

### KISSsoft - Bearing calculation

**SP 6 - Radial journal bearing: Input value bG for the lubrication arrangements in some cases not visible (ISO 7902)**

In the cases 4 and 5 of the lubrication arrangements, the input value for the lubrication groove width bG was not visible.

**SP 6 - Improved approximation of double row cylindrical roller bearings**

The approximation of cylindrical roller bearings (double row and double row full complement) has been improved (the approximated pitch diameter was too small).

**SP 6 - Lubricant film thickness correction in roller bearings.**

Correction in the speed used for the EHL film thickness in rolling element bearings. This affects only the documentation value of the EHL film thickness.

### KISSsoft - CAD interface

**SP 6 - Solid Edge: Possibility to use user part template**

If you want to generate a gear with an user defined part template, then you can define an extra parameter 'USERPARTTEMPLATE=???.par' in the file 'kiss.ini' under the section [SolidEdge]. KISSsoft used until now the default part files from SolidEdge.

**SP 6 - Siemens NX: Bevel gears with small cone angle weren't generated**

If the bevel gears had small cone angle (gear 1) it wasn't possible to generate the gear. This process is now improved.

**SP 6 - Siemens NX: Generate a worm wasn't working**

Generate a worm wasn't working. This is fixed.

### KISSsoft - Gear calculation

**SP 6 - Info text for pressure angle modification**

The info text for the effective pressure angle of the pressure angle modification was not shown in the modification table.

**SP 6 - Required safety factor for crossed helical gear in plastic**

For crossed helical gears, the setting for the required safety factor for plastics (not depending on size) was missing and the calculation was always using internally fixed values.

Now the input fields were added and the user can set the values for the calculation.

**SP 6 - Improved normal vector calculation in measurement grid report for cylindrical gears**

The normal vector calculation is now considering the lead modifications along the face width in the measurement grid report for cylindrical gears.

**SP 6 - Tooth form produced with form grinding (start at tip form circle)**

If form grinding was selected (with activated pre-manufacturing) and the option start modification at tip was set to "tip form circle", the produced tip diameter was not correct. This is fixed.

#### **SP 6 - Convert addendum coefficient dialog for hobbing cutter**

Convert addendum coefficient dialog (calculating Addendum coefficient) for hobbing cutter was not working properly if the tooth thickness reference line was set to own input. If you pressed calculate, the gear root diameters were changing. This is now fixed.

#### **SP 6 - Wrong value for single flank composite tolerance in ISO 1328:2013**

When ISO 1328:2013 is used, the total and the tooth-to-tooth values for the single tooth composite error (FisT and fisT) were swapped.

#### **SP 6 - Calculation cylindrical gears according DNV rule**

Calculation of cylindrical gears according DNV rule: Messages and Warnings improved.  
Safety for the Hardened layer according DNV41.2 was wrong, when duty cycle were used having bin's with negative torque. Then the proof was made with the highest positive torque without considering negative torques. This is fixed.

#### **SP 6 - Tensile fatigue strength for worm wheels in the Z014-100.DAT file (POM)**

Cycles to failure for the TensionSigZsch in the Z014-100.DAT file (POM) were not correct. This is fixed.

#### **SP 6 - Root form diameter calculation for constructed involute**

The calculated (and documented) root form diameter was wrong for constructed involute without pre-machining. The problem is now fixed.

#### **SP 6 - Adding tip rounding in normal section**

When adding tip rounding in normal section, the applied rounding was not correct. This is now fixed.

#### **SP 6 - Tooth root strength for Grivory HTV3H1**

In the Grivory HTV3H1 DAT file, the cycles to failure were wrong in 1 line. This is now fixed.

#### **SP 6 - Meshing factor in scuffing calculation**

The meshing factor XQ in scuffing calculation by integral temperature method was wrong when the condition  $1.5 < \text{eps.f/eps.a} < 3$  applied.

#### **SP 6 - Contact analysis for internal gears with asymmetric modifications**

If asymmetric modifications were applied to the internal gear, they were not considered correctly in the contact analysis. The issue is fixed.

#### **SP 6 - Duty cycle calculations with option 'Calculate negative and positive bins separatly and use the more unfavorable case'**

In duty cycles having bin's with positive and negative torque, when the option 'Calculate negative and positive bins separatly and use the more unfavorable case' the results were sometimes wrong. This happened only, when negative bin's had higher torque than the positive.

#### **SP 6 - Wear calculation according to Pech - plastic/plastic combination**

Grease temperature and wear according to Pech for crossed helical gears were not calculated correctly for plastic/plastic combinations. This is fixed.

### SP 6 - **Colored surfaces were not shown correctly in all cases of user-defined axes**

2D graphics containing colored surfaces (like 'Stress distribution on race' in W010), the surface was not positioned correctly in all cases.

### KISSsoft - Shaft calculation

#### SP 6 - **Improvements on the display of the gear elements in shaft editor**

The display of the power elements, especially the gear elements, are improved in the shaft editor.

1. The transparency of the inner section of the elements are increased not to hide the shaft elements in the background.
2. The approximation of the tip and root diameters of the gear elements are fixed and gives more close values to the actual dimension.
3. We had been using the same shape for external and internal gears and it was not possible to make difference between them. Now we added a square between the internal gear root and the shaft bore to show the internal gear clearly.

#### SP 6 - **Error in bearing lifetime calculation (reference method) with single bin**

When the user calculated a single load bin (tab "Basic Data", drop down list "Load spectra" -> "Consider only one load bin of the load spectra"), and the bearings were calculated with the reference method (tab "Basic Data", drop down list "Rolling bearings" -> "Rolling bearing service life from inner geometry (ISO/TS 16281)"), the speed of the bearing was not correct. This lead to wrong results in the lifetime as expressed in hours, and it also affected the bearing damage/utilization results.

#### SP 6 - **Better search for eigenfrequencies**

The post-2013 eigenfrequencies solver is corrected / updated to better search for eigenfrequencies. This resulted in finding some eigenfrequencies that were missed with the old algorithm (especially eigenfrequencies that are close to each other).

#### SP 6 - **Error in gear stiffness/mass consideration in shaft calculation**

When the gear stiffness selection was "Gears mounted by interference fit, with stiffness according to ISO 6336-1" (Tab "Basic Data"), and the gear was occupying two cylindrical/conical outer contour elements, the stiffness of the shaft was considered wrongly in the calculation.

### KISSsoft - Splines calculation

#### SP 6 - **AGMA 6123: Hardness conversion wasn't correct**

The core hardness of the material was not correctly converted from HV (Vickers) and HBW (Brinell) to HRC (Rockwell).

In the calculation always the core hardness rockwell C (HRC) is used.

#### SP 6 - **Manufacturing drawing**

The tables of the manufacturing drawing for splines contained the data as defined for cylindrical gears. Now the right template Z9AGearn.rpt is used.

### KISSsoft – Planet carrier FEM calculation

#### SP 6 - **Correction in the positioning of planet carrier read in from a STEP file**

When a planet carrier was read in from a STEP file, there were cases that its coordinate system did not coincide with the one assumed in the FEM calculation. The position is now corrected automatically.

#### SP 6 - **Correction in the fixing area of the planet carrier**

The fixing area of the planet carrier is now better handled in the FEM mesh generation.

#### **SP 6 - Correction in the dr and dt (pin tilting) calculation from planet carrier FEM deformation results**

FEM nodal deformations in the planet carrier pin FEM deformation were not used correctly for the dr and dt (pin tilting) calculation. This affects results for all available ways of entering pin nodal deformation, but especially when using FEM results from an external FEM program.

## **KISSsoft Changelog Version 03/2016 - Service Pack 5**

### **KISSsoft - Bearing calculation**

#### **SP 5 - Friction torque calculation according Schaeffler: Different oil level definition**

The oil level definition in KISSsoft and in the SKF catalogue are identical, but the definition in the Schaeffler catalogue is a bit different. In the background we convert now the oil level according the Schaeffler definition when calculating the friction torque according INA/FAG.

### **KISSsoft - Bolt calculation**

#### **SP 5 - The limit of the maximum pressure area was checked with the maximum required pretension force**

The limit of the maximum pressure area was checked with the maximum required pretension force instead of the maximum attained pretension force.

Affected are only for the messages, the calculation was correct.

We changed this for the maximum pressure area under the bolt head, washer and the extension sleeves.

### **KISSsoft - Gear calculation**

#### **SP 5 - Operating pitch diameter instead of reference diameter used for helical gear approximation**

To approximate a helical gears by slices of spur gears in contact analysis, operating pitch diameter was used instead of reference diameter. This is fixed.

#### **SP 5 - Rough sizing of planetary gear**

The rough sizing uses wrong  $K_y$  factor when using 'Calculation according to AGMA 6123' and gives different safety factors compared with the main calculation.

#### **SP 5 - Wrong $d_{Nf}$ and $d_{Ff}$ displayed in the report**

In patch D, an error was introduced, which in special cases caused wrong  $d_{Nf}$  and  $d_{Ff}$  diameters to be shown in the report (all the other parts in the report as safety factors etc were not affected). The problem occurs for gears with protuberance when in the Tab Reference profile diameters were set as an Input. This is fixed.

#### **SP 5 - Efficiency calculation with contact analysis**

For partial loads efficiency was not calculated correctly in the contact analysis for .Z12 and .Z14 modules. Wrong results were also displayed in the modification sizing results table. This is fixed.

#### **SP 5 - Wrong meshing flank in 3 and 4 gear chains**

Left and right flank was not correct switched with 3 and 4 gear chains while using face load factor calculation according to ISO6336-1, Annex E. This is fixed.

#### SP 5 - **Error when different number of slices used for Annex E and contact analysis**

Using contact analysis and face load factor calculation according ISO6336-1, Annex E, with different number of slices, caused a slight error in the calculation. This is fixed now and might result in slightly different contact analysis results.

#### SP 5 - **Modification sizing: Shaft torque incorrectly scaled**

The partial load in the modification sizing dialog did not scale the shaft torque correct for the calculation of face load factor according to ISO6336-1, Annex E. This error led to wrong face load factors and is fixed now.

#### SP 5 - **Tip diameter (with tip alteration) in the tab Reference profile**

In the tab 'Reference profile' the displayed tip diameter was not correct in cases, when tip alteration (k\*mn) was applied. This is now fixed.

#### KISSsoft - Shaft calculation

#### SP 5 - **Mass moment of inertia documentation**

The documentation of mass moment of inertia for non-circular profiles was wrong.

#### SP 5 - **Error in double row cylindrical roller bearings calculation**

The calculation of roller tilting for double row cylindrical roller bearings (inner geometry) was wrong, and this could also cause non-convergence of shaft models. This is fixed.

## KISSsoft Changelog Version 03/2016 - Service Pack 4

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

#### SP 4 - **Improvement: Bevel gear 3D geometry**

The option to set the origin of the 3D geometry for the model saving is added under the module specific settings.

Now the user can set the saving origin at pitch apex, front of gear blank, back of gear blank, middle of face width, and middle of front and back of gear blank.

#### SP 4 - **Twist modification couldn't be applied in the 3D geometry**

The twist modification couldn't be applied in the 3D geometry, caused by wrong type checking. Now it's fixed.

#### KISSsoft - Bearing calculation

#### SP 4 - **Radial journal bearing: Input value for the clearance wasn't clearly documented**

The input value for the clearance for the calculation according the standards ISO 7902 and DIN 31657 was used for the diameter, but should be used for the radius  $CR = R - RJ$ .

We changed the text to 'Clearance in radial direction (at 20°C)', but after discussions we will make it clearer in the next patch, an info picture will show you the dimension CR. Saved values in a stored file will be automatically updated (divided by 2).

#### SP 4 - **Friction torque calculation according Schaeffler: factor f0 was wrong in some cases**

The difference concerns the factor f0 in the friction calculation according the Schaeffler catalogue 2014.

An additional multiplication factor for f0 (influence of the oil height) is defined in a diagram (figure 2,

page 65) dependent to the ratio  $h/dm$ .

This factor is multiplied with the factor  $f_0$  from the tables (page 66-68).

If the ratio  $h/dm$  is smaller than 1,  $f_0$  was wrong calculated and as result the part friction torque  $M_0$  wasn't correct.

#### KISSsoft - Bolt calculation

##### SP 4 - **Maximum surface pressure for rotating angle or yield point controlled tightening**

The maximum surface pressure for rotating angle or yield point controlled tightening should be calculated with the formula  $p_{max} = F_{MTab}/A_{pmin} \cdot 1.4$  from the VDI.

In KISSsoft the maximum surface pressure was calculated with the maximum assembly preload  $F_{Mmax}$ .

For the safety against pressure calculation we use from now on the maximum surface pressure calculated with the formula from VDI.

#### KISSsoft - CAD interface

##### SP 4 - **NX: Interface to Siemens NX 11.0**

Interface to Siemens NX 11.0 is implemented.

##### SP 4 - **SolidWorks: Interface to SolidWorks 2017**

Interface to SolidWorks 2017 is implemented.

#### KISSsoft - Gear calculation

##### SP 4 - **Theoretical root form diameter with protuberance and grinding allowance**

Theoretically calculated root form diameter for gears with protuberance and grinding allowance was calculated according DIN3960, which is slightly incorrect. This is fixed, we use now an approach based on the manufacturing simulation.

##### SP 4 - **Manufacturing profile shift coefficient in tab Tooth form**

Manufacturing profile shift coefficient (min/max) was not calculated correctly for preliminary/final treatment in the **tab Tooth form** if different normal module or pressure angle were selected. This is fixed.

##### SP 4 - **Improvement: Filtering cutter list in the tab Tooth form**

When selecting a cutter from a list and using option 'restrict selection using module and pressure angle', only cutters with exact normal module and pressure angle were displayed. Now this is extended so that also other cutters, that can be used for manufacturing (but have different normal module and pressure angle), are also displayed in the list.

##### SP 4 - **Missleading values showed in tab reference profile for worm and worm wheel calculation**

Due to misleading values showed at tab reference profile, in case of worm and worm wheel calculation with length or diameters instead of factors, only factors can be used from now on. This minor bug-fix will not change any calculation results.

##### SP 4 - **Form grinding for internal gears**

Form grinding is currently not available for internal gears. Form grinding for internal gears in old files is automatically updated to generation grinding. A warning message is also displayed.

#### SP 4 - **Wrong documented deviation and inclination in contact analysis report.**

The values of deviation and inclination (constant and proportional) in the 'Define axis alignment' dialog was documented wrongly in contact analysis report. This is fixed.

#### SP 4 - **Tooth Flank Fracture Documentation**

When gear 2 is driving, the letter indicating the critical point on the line of action was wrong in the documentation (report and graphic). The results were okay, showing the data of the critical point. The same problem was fixed for the micropitting documentation.

#### SP 4 - **Root form diameter was shown wrongly in tab reference profile**

The root form diameter  $d_{Ff}$  was displayed wrongly in tab 'Reference profile' in case of using protuberance. This is fixed.

Due to this issue the root form diameter is set to read only in tab 'Reference profile' and in the dialog 'Convert protuberance angle'.

#### SP 4 - **Duty cycle with negative bins**

Duty cycles with negative bins: For flank safety, if 'Consider only positive bins' or 'Consider only negative bins' or 'Worst case' is selected, than - up to now - bins with alternate bending factor  $Y_M < 1.0$  were always considered - also for flank safety. On customer request, this is now changed. So - for flank safety - independent of  $Y_M$ , positive / negative flanks are treated according the selected setting.

#### SP 4 - **Tooth root strength of several plastic materials**

The tooth root strength of all the materials which were measured in the project '1. Industriekreis' (at University Erlangen) are too high. This is due to a misinterpretation of the test rig setup, which only recently was detected. The values are now corrected in the DAT files. The concerned plastic materials are listed below.

Delrin 100  
Ulramid A4H  
Arnite A04900  
Grivory HTV3H1  
Stanyl TW200F6  
Stanyl TW341  
Vestakeep 4000 FC30  
Vyncolit X6952

#### SP 4 - **Improvement: Effective pressure angle from the pressure angle modification**

When the pressure angle modification is defined, the effective pressure angle is now calculated according to Linke, Stirnradverzahnung, Eq (8/6).

#### SP 4 - **Improvement: Fine sizing of worm gear**

The following improvements are made for the fine sizing of worm gears

1. The size of the 'Show/hide columns' window didn't fit well to the window size.
2. Transmittable power is added to the result.

#### SP 4 - **Fine sizing of bevel gear**

The checking condition for the step for some parameter was too strict and didn't work properly.

For example, when the user set the number of teeth from 10 to 11 with the step of 1, only solutions for 10 were displayed.

Now it's fixed.

#### **SP 4 - Center distance with big module gear**

For very big module gears, the center distance keeps slightly increasing whenever the calculation is made when the sum of profile shifts is not equal to zero.

Now the problem is fixed.

#### **SP 4 - Cylindrical Gears according DIN3990**

For KHb calculated according method C2 (for gear pairs) in DIN3990 the minimum requested value is reduced from 1.050 to 1.025. We decided this after a longer exchange with experts, the topic is not precisely defined in DIN3990. Also STplus from FZG is today using this approach, so we decided to apply the change.

Note that for Planetary stages according DIN3990 method C1 is used, there the 1.050 minimum limit is clearly requested.

#### **SP 4 - Tip/root diameter in the tab reference profile**

If tip/root diameter was set in the Tab reference profile (with tool selection set to Reference profile gear) and then root radius was sized immediately, the newly set values for the tip/root diameter were overwritten by the old diameters. This is now fixed.

If tip/root diameters were set and then calculation was executed, this error did not appear.

#### **SP 4 - Number of slices in contact analysis overwritten by number of slices in Face load factor calculation**

The number of slices in contact analysis was overwritten by the number of slices in face load factor calculation according to ISO6336-1, Annex E. This is fixed.

#### **SP 4 - Error in ISO6336-1, Annex E, graphic in case of manufacturing errors (fma/fhb)**

The ISO6336-1, Annex E, gap and face load distribution graphics did not show all curves correctly, when manufacturing errors (fma/fhb) were used. This is fixed.

#### **SP 4 - Face gear: Proposition for axial offset conversion was not working correctly**

In the face gear calculation, in the sub-window the proposition of the axial offset  $b_v$  was not working correctly when the shaft angle is not equal to 90 degrees.

Now the problem is fixed. Also, the info graphic is improved to show the definition of the offset more clearly.

#### **SP 4 - Collision check for unsymmetric tooth form**

Collision check was not working properly for unsymmetrical tooth forms. The problem only occurred when checking the left flank. This is now fixed.

#### **SP 4 - Tip rounding of cylindrical gear**

The following problems concerning the tip rounding of cylindrical gear are fixed.

1. The report didn't show the correct type of the tip rounding for the helical gear whether it's defined in transverse, normal or axial sections.

The manufacturing drawing report had the same problem.

2. When the tip rounding was defined in normal section, the tooth form calculation was slightly wrong and caused a failure in 3D geometry generation.

Also it's giving wrong tip form diameter in the Tooth form report.

#### **SP 4 - Flank curvature and angle of flank normal for asymmetric teeth**

The flank curvature and the angle of flank normal were not shown correctly for asymmetric teeth in the graphics.

#### **SP 4 - Face load factor convergence problem with fhb/fma and shafts**

Error in case of face load factor calculation according to ISO 6336-1, Annex E, with shafts and manufacturing error fhb/fma. The cases +fbh/+fma, +fbh/-fma, -fbh/+fma and -fbh/-fma didn't converge correctly and showed results after the their first iteration. In most cases the resulting face load factor was to high. This is fixed.

#### **SP 4 - Axis alignment graphic for cylindrical gear**

The following things are fixed for the axis alignment graphic of the cylindrical gear.

1. Direction and text of the axis is fixed.
2. The constant terms of the deviation error ( $f_{\Sigma\beta-c}$ ) and the inclination errors ( $f_{\Sigma\delta-c}$ ) were not considered.

#### **SP 4 - Select cutter from database dialog fixed**

The dialog to select a cutter from the database had some smaller issues like missing header texts and no resizing of the table.

#### **SP 4 - Colors in the result graphic of the fine sizing were not correct**

The result graphic in the fine sizing did not exactly show the colors for all results as stated in the scale.

### **KISSsoft - General**

#### **SP 4 - Behaviour of tables with the KISSsoft User Interface (KUI) fixed**

In version 2016 with C, the tables which were defined using the KISSsoft User Interface (KUI), were not working properly. Notable examples are the selection of hobbing cutters from the database (gear modules) and the basic geometry of "Spline (geometry and strength)" module.

#### **SP 4 - Linear drive calculation**

When the own input for the lead angle is used, the calculation was made with wrong lead value. Now the user can select the input for the lead angle or the lead, and the calculation will be done accordingly.

### **KISSsoft - Shaft calculation**

#### **SP 4 - Shaft solver improvements**

The stability and performance of the new shaft solver has been improved. If differences in results encountered are small, smaller than 5%.

#### **SP 4 - Correction in text shown in report and windows for whirl in eigenfrequencies.**

The text used for forward or backward whirl in eigenfrequencies calculation was wrong in some cases. The result was correct, but sometimes forward and backward was mixed up in the text. This was also affecting the Campbell diagram.

#### **SP 4 - Shaft nominal load results for load spectrum**

The results in all graphics of the shaft calculation for the nominal power were wrong, they were showing the results for the 1st bin in the spectrum.

#### **SP 4 - Correction of eigenfrequencies calculation in case of different shaft materials and/or connections at shaft ends.**

In some cases combining different shaft materials in coaxial shafts and/or having connecting elements at shafts' ends, resulted in some mistakes in eigenfrequencies calculation.

#### **SP 4 - Loading cylindrical gears into the shaft editor: Wrong driving/driven in some cases**

In the shaft editor, cylindrical gears of the 2nd and 3rd pair which were loaded from a file, had the "driving/driven" selection wrong. This happened when the "Driving gear" selection (Tab "Rating" of the gear calculation file) was "last gear in the chain", and the gear calculation file was "Pinion with Rack (\*.Z13)", "Planetary gear (\*.Z14)", "Three gears train (\*.Z15)" or "Four gears train (\*.Z16)"

#### **SP 4 - Error in user-defined tilting stiffness of classic bearings**

In certain cases, the new shaft solver handled the user-defined tilting stiffness wrongly. This is now fixed.

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

#### **SP 4 - DIN 5480-15: The measurement over two pins of the ring gauge was wrongly calculated**

The measurement over two pins of the ring gauge was wrongly calculated according DIN 5480-15.

#### [KISSsoft - Planet carrier FEM calculation](#)

#### **SP 4 - Correction in the signs of planet axis deviation for side II torque input.**

Planet carrier FEM calculation was not considering the side II torque input direction correctly, resulting in wrong signs for the planet axis alignment.

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

#### **SP 4 - Housing stiffness results table, indications for general supports were wrong.**

The housing stiffness results table in KISSsys was not showing the correct values for general supports. But the values used in the KISSsoft shaft calculation were correct and hence were not affected.

#### **SP 4 - NASTRAN reduced stiffness matrix reader correction.**

When reading reduced stiffness matrix in NASTRAN format, there were cases where the nodal coordinates definition (GRID variable) was split in two lines. These cases were not handled correctly.

## **KISSsoft Changelog Version 03/2016 - Service Pack 3**

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

#### **SP 3 - Checking condition for shaft angle in 3D geometry of face gear**

In the generation of 3D geometry of face gear, the checking condition if the shaft angle is bigger than 90 degrees was too tight.

Thus, sometime it generates an error message and interrupts the process.

Now the checking condition is fixed and generates the model without problem.

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

#### **SP 3 - Clamped parts table lost units after editing the data base**

The table for the clamped parts lost its units after the data base tool was opened writable.

### SP 3 - **Solid Edge: Interface to Solid Edge ST9**

Interface to Solid Edge ST9 is implemented.

### KISSsoft - Gear calculation

#### SP 3 - **Improvement: Number of harmonics for amplitude spectrum in contact analysis**

The number of harmonics for amplitude spectrum graphs in contact analysis is increased from 10 to 20.

#### SP 3 - **Improvement: Special report of Detailed data for profile, flank line diagram and tooth form**

The flank normal angle in degrees are added in the special report of Detailed data for profile, flank line diagram and tooth form.

Before, only the values in radians were shown. The diameter of the points are also added.

#### SP 3 - **Influence of grinding allowance in root diameter**

If in tab 'Reference profile' the diameters are displayed, and the selected grinding option included the root area, then the grinding allowance was not considered properly for the root diameter of the gear.

1. The display of the root diameter in the user interface was wrong when the selected reference profile was from the database, but the calculation was correct (documentation was also correct).
2. When the selected reference profile was 'own input', both the calculation and the display of the root diameter were wrong.

#### SP 3 - **Check of Grinding allowance tolerance**

Change in the limits: Limitation of the admitted Grinding allowance tolerance is now increased to: Less than 30% of grinding allowance (before 20%) and to less than 200% of tooth thickness tolerance As.e-As.i (2 times bigger as before).

#### SP 3 - **Sizing of coefficient of friction in contact analysis**

The sizing of the coefficient of friction in the contact analysis tab was using different load level and giving wrong result.

#### SP 3 - **Graphic of the meshing: The number of displayed teeth was not saved**

The number of teeth in the meshing graphic was set back to default whenever the calculation was executed.

#### SP 3 - **Contact analysis result with facewidth offset**

When the face width offset is applied, in the contact analysis result graphics of "Stress distribution on tooth Gear B" the offset was wrongly applied and the contact pattern was shifted to opposite side. Now the problem is fixed.

#### SP 3 - **Generation with pinion type cutter: Tooth form error**

There was a tooth form bug when defining a pinion type cutter from the tab Tooth form if  $\alpha_{KP0}$  was too big (over  $90^\circ$ ). Angles for protuberance and buckling are now limited to  $90^\circ$  (however no message is given). The bug is fixed.

#### SP 3 - **Converting diameter to factors for pinion type cutter**

Calculating pinion type cutter addendum/deddendum coefficients from diameters was wrong, when not all data (as tooth number, etc) was available ( when you start introducing data from scratch). The bug is fixed.

### SP 3 - **Profile diagram for internal gear**

The profile diagram for internal gear was not working properly when the user sets the ISO 21771 notation and the axis as diameter.

### SP 3 - **Tooth form of formgrinded gears**

The 2D and 3D of formgrinded gears (only if grinding included the root diameter) had a straight line in a part of the root area. This is fixed now.

### SP 3 - **Crossed Helical Gear: Contact ratio in the Geometry manager**

In the crossed helical gear calculation, the contact ratio in the Geometry manager was from the cylindrical gear, not from the crossed helical gear.

This gave discrepancy with the values in the result window.

Now both are showing the values from the crossed helical gear.

### SP 3 - **Worm gears (ISO 14521 or DIN 3975): Layout of tooth thickness tolerances and measure over two balls**

Worm gears (ISO 14521 or DIN 3975) had an error in the sub-window 'Convert tooth thickness allowances' when  $A_s$  was calculated from  $Md3R$  (worm) or from  $Md2R$  (worm gear). This is fixed. When working on this topic, we found that the measure over two balls of worm gears was actually calculated with the helix angle corresponding to the crossed helix angle value. We changed this and calculate now  $Md2R$  with the helix angle corresponding to the worm lead angle (as used by ISO 14521 or DIN3975). There is no difference, if the profile shift of the gear is 0, otherwise the values will be slightly changed.

### SP 3 - **Checking condition to enable gear selection button in axis alignment window in contact analysis**

In the contact analysis tab, the checking condition to enable gear selection button in the axis alignment window was wrong.

Thus, the button is wrongly disabled and the user can't select correct gear in shaft calculation and can't execute the contact analysis.

Now the problem is fixed.

### SP 3 - **Contact stiffness unit in contact analysis result graphics and report**

The unit of the contact stiffness is fixed in contact analysis result graphics and report.

### SP 3 - **Bevel gear factor flag was not available for all calculation methods**

The flag to either enter or calculate the bevel gear factors (YK, ZK) was not shown for ISO10300(2014) calculation method.

### SP 3 - **Flankline modification sizing extended**

The user can now size flankline modifications (Crowning/Helix angle or Excentric Crowning according to ISO 6336-1, Annex E) for gears with unequal facewidth, if the bigger facewidth  $b_{\text{bigger}}$  fullfills the condition  $b_{\text{bigger}}/b_{\text{smaller}} \leq 1.2$ .

### SP 3 - **Performance improvement of planetary contact analysis**

The calculation speed of contact analysis of planetary systems was improved by adjusting the calculation convergence criteria. This mostly will affect calculation time of planetary systems with

high torque and might slightly change calculation results according to the calculation accuracy as set in tab 'Contact analysis'.

### **SP 3 - Importing an asymmetrical cylindrical gear data from a dxf**

When importing an asymmetrical cylindrical gear tooth form from a dxf, the tooth form was not generated correctly. This is now fixed.

### **SP 3 - Contact pattern of bevel gear contact analysis**

The contact pattern of the bevel gear contact analysis with left hand helix angle was inverted, not fitting to the contact pattern of the 3D-Skin model. This is fixed.

### **SP 3 - Error in transformation of conical extension into axis and meshing plane**

The transformation of the conical extension into axis and meshing plane was wrong. This is fixed now.

This error lead to different contact pattern results between contact analysis and face load factor calculation.

### **SP 3 - Kgamma values for planets (Z14) not shown correctly in the contact analysis report.**

Kgamma values for planets (Z14) were not shown correctly in the contact analysis report. In the results window however, the correct values were displayed. This is now fixed.

### **SP 3 - Face Gear with tip chamfer**

Face Gear with tip chamfer: A chamfer can be introduced, but is not considered in the calculation; this was indicated by an info-message. As this message not always shows up, we changed the message into an error message. The program will then stop (you can continue, if you activate 'Do not abort when geometry errors occur').

### **SP 3 - Life time calculation results in the main report**

Life time calculation results (only with duty cycles) in the main report show the life of the gear system without considering if under 'Module specific settings' some topics as bending or pitting are deactivated. This is now fixed.

### **SP 3 - Face load factor calculation error message with load spectrum and shafts**

In case of face load factor calculation with shafts and a load spectrum, the calculation showed an error message that it wasn't able to find the correct gear on the shaft.

This only happened if the speed factor of the first load spectrum bin was not 1. This is fixed.

### **SP 3 - Face load factor was overwritten by contact analysis of planetary systems**

In case of running contact analysis of planetary systems with face load factor calculation not based on ISO6336-1, Annex E, the KHb factor was overwritten by the value from contact analysis. This is fixed.

## **KISSsoft - General**

### **SP 3 - Change of unit system in tables did not work**

Tables in the dynamic user interface did not change the unit system.

### **SP 3 - Sorting problem when clicking on tables**

Dynamic tables were sorted by the first column whenever the user clicked on an item in the table.

### SP 3 - **Diagram properties in graphics were not taken over to the report**

When saving a diagram in the graphics list, the properties for the axes were not taken over to the report.

### SP 3 - **Line Breaks in Comments for Graphics**

Line breaks were not treated correctly in the comments below graphics in reports. Now they are, so some reports might get significantly longer.

### SP 3 - **'Save file question' too often displayed**

In some cases, the message asking if the file should be saved when closing the calculation module or changing to another file, was displayed, even if there was not made a change to the data.

## KISSsoft - Graphics

### SP 3 - **Measuring ball in normal section not shown correctly for the unsymmetric tooth modifications**

If unsymmetric modifications were applied to the tooth, the measuring ball was not positioned correctly in the graph. This is now corrected. In addition to that, we also display a measurement value (Diametral two ball measure) in the graph's comment window.

## KISSsoft - Shaft calculation

### SP 3 - **Thermally safe operating speed: not all the input values were considered**

The bearing input values for the 'difference in temperature' and 'lubricant volume flow' were not all taken from the user interface.

After the calculation this values were set back to the default values.

### SP 3 - **Strength calculation according DIN 743: infinite life strength was calculated with $\sigma_{ANK}$**

We used the same formula for the safety for infinite and limited life strength calculation. According DIN 743-4 we have to use  $\sigma_{ADK}$  in the formula instead of  $\sigma_{ANK}$ , this is fixed now.

### SP 3 - **Shaft strength calculation: Life time of the system was wrong in special cases**

If there are more than one shaft and not all shafts have a cross sections, the life time of the system was calculated wrong (result was always 0 h).

### SP 3 - **Opening of old shaft files (pre-2006) could lead to some missing elements in the tree.**

Old shaft files (pre-2006) could contain elements that are not valid in current releases. These elements are ignored with this patch.

### SP 3 - **Shaft solver improvements**

The stability and performance of the shaft solver has been improved

## KISSsoft - Splines calculation

### SP 3 - **New: Root circle tolerances according DIN 5480-1, Table 5**

You can now select how the root circle tolerances must be calculated (according manufacturing process, DIN 5480-16 or according base formulas, DIN 5480-1, Table 5). This option is under

'Calculations/Settings/General'.

Until now the root circle tolerances were always calculated according manufacturing process (DIN 5480-16).

## KISSsys - General

### SP 3 - **KISSsys viewer doesn't show bevel gear model correctly**

Sometimes the bevel gear model was not shown correctly due to a Boolean operation error in the kSys3DViewer.

Now the problem is fixed.

In general, we recommend to use new 3D viewer (kSysGL3DView) which will be the main viewer in future release.

### SP 3 - **Update of results tables in KISSsys after performing a static calculation including housing deformation.**

The results tables in KISSsys (e.g. bearings results table) were not updated after the end of the static calculation including housing deformation. This is fixed, taking also into account any initial offsets.

## KISSsoft Changelog Version 03/2016 - Service Pack 2

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

#### SP 2 - **3D geometry of face gear**

The height of the face gear of the 3D geometry model was always using internally fixed value.

Now it's using the input value of haFG from Geometry > Details window.

#### SP 2 - **3D skin model for helical gears**

For helical gears, the 3D generation with the option "skin model" didn't produce the model correctly and a solid model was shown.

### KISSsoft - Bearing calculation

#### SP 2 - **Life modification (aISO) and impurity (eC) factors for lubricants with additives**

1. The impurity factor eC was calculated with k instead of  $k = 1$ , if additive was used and  $k < 1$  and  $e_c \geq 0.2$ . (classic and inner geometry method)
2. The eC and aISO factors didn't match between classic and inner geometry method, when additive was used (inner geometry always considered the additive).

#### SP 2 - **Lifetime factors (e,X,Y) for double row angular contact ball bearings**

If a double row angular contact ball bearing had no pressure angle in the database, the lifetime calculation factors (e,X,Y) were not properly calculated and the lifetime results were not reliable. Instead of 0° pressure angle, we calculate now with a default value of 35°.

### KISSsoft - Bolt calculation

#### SP 2 - **The warning 'the length of engagement is too short' wasn't correct checked**

The check wasn't correct, if the length of engagement ( $m_{gesmax} < m_{ges}$ ) is long enough.

The warning does not show up any more in the examples 'Bolts (VDI 2230, Example 1)' and Bolts (VDI 2230, Example 3).

## KISSsoft - CAD interface

### SP 2 - **ProE/ Creo: Worms are not correctly rebuilt after changing helix direction**

Worms are not correctly rebuilt in the cad system after changing in KISSsoft the helix direction.

### SP 2 - **CATIA: the interface stopped during the 3D export**

The interface stopped during the 3D export and an error message emerged, that some Microsoft dll-files are missing.

### SP 2 - **Solid Edge ST8: CAD version check was wrong**

If you open Solid Edge ST8 the KISSsoft Addin is loaded. During this loading process the addin checks the version number of the cad system.

If the cad system version is not supported by KISSsoft, a warning message shows up, that this version isn't supported.

Solid Edge ST8 is supported in this KISSsoft release, but - wrongly - the message was displayed.

## KISSsoft - Connections

### SP 2 - **Documentation of snap ring groove load capacity FN**

The value of the groove load capacity (FN) of the snap ring in the report was wrong, but internally it was used correctly in the calculation.

## KISSsoft - Gear calculation

### SP 2 - **Error in license check in planetary gears**

Planetary stages: License check was not working correctly in case of face load factor calculation according to ISO 6336-1, Annex E, when the user doesn't have a license for contact analysis.

### SP 2 - **Error in equivalent VHJ calculation of bevel gear contact analysis**

An error in the calculation of equivalent VHJ values in the contact analysis with bevel gears and shafts is fixed.

### SP 2 - **Profile modifications tip/root relief with transition radius**

The maximum value of factor 2 is now limited with condition  $L_t < 0.75 \cdot L_{ca}$ . If the introduced radius is higher than the maximum value, the input is changed to the maximum possible value.

### SP 2 - **Worm gears AGMA6034 improved**

For worm gears according AGMA 6034-B92 up to now only the transmittable torque for Static chill cast or Forged materials is calculated. Now in the report also the transmittable torque for Sand cast and for Centrifugally cast is documented. A minor error in the calculation of material factor Cs for Static chill cast is also fixed.

### SP 2 - **Gear quality according to DIN 3990-41**

When the user select the calculation method as "DIN 3990-41", the gear quality was set according to ISO 1328 by default.

Now the default quality is set as "DIN 3961".

### SP 2 - **Life factor calculation using own Woehler line**

The life factors YNT and ZNT were wrongly calculated when the own Woehler line was used.

The error was caused because the stresses when interpolated were treated as linear instead of logarithmic values.

In some dat-files with SN-curves (DNV materials and Plastic materials) some interpolated intermediate points were also corrected accordingly.

#### **SP 2 - Improvement: Negative tooth modifications are implemented**

Until now, the negative modification was possible for pressure angle modification, helix angle modification (parallel), and twist.

Now it can be applied also for the crowning (flank), profile crowning, tip and root reliefs (linear, arc, progressive).

The user should be careful about the definition and it's recommended to check in the profile diagram (K chart).

#### **SP 2 - KISSsoft was crashing while running contact analysis with floating sun**

The contact analysis for planetary systems was crashing when the system was calculated considering a floating sun. This is fixed, now.

#### **SP 2 - Safeties for nominal torque added to the duty cycle report**

Improvement: For wind turbine certifications with duty cycles the Micropitting safety has to be documented for the nominal torque. Up to now, the MP safety is documented only for the most loaded bin. We added now in the report the MP safety for the nominal torque.

#### **SP 2 - Fine sizing of cylindrical gears improved**

Fine sizing of cylindrical gears, due to recent improvements of undercut calculation, was not distinguishing as supposed between variants with and without undercut. Now a message shows up as 'xx solutions discarded because of undercut'. In tab 'Condition III' solutions with undercut can be admitted.

A bug, discarding variants is fixed for the options 'High tooth profile' with  $\epsilon\alpha = \epsilon\alpha_{\text{target}}$  and with  $\epsilon\alpha \geq \epsilon\alpha_{\text{target}}$ . Now much more solutions will show up.

#### **SP 2 - Improvement: Profile diagram**

Several improvements are made for the profile diagram (K-Chart).

1. The diameters are shown as positive when the user set the notation according to ISO 21771 for internal gears.
2. Always show the markers for the maximum and minimum active root diameters according to the tolerance. Until now, only the minimum or maximum value was shown for external or internal gears, respectively.
3. The position of the legend are improved to avoid text overlap.

#### **SP 2 - Starting diameter of profile modification at tip**

The length of the tip profile modification was up to now measured on the real tooth form.

So when the amount of modification  $C_a$  was changed, the start diameter of the modification changed slightly.

Now we measure the length on the theoretical involute, and thus the start diameter of the modification will always keep the same.

Note: This change was already included in Patch A but was missing in the patch list.

#### **SP 2 - Wrong convergence of contact analysis with planetary systems.**

In some cases of contact analysis with planetary systems, the kinematic (absolute position of gears to each other) was incorrect. This lead to wrong, or not at all, convergence of the system. This is fixed now and may change some results of contact analysis with planetary systems.

#### **SP 2 - Problem in bevel gears contact analysis with shaft files**

In some cases the contact analysis of bevel gears with shafts was not calculating the contact pattern correctly. This is fixed now.

Additionally the report of the equivalent misalignment is simplified now.

#### **SP 2 - Enhancement of excentric crowning sizing**

Sizing of excentric crowning was enhanced to approximate a modification in cases where either the value C1 or C2 is zero. Now a message will show up in this case, that it is not possible to produce a 100% perfect result.

#### **SP 2 - Enhancement of crossvariation of modification sizing**

The crossvariation of modification sizing (value/Factor1/Factor2) is enhanced. Now an additional crossvariation between Factor1 and Factor2 is implemented.

#### **SP 2 - Profile correction in root**

When using the linear root profile modification, in rare cases with relatively short modifications and high tooth form accuracy, the modification was not applied.

#### **SP 2 - Generate temporary files for machine tools**

When using this option in the module specific settings, the tooth form is now printed with 9 decimal digits, instead of 3.

#### **SP 2 - Error in torque and power sizing with shafts**

Sizing torque or power was not working in cases of shafts used for face load factor calculation according to ISO 6336-1, Annex E, with and without loadspectras. This is fixed now.

#### **SP 2 - Translation Error in Modifications**

The designation "Tip relief, linear with profile crowning" is now translated into the correct language.

#### **SP 2 - Modification of SN-curve according Haibach**

Improvement: A new choice, Haibach original, is added to the list of possible modifications in the endurance range of the SN-curve. The modification until now called 'Haibach' is now called 'Haibach modified', but unchanged, this modification has a slope of  $2 \cdot p$  (as described in the help). The new 'Haibach original' has a slope of  $2 \cdot p - 1$  (as given in the Haibach book). The modification according 'Cortan/Dolan' is unchanged, with a slope of  $p$ .

For explication of the slope  $p$ : See ISO6336-6.

### [KISSsoft - General](#)

#### **SP 2 - Downloading license files did not work**

It was not possible to download license files with the license tool.

### [KISSsoft - Graphics](#)

#### **SP 2 - Drawing of cylindrical gear system**

1. In the drawing of the cylindrical gear system, if an intermediate gap was set, it was always shown.
2. The axial offset  $b_v$  was not considered in the drawing.

### [KISSsoft - Proof of strength with local stresses](#)

## SP 2 - **FKM-Guideline: the plastic notch factor npl were in some cases wrong**

The plastic notch factor npl for materials with chemic-thermal or thermic surface hardening were not adapted to the changes in the 6th edition. In the 6th edition this is calculated with the surface hardness. Also values for case hardened steels are changed.

### KISSsoft - Shaft calculation

## SP 2 - **Saving user-defined bearings from KISSsys files**

KISSsys did not save the user-defined bearings in the model, even though KISSsoft was capable of this feature. This functionality is now corrected and universal in both KISSsoft and KISSsys.

## SP 2 - **Sorting of the load cycle bins wasn't correct**

The sorting of the load cycle bins (the biggest to the smallest) wasn't correct in the calculation according DIN 743 and FKM.

## SP 2 - **Fixed a crash of the shaft element editor when KISSsoft is called from KISSsys**

When the shaft calculation was called from KISSsys the element editor crashed in some cases. Due to some repainting in the background, the shaft editor was taking CPU power even if nothing was calculated.

## SP 2 - **Shaft element list did not show US customary units**

The elements list did always show the metric units and changing by the user was not possible.

### KISSsoft - Splines calculation

## SP 2 - **Spline ANSI 92.1, Major Diameter Fit, Tolerance of Hub**

For Spline ANSI 92.1, Major Diameter Fit, Root diameter tolerances of Hub were inverted.

## SP 2 - **Improvement: Participation factor kphibet according Niemann strength calculation**

The participation factor kphibet for a strength calculation according Niemann is defined based on DIN manufacturing quality. But as the manufacturing tolerances, for the same quality number are very different between DIN and ISO/ANSI this was misleading, when ISO4156 or ANSI92.1/.2 is used. An ISO/ANSI quality of 6 corresponds approximately to a DIN quality of 9..10! We decided therefore to add (for ISO 4156 and ANSI profiles) to the quality Q +4 for the determination of the participation factor. The value used is also documented in the report as 'corresponding DIN quality'.

### KISSsys - General

## SP 2 - **Running scripts**

Some calculations and reports were not generated correctly when they were called from a script.

## SP 2 - **The database load spectrum table is now write protected**

The table to show the load spectrum loaded from KISSsoft database was not write protected.

## SP 2 - **Element tree, list and editor did not close correctly from KISSsys**

If a shaft calculation was started from KISSsys, the element tree, the element list and the element editor remained open if they where undocked when KISSsoft was closed.

## SP 2 - **Correction in the output of housing deformation results in the FEM coordinate system.**

The output in the results table of the housing deformation results in the FEM coordinate system was wrong.

## KISSsoft Changelog Version 03/2016 - Service Pack 1

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

#### SP 1 - **Skin model for single tooth cylindrical gears**

For cylindrical gears with only one tooth, the skin model is generated correctly now.

#### SP 1 - **Cylindrical 3D gears with skin model**

In the 3D gear geometry for cylindrical gear, the root was missing when displaying it as a skin model.

### KISSsoft - Bearing calculation

#### SP 1 - **Bearing damage for bearings with 0 speed**

For bearings with zero speed, both the lifetime and the damage were documented as infinite ( $L = 10^6$  and damage = 9999.99 respectively). This was wrong, and the damage should NOT be printed as infinite, but rather very small (eg. 1%, depending on the required lifetime).

### KISSsoft - Gear calculation

#### SP 1 - **Improvement: Measurement over 2 pins acc. to AGMA 2002-Cxx**

Measurement over 2 pins (free and transverse) acc. to the proposed revision of AGMA 2002-Cxx are added for cylindrical gears.

#### SP 1 - **Tab reference profile: Inner gears**

In the user interface for the tab reference profile, the conversion to diameter for internal gears was wrong, when the option to display internal gears with positive diameters was chosen (definition according to ISO instead of DIN).

#### SP 1 - **Conversion of addendum coefficient of gear for non-topping hobbing cutter**

In the user interface, the conversion of addendum coefficient of gear for a non-topping hobbing cutter was not working properly.

#### SP 1 - **Tooth thickness at reference line**

The input of the tooth thickness at reference line for hobbing cutter was not visible and therefore couldn't be changed.

#### SP 1 - **Center distance tolerance for gears (own input)**

The user input for center distance tolerance of gears (excluding gear pair) was not working properly, when the tolerance was set to "Own input".

#### SP 1 - **Fine sizing of planetary gear with contact analysis**

The "With calculation of the transmission error" option in the fine sizing of planetary gears was not working and giving no results.

Now the problem is fixed.

#### SP 1 - **Topological modification for internal gear**

The topological modification for internal gear was not working correctly caused by the wrong assignment of the tooth length factor.

The problem is fixed now.

**SP 1 - Wrong equivalent H and J deviation in bevel gear contact analysis.**

In cases of bevel gear tip is pointing to the negative y direction on a shaft, the bevel gear contact analysis was calculating a wrong equivalent H and J deviation. This is fixed now.

**SP 1 - Grinding notch effect with internal gears**

For internal gears, when grinded, the addendum  $h_{Grind}$  of the pinion like grinding tool is now calculated and documented.

This value is now used to calculate more precisely the grinding notch factor  $Y_{sg}$ .

**SP 1 - Wrong sign of V deviation in bevel gear calculation**

The sign of the V deviation in bevel gear contact analysis and 3D-System was wrong. Additionally the G deviation was renamed into J deviation according to Klingelnberg and the respecting info image was extended.

**SP 1 - Sense of rotation error message for bevel gear contact analysis**

The bevel gear contact analysis with shafts showed an error regarding the sense of rotation in case that one of the shafts has a bevel gear with tip pointing to the left (coordinate center point). This is fixed.

**SP 1 - Linear tip and root relief with transition radii**

2 additional cases considered: If Factor 2 is 0, then transition radius  $r$  is calculated so that  $LI = 0.8L_{Ca}$ . If Factor 2 is so big, that  $LI < 0.5L_{Ca}$ , then transition radius  $r$  is calculated so that  $LI = 0.5L_{Ca}$ .

**SP 1 - AGMA 925 calculation for planetary gear**

The load distribution factor  $K_y$  was not considered in the AGMA 925 calculation.

Now the problem is fixed.

**SP 1 - Planet Carrier deformation : Wrong distance between node I and II for calculation of double sided carriers**

The proportional "Tilting of bolt relative to planet carrier axis" ( $drp$ ,  $dtp$ ) at dialog "Define axis alignment" was calculated with the wrong distance between node I and II for double sided carriers using Code\_Aster.

**SP 1 - Improvement: Excel-Sheet for Topological Modifications**

Topological Modifications are defined in dat-files. We added in the \dat folder an Excel-Sheet 'Topological Crowning.xlsx' to produce the table with the definition of the modification. The sheet includes also an example how to define a negative profile crowning.

**SP 1 - Ramp angle on hobbing cutter with pre-manufacturing**

In some cases, the ramp angle was set to 0, when a hobbing cutter and pre-manufacturing was chosen.

**KISSsoft - General**

**SP 1 - Improvements in KISSsys 3D viewer**

Various improvements of the 3D viewer for KISSsys (eg. the placement of the shafts was not correct if the shaft orientation was complex).

**SP 1 - ALL TOPICS mentioned in PATCH G of 2015 ARE ALSO PART OF THIS PATCH, but not**

## **mentioned anymore**

Please consult on our website the list of topics for Patch G (7) of 2015.

### [KISSsoft - Graphics](#)

#### **SP 1 - Improvement on manufacturing drawing**

For the manufacturing drawing, there is a new command to keep a fixed scale of a graphic. With the command `fixedscale 1`, it's possible to have the drawing 1:1. The window command afterwards specifies the x,y-values for the topleft corner of the drawing.

Example:

```
draw 2DGeoToothDrawing1
```

```
fixedscale 6
```

```
window: 270, 297
```

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

#### **SP 1 - Spiral spring pin: Admissible shear stresses for spring pins**

The admissible shear stress  $\tau_{bmin}$  values from the standard (f.e. DIN EN ISO 8748) for the spiral spring pin are for the double shear cases.

In single shear case can be used only half of the values from the standard. This was documented in older standards (f.e. DIN 1481:1978).

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

#### **SP 1 - Crash due to the eigenfrequency calculation of complex shafts.**

Sometimes the eigenfrequency analysis of complex shafts or big shaft systems could result in a crash of the software. This is now fixed.

#### **SP 1 - Wrong sign while considering gear body deformation in shaft calculation.**

The tooth trace modification of the shaft calculation did consider the influence matrix for additional gear body deformation with the wrong sign. This is fixed.

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

#### **SP 1 - Unsymmetric gear body influence matrix.**

The influence matrix generated for an unsymmetric gear body using FEM calculation had an error.

### [KISSsoft - Planet carrier FEM calculation](#)

#### **SP 1 - Planet carrier FEM calculation using step file**

There was a problem starting the FEM calculation of a planet carrier, using the geometry from a step file.

### [KISSsys - General](#)

#### **SP 1 - Inclusion of housing stiffness without FEM initial offsets.**

In the case the imported stiffness matrix did not include any FEM initial offsets, the calculation was returning an error.

#### **SP 1 - Reading of ABAQUS reduced stiffness matrix with 4 master nodes.**

Sometimes there was an error reading an ABAQUS reduced stiffness matrix with 4 master nodes. The matrix was not read and the calculation could not proceed further.

#### **SP 1 - Gear modification information in the ExportSystemData function.**

Added gear modification information in the ExportSystemData function.