constructed involute: large root radius**

The root radius for constructed involute can be introduced in the tab "reference profile". However, there is a certain maximum, after which it's impossible to fit the radius in the root. In that case, the

input was simply ignored and an edge in the root was generated.

This has been changed, so that the radius taken in the tooth form calculation will be the maximally possible radius. In that case, a warning message is displayed.

This change can also have an influence on the tool of pinion type cutters, since they're internally generated as constructed involute.

#### SP 4 - **Helix angle factor in the report**

The "Helix angle factor" in the gear bending strength calculation report was wrongly described as "Helical load factor". Now it's fixed to use the correct term "Helix angle factor".

#### SP 4 - **Changing the reference profile did not always work**

Changing the configuration of the reference profile (hobbing cutter, pinion type cutter, reference profile gear, constructed involute) did not work in cases where not all 4 configurations are available (for example racks).

#### SP 4 - **Master gear: Improved range for tip diameter of the master gear**

Master gear: We had cases where the  $h_{aP^*}$  of the Master gear was negative. The method can now treat also such special cases.

#### SP 4 - **KHbeta convergence problem**

In some cases the KHbeta calculation of planetary systems with shafts, load iteration and load spectrum was broken and did not converge.

#### SP 4 - **Improvement of torque layout**

Torque layout function often was giving "Iteration does not work." The function is improved.

#### SP 4 - **Hertzian Pressure in Contact analysis for internal pair with small tooth difference**

The Hertzian pressure calculated with contact analysis was too high for an internal gear pair with very small tooth number difference (e.g.  $z_2 = z_1 - 1$ ).

### KISSsoft - General

#### SP 4 - **Abort button inhibited use of special calculation**

If abort button of the progress bar was pressed while calculating with a special module (e.g. Contact analysis, Operating Backlash, etc), the user was not able to start any calculation of a special module again. A restart often was necessary.

#### SP 4 - **License file download did not work**

The download of the license file directly from the software did not work.

#### SP 4 - **Links to news and trainings did not work**

The links to the news and the trainings on the start page did not work.

### KISSsoft - Graphics

#### SP 4 - **Markers in the flank line diagram**

In the flank line diagram, the number indication on the horizontal and vertical markers was fixed to either [mm] or [mil] unit.

This was changed, so that the unit on the y-value corresponds to the unit on the x-axis. This means that the numbers change, when the unit of the axis are changed.

#### SP 4 - **Bevel gear drawing**

In the bevel gear drawing, the tip alteration at outside was not consistent with the 3D model, in the case of a modified blank.

Now, only the length of the tip alteration at outside is considered, when modified blank is activated. The value  $h_{ake}$  is hidden in that case.

### KISSsoft - Shaft calculation

#### SP 4 - **Import of RotCAD exchange and DXF files did not work properly**

The import of RotCAD exchange and DXF files did only work for Asciii files, whereas the export produces UNICODE files. Therefore the export/import mechanism did not work.

#### KISSsoft - Shaft-hub-connections

#### SP 4 - **Woodruff key: groove depth for the hub**

If the geometrie standard was set to 'own input', it wasn't possible to define the groove depth for the hub.

#### KISSsys - General

#### SP 4 - **Restored the icon for UpdateAllShaft**

The icon for "UpdateAllShafts" was missing. Now it's restored in the main toolbar.

#### SP 4 - **Show full path in the message**

In the KISSsys message window, we display now the full path instead of local path to help the user to quickly find the element related with the message. For example, the new message shows as "[\_O.GB.s3.Key] reference does not exist." instead of "[^.Key] reference does not exist."

#### SP 4 - **GPk model update**

The shaft calculation methods in the GPk models are fixed to be consistent with the KISSsoft shaft calculation. Important note: The GPk models existing on the user installation will be overwritten by this patch. So when you change data in a GPk model always store the model under a new name, so that it will not be overwritten!

## KISSsoft Changelog Version 03/2014 - Service Pack 3

#### KISSsoft - 3D geometry (STEP interface)

#### SP 3 - **3D STEP models of cylindrical improved**

In the 3D STEP models of the cylindrical gears, there was in some cases a thin fillet at the side of the cylindrical gear. The error has been cleaned up.

#### KISSsoft - Bolt calculation

#### SP 3 - **'Results from FEM calculations' wasn't shown**

The tab 'Results from FEM calculations' wasn't shown, if you open an example, in which the configuration 'Proof for bolts with FEM results' was set.

#### SP 3 - **Bolt length of engagement: input values are overwritten**

In the 'Length of engagement' subwindow, the input values are overwritten with the default values, if you close the window.

#### KISSsoft - CAD interface

#### SP 3 - **SolidWorks: some helical gears weren't generated**

Some helical gears with an helical angle bigger than 15 degrees and a big face width weren't generated.

The guide line of the cutout is now a bit longer so that KISSsoft can generate the gear.

#### SP 3 - **Creo Direct Modeling: opened allways a new application**

When exporting a gear System, for every gear a new part was opened, instead that all gears were created in the same part.

If you choose the Graphic/3D Export/System only one gear was generated. Now you get a message, which you can accept when a gear is finished, then the next gear will be generated.

#### KISSsoft - Gear calculation

##### SP 3 - **Wrong behaviour of ui for profile shift according to manufacture**

Error in behaviour of user interface for the calculation of profile shift according to manufacture fixed.

##### SP 3 - **Message for reference gear for planetary gears improved**

The message informing about the fixed reference gear is improved and shown directly when the change is attempted.

##### SP 3 - **Operating backlash: DjSigmabeta**

For the calculation of the reduction of the backlash by misalignment of axis (DjSigmabeta), always the face width of the pinion was used. Now the smaller face width of both gears is used.

The proposition for the distance between two bearings (Lg) is changed (improved) if resistance calculation according AGMA or for plastic materials is used.

##### SP 3 - **Measurement grid report for cylindrical gear**

The Z coordinate values in the measurement grid report of cylindrical gear were not shown correctly.

##### SP 3 - **DXF file name in tooth form operations could only be set directly**

DXF file names in the tooth form calculation could only be selected via file dialog but not edited manually.

##### SP 3 - **Proposition of wear coefficient according Plewe for case carburized steels**

The proposition of wear coefficient according Plewe for case carburized steels was wrong (the Plewe curve for through hardened steel was used).

##### SP 3 - **Sizing of reference profile**

Some options for the sizing of the reference profile were disabled for most customers. Now all four options are available for all customers with sizing permission.

##### SP 3 - **Issue with concave/concave flank contact in contact analysis**

In case of a flank contact with concave/concave curvature, the hertzian deflection can't be calculated. In these cases a warning message will appear and the stiffness related to hertzian deflection is set to fixed  $1.0 \cdot 10^{100}$  [N/mm/mym]. A closer examination of the tooth form is necessary because results of the contact analysis will not be reliable.

##### SP 3 - **IMPORTANT: User defined pinion cutter lists in database differentiate between 2013/2014 definition**

As noted in the list of changed topics from Version 2013 to 2014, the definition of dFf0 (semi topping) and dFa0 (protuberance) was changed. If a user defined cutter lists having data for protuberance and/or semi-topping is used, then the data read in from the list was not updated to the new definition. This is now corrected. So if lists valid for 2013 are used, when showing up in the user Interface in 2014, the values of hFfP0\* and hprP0\* will be different, because transformed into the new definition.

Adding the line '#Definition: 2013' or '#Definition: 2014' to the file will indicate its definition. Without such an indicator, the definition will be 2013.

##### SP 3 - **The protuberance of a pinion cutter was not always updated correctly**

The protuberance of a pinion cutter defined in KISSsoft 03/2013 or earlier was not in every case updated correctly to KISSsoft 03/2014 definition.

### SP 3 - **Message added if old file contains tooth form operation with pinion cutter**

Message added that informs of the definition change of the pinion cutter if an old file contains the tooth form operation 'Generate gear with pinion cutter' and a protuberance or ramp angle is set.

### SP 3 - **Drawing data report for crossed helical gear**

In the drawing data report of the crossed helical gear calculation, some of the values of gear 2 showed the values of gear 1. Now the problem fixed.

### SP 3 - **Points in dxf file to read in tooth form**

When importing a tooth form from a dxf-file where points are present, the tooth form can not be extracted correctly. These points need to be deleted from the dxf, so a warning message about presence of such points has been added.

### SP 3 - **Message was missing when sizing of the axial offset of a face gear was called**

The message showing the result of the sizing of the axial offset for face gears was missing.

### SP 3 - **Wear removal by method A**

In the main report, the wear removal by method A was using the value from the standard calculation, not from the contact analysis.

Now it's fixed to use the value from the contact analysis.

### SP 3 - **Static safety for tensile stress**

The report showed wrong symbol for the static safety for tensile stress of cylindrical gears.

Now it's fixed to use the correct symbol as  $[S_b = \sigma_{FP}, S_b / \sigma_F]$ .

### SP 3 - **Master gear calculation for single gear**

For the master gear calculation in single gear module, the active diameters for the test gear are not available.

Instead, we use the form diameters for the proposed value of the maximum active tip diameter and the minimum active root diameter.

### SP 3 - **Reading user-defined load spectrum file**

If the user-defined load spectrum doesn't have full list of contents to the temperature, the programs can't read the file correctly.

Now, we fixed the problem and the user can define only the part of the contents, for example, only up to  $KH_{\beta 1}$ .

### SP 3 - **Worm gear tip diameter $d_{a2}$ slightly changed in some cases**

Tip diameter  $d_{a2}$  of the worm gear, when a topping tool was used and profile shift was  $x \neq 0$ , was very slightly wrong; because  $d_{a2}$  was calculated with  $x \cdot m_n$  instead of  $x \cdot m_t$ .

### SP 3 - **Bevel Gear Geometry according ISO23509 if shaft angle $\neq 90$ degrees**

Improvement: Workgroup 13 of ISO TC60 found, that the formula 129 in ISO23509 is wrong, if the shaft angle is  $\neq 90^\circ$ . This is now corrected.

### SP 3 - **Bevel gear according ISO 10300 (2014)**

Calculation of  $F_n$  for pitting changed according newest document (Eq. 3 in ISO 10300-2:2014).

### SP 3 - **Total rotation angle $j_{tsys}$ corrected**

Total rotation angle  $j_{tsys}$  corrected as displayed in the report was wrong for 3-gear-chain, 4-gear-chain and bevel gears.

## KISSsoft - General

### SP 3 - **Errors regarding the order in database tool fixed**

When activating/deactivating data sets in the database tool, the order got mixed up. Moving multiple data sets to the top or bottom did also mix up the order.

### SP 3 - **Database update did not consider changes in the order of KISSsoft data sets**

The database update did not respect changes in the order of data sets or of data sets hidden by the user for all sets with ID < 20000 (concerns all original KISSsoft data sets).

### SP 3 - **Crash due to missing help file solved**

KISSsoft crashed if no help file was found when pressing F1.

## KISSsoft - Graphics

### SP 3 - **Settings of graphics in manufacturing drawing**

Normally, the saved settings for the graphics in the manufacturing drawing are taken to generate the diagrams.

In some cases, the settings were not set correctly, which is fixed now.

### SP 3 - **Display of Woehler lines (S-N curves) with load spectrum**

In the details for the rating, there is a new option that let's you specify how to consider negative bins of the load spectrum.

Until now, this option was not considered in the woehler line graphic.

Remark: The last option "Check both cases and document the unfavorable case" can't be displayed at the moment and no lines are shown.

## KISSsoft - Shaft calculation

### SP 3 - **'Consider gears as masses' in shaft calculation**

When multiple identical gears were defined in the same position, and the user selected to consider the gear's mass (tab "Basic Data" -> drop-down "Gears" -> option "Consider gears as masses"), the mass was considered multiple times and not one, as it should. This affected the shaft's bending line.

### SP 3 - **Editing the elements-list in shaft input does not bring the elements-editor to the top anymore**

Selecting or editing an item via the elements-list does not bring the elements-editor to the top anymore.

### SP 3 - **Correction of conical section diameter in the "Diagrams of bending" report**

In the case of conical shaft sections that do not start at global  $y=0$ , the outer diameter in the "Diagrams of bending" report was wrongly given.

### SP 3 - **Cross section position was not considered directly**

When changing the position of a cross section in the elements-editor, the value was not considered in the calculation, when calculate was triggered right after entering the value. It was only taken when the input field was left before triggering calculate.

### SP 3 - **Correction of load distribution plot in connecting bearings**

Solution of the problem where in some cases the plot of load distribution of connecting bearings was

not shown, even though the bearings were loaded.

### SP 3 - **Improved calculation accuracy and speed for inner geometry bearings**

The accuracy and speed of our functions which are used for ball and roller bearings (inner geometry method) has been significantly improved. This is expected to have a minor ( < 2-3 %) effect in the results.

### SP 3 - **Tooth trace diagram in shaft calculation**

The tooth trace diagram in shaft calculation showed the defined modification wrongly for the left flank.

Also, the end relief calculation gave small errors if the starting of modification is not coincide with the calculation node.

Now the problems are fixed.

In addition, the following things are improved for better readability.

- The default color for the lines is now consistent with the deformation diagram.
- The scale of the X- and Y-axis are changed.
- The Y axis values of the right flank diagram is reversed to be consistent with the diagram in gear calculation.

### SP 3 - **Press fit defined by the user was neglected in some cases**

Correction of the case where a press fit in a bearing was neglected, even though it was correctly defined.

### SP 3 - **Inclusion of the complete stiffness matrix of supports in the eigenfrequencies calculation of the new solver.**

The full 6x6 stiffness matrix of supports is included in the eigenfrequencies calculation of the new solver. This will have an effect when rolling element bearings with internal geometry are used.

### [KISSsoft - Splines calculation](#)

### SP 3 - **Reference profile was read from wrong database**

The data for the reference profile was read from the wrong database. Due to this error in some cases a message appeared telling that the data set was not found in the database although the entry was shown in the drop down list as well as in the database tool.

### SP 3 - **Setting geometry according DIN 5481/ DIN 5482**

Setting the the geometry according DIN 5481 and DIN 5482 was not possible anymore, these geometry profiles were only working with the examples. It is fixed now.

## **KISSsoft Changelog Version 03/2014 - Service Pack 2**

### [KISSsoft - Bolt calculation](#)

### SP 2 - **Ratio of shearing strength for the bolt is dependent on the strength class**

The ratio of shearing strength for bolts are defined in a table according VDI 2230 (2003).

This ratio is dependent on the strength class.

You can set an own definition for this ratio in the subwindow **Define** near the strength class list.

### [KISSsoft - CAD interface](#)

### SP 2 - **NX9 ribbon menu**

NX9 ribbon menu added. Now you can use the KISSsoft-addin in the ribbon bar and in the menu.

### SP 2 - **ProEngineer: Problems with region settings**

Problems are solved with comma or point definitions by numbers of the different regions settings.

#### SP 2 - **Load spectrum report for planetary gear**

When the load spectrum for the second gear is defined in planetary gear calculation, the header for the load spectrum report wrongly showed the power and the torque as well. Now, we removed these items and show only the frequency and the speed.

#### SP 2 - **Bevel Gears according ISO10300: 2014 Factor YNT and ZNT**

Factor YNT and ZNT for endurance domain was always 1.0 (instead of 0.85, if 0.85 for  $10^{10}$  was selected).

#### SP 2 - **AGMA925 Report**

In the AGMA925 Report, if imperial Units are used, the maximum flash temperature is printed wrongly (32°F too low).

#### SP 2 - **Gear/Shaft matching problem for 3 and 4 gear chains**

In case of calculating KHBeta according to ISO6336-1, Annex E including shaft calculation, for 3 and 4 gear chains: The algorithm could not find the correct gears for bending and torsion line.

#### SP 2 - **Gap and line load graphics had empty results for 3 and 4 gear chains**

The graphics for Gap and Line load according to ISO6336-1, Annex E, were empty for 3 and 4 gear chains.

#### SP 2 - **'Modification sizing' dialog did not work properly**

Due to problems in the user interface of the 'Modification sizing', it was often not possible to set the inputs as requested. Input synchronization between different modifications was not possible. Furthermore an error message is shown if the user tries to import modifications from tab 'Modifications' while the calculation is inconsistent.

#### SP 2 - **Saving offset in beveloid gears**

In the beveloid gear module, the offset was not saved and reset to 0, when loading the file.

#### SP 2 - **Convert protuberance angle without given protuberance height coefficient**

The protuberance angle could not be converted if no protuberance height coefficient was entered before.

#### SP 2 - **Loading files with references to not existing data base entry**

When loading a file that refers to a not existing hobbing or pinion type cutter in the data base, the cutter/tool is now set to own input.

#### SP 2 - **Duty cycles with negative pin's: Additional modes**

Improvement:

When duty cycles with negative bins are used, we added an additional mode in 'Details' of tab 'Rating'. You may select now for the flank safety 'Check both cases and document the unfavorable case'. For the bending safety you may select 'Check both cases and document the more realistic case'. For bending, as the rule used (DIN3990-6, Method FC) is very conservative (multiplying one side bins by  $1/0.7$ , thus giving low safeties), the case giving higher results is shown.

#### SP 2 - **Convert tip form diameter for pinion type cutter added**

The convert button for the tip form diameter of a pinion type cutter was added just as the convert button for the root form diameter of a reference profile or constructed involute.

#### SP 2 - **Convert protuberance in tooth form calculation fixed**

The converting of the protuberance in tab tooth form for operation 'Generate gear with hobbing cutter' and 'Generate gear with pinion type cutter' did not work properly.



## SP 2 - **Beveloid gear licence**

The beveloid calculation in the version 03/2014 is now free for anybody and no licence is needed.

## SP 2 - **Tip form diameter dFa with topping tool**

Calculation of the tip form diameter dFa, when a topping tool is used, is very complicated. The algorithm is now slightly improved.

## KISSsoft - General

### SP 2 - **Decimal point or comma did not work for all languages !**

Due to a change in the tool we use to design the user Interface, for some language or country settings only point or comma was accepted as a decimal separator. For some non was accepted at all.

This is the main reason, why we had to publish so early an additional patch.

### SP 2 - **Size of column dialog for tables improved**

For tables with a lot of columns, the dialog to show/hide the columns was too small.

## KISSsoft - Graphics

### SP 2 - **Manufacturing drawings for Splines**

In the splines graphics for the manufacturing drawing, the wrong report was printed. Instead of e.g. Z10Gear1e.rpt, the correct template Z9AGear1e.rpt will be taken.

### SP 2 - **Addendum diameter in 3D graphics**

In the 3D display of a gear, the addendum diameter in the comment section was in rare cases not correct. This occurred, when the tooth form was generated from a tool, where the root height was too small.

### SP 2 - **Assembly drawing for helical gears**

In the assembly drawing of helical gears, the direction of helix angle was not correct.

### SP 2 - **Beveloid gear manufacturing graphics**

In the graphics for the manufacturing of the beveloid gear, the tool for the corrections or grinding was not shown at the right position.

### SP 2 - **Graphic contact temperature and lubricating film**

In the graphics for the contact analysis, the contact temperature and lubricating film according to AGMA was shown as 0, if the calculation was not done according to AGMA. We deactivated the AGMA graph, so that only the curves according to ISO 15144 are shown, unless rating is calculated with AGMA.

## KISSsoft - Shaft calculation

### SP 2 - **Redundant warning message for cone diameter**

When the cross section is added to the cone element, the error message for the outside diameter was shown unnecessarily. Now the checking condition is improved and the message is not shown anymore.

### SP 2 - **Center point of rope sheave jumped in editor**

The center point (local and global position) of a rope sheave jumped in the element editor when switching between widgets.

#### SP 2 - **Load item selection in shaft editor**

A load item with length of load application bigger than 0 could only be selected by clicking on the left arrow.

#### SP 2 - **Graphics did not always update**

Some properties of the graphics did not update after new inputs and calculation.

#### SP 2 - **Load spectrum calculation shaft with stiff connections**

The speeds of rigidly connected shafts were not set correctly for the individual bins of the load spectrum, if one of the shafts didn't have any force elements defined on it. This resulted in the relative speed between the shafts to be non-zero, even though they were rigidly connected with a stiff connection in the Ry rotation. This affected the lifetime calculation of any rolling bearings which were also defined between these two shafts.

#### [KISSsys - General](#)

#### SP 2 - **Gear meshing path**

The gear mesh name from KISSsys to the KISSsoft calculations was indicating the whole path of the gear element. That was the reason why the contact analysis according to the shaft calculation and KHbeta according to Annex E was not working properly. This bug is related only to kSoftHelicalGearPair, kSoftThreeHelicalGears, kSoftFourHelicalGears and kSoftPlanetGearSet.

## **KISSsoft Changelog Version 03/2014 - Service Pack 1**

#### [KISSsoft - Bearing calculation](#)

#### SP 1 - **Static equivalent load P0**

The static equivalent load P0 was always calculated as  $P0 = X0 * Fr + Y0 * Fa$ , and not as  $P0 = \max(X0 * Fr + Y0 * Fa, Fr)$  as described in the standard (ISO 76)

#### SP 1 - **Standalone bearing calculation - taper roller bearings**

The standalone bearing module (\*.W51 file extension) required a diametral clearance value, but these values are not needed and were never used.

#### [KISSsoft - CAD interface](#)

#### SP 1 - **CAD interface: Problems with helical internal gears**

Some helical internal gears couldn't be completely generated.

#### [KISSsoft - Gear calculation](#)

#### SP 1 - **Invalid ID Flankbreaking calculation.**

In the Flankbreaking calculation for gears the error message had a wrong text, when no data file was selected.

#### SP 1 - **Rough and fine sizing result window**

The list title of fine sizing windows did not show symbols in correct format in Asian windows caused by Unicode problem.

#### SP 1 - **Load spectrum with KHbeta ISO6336-1, Annex E and load iteration for planetary systems**

The Planetary system had problems to find the correct gears on the shaft if KHbeta calculation according ISO6336-1, Annex E, was used with shafts, iteration of load distribution and a load

spectrum.

**SP 1 - Load spectrum was not set to own input if database reference failed**

When loading a gear calculation file containing a load spectrum that did not exist in the current database, the load spectrum was not always set to own input.

**SP 1 - The cutter/tool definition for a face gear did not always show the addendum coefficient of the gear**

If the cutter/tool definition for a face is set to input of length or diameter, the addendum coefficient of the gear should still be shown instead of addendum or tip diameter.

**SP 1 - Call of special reports caused multiple calculation**

When running the service life calculation or the sizing of torque in menu report, the calculation was executed once to often. Unexpected messages did appear.

**SP 1 - KHbeta of Planetary system for strength calculation**

The option 'KHbeta for the strength calculation' in the dialog 'Define Axis alignment' was always giving the maximum value to the strength calculation.

**SP 1 - KHbeta was calculated twice for planetary systems**

KHbeta was calculated always twice for planetary systems. This does not have any effect on the results, but calculation time was much longer.

**SP 1 - Gear/Shaft matching problem of KHbeta Annex E and Contact analysis**

If the KHbeta Annex E or contact analysis calculation was combined with shaft files, and there were several identical meshings modeled on the shaft (this is the regular case for planetary systems), the algorithm had in some cases problems to determine the right gear on the shaft. The user can define the correct meshing for the analysis in the dialog 'Define gears on shaft', now. For planetary systems the meshing of the first planet has to be chosen. It is recommended to give individual names to all load elements in the shaft calculation.

**SP 1 - The Planetary Analysis was always showing the results as right flank results.**

The graphic representation of the path of contact was always shown as a right flank calculation even if the left flank was in contact.

**SP 1 - Contact analysis with unsymmetric tooth modifications**

In the contact analysis, when the first gear has contact on the left flank, unsymmetric modifications changed the flank side when calculating multiple times. Now always the right side modifications are considered.

**SP 1 - Operating backlash: Housing material data were read wrongly**

The data of the housing material were read wrongly, if the ID of the base material is not the same as the ID of the gear material.

**SP 1 - Tooth form in the geometry manager**

The tooth form in the geometry manager wasn't refreshed when values were changed.

**SP 1 - Behavior of how to import Modifications into Dialog Modification Optimization adjusted**

Important improvement: The dialog "Modification Optimization" was importing the modifications automatically from the "Tab Modifications". This is now deactivated and an import button, for importing the data into the table of the tabs Conditions I and II, is introduced.

**SP 1 - Operating backlash with Water absorption**

The calculation method following DIN 3967 does not give an indication how to treat inner gears with water absorption. It is possible, that the backlash will increase or decrease, therefore it is not considered in the calculation.

**SP 1 - KHbeta calculation with shaft was canceled if shaft didn't converge**

In case of a not converging shaft calculation the KHbeta calculation was stopped. This is now improved through asking the user if he wants to deactivate the iterative calculation. With yes the calculation will be converging, with no the calculation will abort.

#### **SP 1 - Tilting of carrier shaft in Planetary Systems was considered wrong**

The tilting of a carrier, when calculated through KISSsoft shaft calculation, was producing different results when compared with tilting inserted manually. This is producing slightly wrong results in the KHbeta calculation according to ISO 6336-1, Annex E

#### **SP 1 - Required service life marker in safety factor graph**

A marker is added to show the required service life in the safety factor curves graphics. This would help to get a feeling how much potential there is for the safety factors when changing required life.

#### **SP 1 - Conversion of tip/root form height coefficient**

In case of problems with the conversion of the tip/root form height coefficient a more detailed message is shown.

#### **SP 1 - Center distance in meshing graphic of non circular gears**

In the meshing graphic of non circular gears the center distance was not showing the unit and a useful number of decimal places.

#### **SP 1 - Save curve for tooth form graphics in non circular gears**

Save curve did not work for all tooth form graphics in non circular gears

### **KISSsoft - General**

#### **SP 1 - Dock widgets were blocked after loading a file with not existing database references**

When opening an external file (found for a shaft calculation) that contains database references that do not exist in the current database, the user interface (mostly the dock widgets) was blocked in case that the calculation module was not opened before.

#### **SP 1 - Translations improved**

Several misleading translation are improved.

#### **SP 1 - Load spectrum with negative bin's: NEW DEFINITION**

IMPORTANT FOR USER'S OF LOAD SPECTRA WITH NEGATIVE VALUES FOR TORQUE / SPEED (For Shaft and Gear calculations) We have changed the definition to make it consistent with Load spectrum as used in KISSsys. Important: The help text can not be updated in the Patch, you find in \help a document with explanations (see DutyCycleNegBinsE.pdf or see DutyCycleNegBinsD.pdf).

#### **SP 1 - dxf-Export with older version**

In the "kiss.ini" file of the installation, the standard value is set to use the old dxf-version. This is not intended and should be changed manually to DXFVERSION=1. When trying to export a dxf with the old version, a warning message is shown.

### **KISSsoft - Graphics**

#### **SP 1 - Zooming Tool in 3D Graphics**

There was a small mistake in the zooming tool for the 3D graphics (rectangular zoom), so that the positioning after the zoom was shifted. Now the tool is correct.

#### **SP 1 - Improvement in the graphics of the contact analysis**

The descriptions of the curves has been changed, there is a second "single contact stiffness" to represent the second mesh and some markers to highlight the beginning and end of the mesh.

#### **SP 1 - Rack tooth form in normal section**

Rack: In the graphics of the tooth form, when choosing the display "Normal section (tooth)", the tooth was incorrectly connected in the middle.

## KISSsoft - Proof of strength with local stresses

### SP 1 - FKM Guideline: some issues

- $KWK_{\sigma 3} = 1$ , if  $\sigma_3$  is vertical to the surface area.
- Kf-factor has to be  $\geq 1$
- To calculate  $\sigma_v$  generated by pressure,  $f_{\sigma D}$  has to be used instead of  $f_{\sigma Z}$
- Static calculation: The values for  $\sigma_{sk}$ ,  $n_{pl}$ ,  $K_p$ ,  $a_{sk}$ ,  $\sigma_{hydro}$  were available only for the System, not for all elements.

### SP 1 - FKM: relation $R < -1$ allowed

The relation  $R$  smaller  $-1$  was not allowed to use, which are necessary for the cases with alternating compression stress.

## KISSsoft - Shaft calculation

### SP 1 - Campbell diagram report only shows up in German

The report associated to the calculation of the Campbell diagram only showed up in German, regardless of the selected language.

### SP 1 - Sliders did not react on clicking

The sliders of the shaft editor did not react on clicking but only on moving.

### SP 1 - Update was not complete when moving elements in the shaft editor

The state of the calculation was not updated when elements in the shaft editor were moved. The position of an element was not updated in the elements list if the element was moved in the shaft editor.

### SP 1 - Inconsistent bearing tolerance from older calculation files

Some old calculation files (prior to Release 2013) were saved with inconsistent tolerance values for some bearings. For example, it was possible that a deep groove ball bearing was defined with a tolerance value which corresponds to taper roller bearings. The wrongly selected tolerance was used then in the calculation. This affects only the inner geometry calculation.

### SP 1 - Thin ring four-point bearings

This is a special bearing category, which is not defined in the standard for the approximation of inner geometry, but KISSsoft ignored that fact. Dedicated messages guide the user in the required steps for any problem resolution.

### SP 1 - Selection of connecting element in shaft editor fixed

Connecting elements could not be selected in the shaft editor if they were positioned around the axis.

### SP 1 - Stability of shaft solver

Improved the stability of the new shaft solver, especially for bearings with contact angle for the inner geometry method.

### SP 1 - 3D viewer - eigenfrequencies

The eigenfrequencies of shafts having the left shaft end at a position  $Y 0$ , were shown wrongly in the new shaft 3D viewer.

### SP 1 - Oil level in shaft editor

The oil level in shaft editor was not shown correctly when the shaft was positioned with angle. Now it is shown correctly. Still the oil level is not correct when the shaft is positioned with vector. This will be fixed in next release.

### SP 1 - roughness factor wrongly

The roughness factor was wrongly read for the cross section element shaft shoulder and shaft shoulder with relief groove.

## KISSsoft - Splines calculation

### SP 1 - **DIN 5482 tip diameter allowance**

The tip diameter allowance of the profiles according DIN 5482 was 0, now the allowance for the shaft is h11, for the hub H11. All examples with the profiles are newly saved.

## KISSsys - General

### SP 1 - **Open project folder menu in KISSsys**

The user could not select the folder shortcut directly when he tries to select project folder.

### SP 1 - **KISSsys table data update**

When you enter a data in a table, the data was not updated automatically, the user had to refresh the view manually.