KISSsoft
A Gleason Company

KISSsoft Release 2023
Corrections, Features and Improvements

Service Pack 5

Gears

SP 5 - **Material properties of Duracon M90-44 from Polyplastics**

Root fatigue data is added for plastic material Duracon M90-44 from Polyplastics. Some general properties are also updated.

SP 5 - **The oil viscosity graph is shown correctly for small viscosity values**

The oil viscosity graph was now correctly drawn even when the oil viscosity is smaller than 10.

Cylindrical Gears Rating

SP 5 - **Annex E shaft matcher improvements for multimesh in three and four gear chain modules**

The shaft matcher is corrected during Annex E to better handle multimesh gears in shaft files.

SP 5 - **Influence of alternating bending on the flank safety factor**

Tooth flank load spectrum setting "Calculate both cases and document the unfavorable case" works correctly in cases that Y_M factor for all gears is set to 1.0. Flank safety factors are affected.

SP 5 - **$K_{H\beta}$ calculation in case of invalid geometry in a shaft file**

If the $K_{H\beta}$ calculation encounters a geometry error in a selected shaft file, an error message appears indicating which shaft file needs to be corrected.

SP 5 - **Properties of a step file for gear body**

When loading a step file, consisting of an assembly with only one part, the properties of the part are assigned correctly.

Cylindrical Gears Contact Analysis

SP 5 - **Number of pitches is set based on pitch error**

If the "Own input" is not selected for resolution, the number of pitches used in the contact analysis will always be 1, if there is no pitch error, and 2, if there is pitch error. Previously it didn't revert back to 1 when pitch error was removed.

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Cylindrical Gears Geometry

SP 5 - **Constructed involute with straight protuberance**

Opening saved files with constructed involute and straight protuberance now works again.

SP 5 - **Profile diagram shows individual modification curves properly with different axis settings**

Profile diagram shows individual modification curves properly when the axis settings is set to roll angle, diameter and rotation angle.

Bevel Gears

SP 5 - **Fine sizing results table**

Column texts in fine sizing results table are now working when you use Contact Analysis button for additional calculations.

Shafts

SP 5 - **Forced response graphs in shaft calculation modified for combined directions**

In the general plot of the forced response analysis, the values in directions X, Y, and Z are shown correctly. Now the resultant values in combined directions are modified to show the results for XY, XZ, YZ, and XYZ directions.

SP 5 - **Hand of helix of a cylindrical gear in 3D viewer**

Hand of helix of a cylindrical gear in 3D viewer of shaft calculation module is now shown correctly with negative helix angle.

SP 5 - **Selection of forces improved**

The selection of forces with a length of load application > 0 has been improved.

SP 5 - **Shaft solver convergence**

Convergence of shaft solver for classic bearing calculation has been improved for some cases.

Bearings

SP 5 - **Calculation speed of needle cage and cylindrical roller bearings**
Calculation speed of needle cage and cylindrical roller bearings with big load spectrum has been slightly improved. This addresses the regression introduced in release 2022 for these 2 types of rolling bearings.

SP 5 - **Number of rows for needle cage roller bearing**
Input field for number of rows for needle cage roller bearing has been removed from the internal geometry tab in the database tool. The value was not used in the calculation, and this change has no effect on the calculations.

SP 5 - **Roller bearing raceway modification settings**
Settings for raceway modifications are now shown only for cylindrical roller bearings and not for all roller bearings.

SP 5 - **Rolling bearing lifetime calculation with single bin calculation**
Rolling bearing lifetime calculation for single bin now considers the lubricant temperature from selected bin if an option for using the temperatures from load spectra is selected.

Shaft-Hub Connections

SP 5 - **Root diameter tolerance setting according to manufacturing process**
In spline calculation, the root diameter tolerance setting according to manufacturing process (DIN 5480-16) now works correctly. The tolerance is treated in the same way as the cylindrical gear.

Bolts

SP 5 - **Permissible tensile stress σ_{Mzul} calculation**
The permissible tensile stress σ_{Mzul} is calculated with the formula 143 according VDI 2230 paper 1 (2015).

SP 5 - **The surface roughness input field**
The surface roughness field of the bolt head was not read correctly from the user interface.

FEM Calculations

SP 5 - **FEM mesh density of big planet carrier models**
Improvement done between runtime and accuracy for big planet carrier models.

SP 5 - **Improvement of the LTCA - FEM interface for gear body calculations**
The internal interface of LTCA to FEM in case of gear body simulations was improved and made robuster. Appropriate user message was added to improve the user friendliness of the software.

Scripting

SP 5 - **For loop is able to use a negative step size**
Until now, the step size had to be a positive number unless the user would manually program out the condition such as "for(i = 10 to i >= 0 step -1)". Now it's possible to use "for(i = 10 to 0 step -1)" and the skript inverts the <= to >=.

CAD-Interfaces

SP 5 - **Interface to SolidWorks 2024**
Interface to SolidWorks 2024 added.

Service Pack 4

General

SP 4 - **Database export**
It is possible to export materials from the database even with IDs ≥ 20000 (own input).

Gears

SP 4 - **Manufacturing details per teeth added**
Manufacturing details per teeth added per dialog entry.

SP 4 - **Reading pinion type cutter from a database**
In cases when the pinion type cutter was read from a database, but had wrong m_n and/or α_n, the data of the tooth number and profile shift is now considered correctly. The fix also applies to opening new files with wrongly defined pinion type cutters.

Cylindrical Gears Rating

SP 4 - **Face load factor speed correctly validated from shaft file with carrier in Z12**
When running the face load factor calculation in the Z12 module with a carrier speed, the calculation no longer gives error messages validating the speed and sense of rotation.

SP 4 - **Gearbody deformation projected in correct direction for face load factor calculation**
Gearbody deformation is projected in the correct gap direction for the Annex E face load factor calculation.

SP 4 - **Planet-ring mesh gap consideration when using shaft files**
When the shaft files for the carrier and ring shafts are specified, the calculation now correctly considers all sources of gap for the face load factor calculation.

SP 4 - **The carrier coupling dialog has been extended to allow loads other than couplings**
You can now select other loads instead of needing coupling elements in the W10 file when in the planetary axis alignment tab.

Cylindrical Gears Contact Analysis

SP 4 - **Axis misalignment values are loaded correctly regardless of settings**
The deviation and inclination errors in the axis alignment tab are now set on file load even if face load factor calculation is not set to Annex E.

SP 4 - **Function 'CalculateCAStep' improved for concave pairings**
The function 'CalculateCAStep' is improved for concave pairing. Results from this function are now set to zero if a false result is returned. In addition, a variable to check if a concave pairing was encountered is available with 'caResults.konkav'.

SP 4 - **Gear mesh frequency in contact analysis report updates when load spectrum is applied**
The gear mesh frequency tables in the contact analysis report now update according to the speed factor in the load spectrum bins.

SP 4 - **Planetary contact analysis graphics adjusted to not show unconverged steps**
Planetary contact analysis graphics have been updated so that any steps unconverged are removed instead of showing "0".

SP 4 - **RetrieveContactAnalysisResults function improvement**
RetrieveContactAnalysisResults sometimes resulted in an unexpected behavior when some steps did not converge during the planetary contact analysis.

SP 4 - **Show planet flank distributions in planetary system contact analysis 3D graphics**
The values in the planetary system contact analysis 3D graphics, can now be seen on the planet side of the mesh as well as the sun and ring.

SP 4 - **Variable ZS.planetDeltaTE can be correctly retrieved following planetary contact analysis**
ZS.planetDeltaTE previously showed a value of 0 following contact analysis in the Z14 module.

Cylindrical Gears Geometry

SP 4 - **Geometry Manager**
Transferring data from Geometry Manager to the main calculation now works again.

Bevel Gears

SP 4 - **Different CA results for bevel gears run with no load contact pattern**
Different contact analysis results were generated if the user selected to run the no load contact pattern and had shaft files selected.

SP 4 - **Differential bevel gear 3D model generation**
It is again possible to create a 3D model of a bevel gear where the gear body is extended to the inside tip cone.

SP 4 - **Import of the topological modifications**
Improvement in the stability of the import of topological modification for bevel gears.

SP 4 - **Invalid bevel shaft deflections removed from contact analysis report**
The bevel contact analysis report no longer shows old shaft deflections which do not correspond to the current shaft misalignment calculations.

Crossed Helical Gears

SP 4 - **Flank safety factor calculation according to VDI 2545**
Flank safety factor for worm wheel according to VDI 2545 is now calculated more precisely.

Face Gears

SP 4 - **Various improvements**
The rim thickness factor is now set to Y_B=1.0 for face gears. Additionally, tooth thickness tolerances and the root height tolerances are now correctly considered in the 3D model of the face gear.

Shafts

SP 4 - **3D Viewer shows torque arrows even if they are small**
Changed definition of showing 3D viewer torque arrows when they are small

SP 4 - **Correction in the flank line modification graphic**
The flank line modification graphic did not show the effect of the gear body.

SP 4 - **Inner diameter of bevel gear read from connected file**
Inner diameter of bevel gear read from file is now transferred correctly to the shaft file.

Bearings

SP 4 - **Basic modified rating life L_{nmh} of rolling bearing considering oil temperature defined in the load spectrum**

Oil temperature defined in the load spectrum was not considered in the calculation of basic modified rating life L_{nmh} of rolling bearings (instead, nominal oil temperature was used).

SP 4 - **Bearing width for Koyo double row tapered roller bearings in O-arrangement**

Widths of inner and outer rings of double row tapered roller bearings in O-arrangement from Koyo have been corrected.

SP 4 - **User defined rolling bearing stiffness**

The default shaft solver now properly considers non-linear rolling bearing stiffness when defined with the file for a classic rolling bearing calculation (i.e. without considering internal geometry of the bearing).

Shaft-Hub Connections

SP 4 - **Factor k_f according to Kollmann**

Factor k_f according to Kollmann is now calculated more precisely.

Bolts

SP 4 - **Bolt diameter was changing during calculation**

During calculation, in some cases the nominal diameter of the bolt changed by 0.001 mm. Now the diameter remains constant.

SP 4 - **Friction diameter under the head**

For the friction diameter under the head, the smallest diameter is now used (not necessarily the extension sleeve diameter).

SP 4 - **Shear stress calculation**

In case option "Don't permit exceeding of yield point" equation 152 will be used instead of 153 with influence of the values M_{TSAmax} and F_{QSAmax}. Until now equation 153 was used, because the influence of M_{TSAmax} and F_{QSAmax} are normally small.

SP 4 - **The roughness of the plates was not read out correctly**

The roughness of the plates was not read out correctly. This had an influence on the calculation of the amount of embedding.

Springs

SP 4 - **Goodman diagram data for TD materials according DIN EN 13906-2**

The Goodman diagram data for TD materials is now according to DIN EN 13906-2, figures 14, 17 and 18 (before was according to figures 19 and 20).

FEM Calculations

SP 4 **- 2D FEM calculation**

Improvements were done in the calculation of equivalent spur gear for 2D FEM calculation.

SP 4 **- Improvement in the root stress calculation of helical gears**

The root stress results calculated with FEM are improved for the case of helical gears (better use of the respective equivalent spur gear).

SP 4 **- Improvement of the FE mesh density close to the gear root**

The density of the FE mesh close to the gear root was not that good for some cases (e.g. for various values of root radius coefficient).

COM-Interface

SP 4 **- Tab visibility from COM interface**

Tabs are displayed for several show calls from COM interface.

CAD-Interfaces

SP 4 **- Interface to Siemens NX 2312**

Interface to Siemens NX 2312 added.

SP 4 **- Interface to Solid Edge 2024**

Interface to Solid Edge 2024 added.

Interfaces for Data Exchange

SP 4 **- Improvements in the GDE export**

The layout of the GDE export file has been improved.

KISSsys

SP 4 **- Improvement of the stability of the housing deformation calculation.**

The housing deformation calculation stability has been improved in some cases of partial matching of FEM master nodes to bearings.

Service Pack 3

General

SP 3 - **Carrier speed sign issue for planetary coupled mode**
In the case of planetary coupled mode, the carrier speed is now transferred with the correct sign. Relative speeds calculation is then consistent.

SP 3 - **Floating license counting current access number**
For a floating license, KISSsoft counts the number of users with an active session. In certain cases (multiple sessions with the same license number started on the same client, counted from a different clients) the counting of the cookies is now more precise.

SP 3 - **Update of ARNACOL grease data**
Database values for grease ARNACOL are updated.

Gears

SP 3 - **Calculating tooth thickness allowance from profile shift**
In the conversion dialogue for tooth thickness allowance, sizing for the profile shift input now works again.

SP 3 - **Exporting tooth form as points**
It is now possible to export the tooth form as points also for gear 2. Additionally, it is possible to export also tooth form operations that are marked "Choose as result".

SP 3 - **Geometry manager data takeover**
Data from geometry manager data is taken over to main calculation on accept.

SP 3 - **Single bin calculation with negative torque or speed**
When a single bin calculation with negative torque or speed is performed, the damages are now correctly calculated.

Cylindrical Gears Rating

SP 3 - **Annex E face load factor calculation sufficiently iterates for FEM gear body deformation**
If FEM gear body data are used for the face load factor calculation, the calculation iterates sufficiently unless shaft files were specified as well.

SP 3 - **Improvement of external STEP import functionality for gear body calculations**
The KISSsoft algorithm has now been made more robust in identifying the boundary condition areas when external STEP data files are provided for modeling the geometry of gear bodies.

SP 3 - **Planetary contact stiffness calculation considers load factors correctly during Annex E calculation**
When calculating the planetary face load factor using the Annex E method, the load factor settings selected are now correctly considered when calculating the contact stiffness.

Cylindrical Gears Contact Analysis

SP 3 - **Correction in the planet carrier deflection**
The location of nodal deformations is corrected. This affects only the case of single sided carrier, loaded from side II.

Cylindrical Gears Geometry

SP 3 - **Fine sizing in diametral pitch corrected**
When using the fine sizing in imperial units and inputting normal diametral pitch, output diametral pitches are consistent with the input.

SP 3 - **Geometry manager update**
The geometry manager automatically takes over the data from a selected fine sizing solution.

SP 3 - **Improved check for the root radius coefficient of the reference profile for internal gear**
Check for the maximum root radius of the reference profile for the internal gear has been improved.

SP 3 - **Operating backlash calculation for multiple pairs**
Circumferential backlash in tab Operating backlash is now calculated correctly for pairs 2 and 3 in modules Z14, Z15 and Z16.

SP 3 - **Option Individual modifications per tooth**
When option "Apply individual modifications to all teeth" is activated, the applied modifications are now correctly applied on all teeth.

SP 3 - **Protuberance amount pr for asymmetric hobbing cutter**
Protuberance amount pr for asymmetric hobbing cutter is now shown correctly in the user interface.

SP 3 - **Saving a hobbing cutter to database from tab tooth form**
When saving a hobbing cutter from tab tooth form to the database, the graphic of the tool is now displayed correctly.

Bevel Gears

SP 3 - **Assembly drawing of hypoid gear**
The position of the pinion in the assembly drawing of hypoid gears is correctly shown.

SP 3 - **Effects of P and G misalignment in contact analysis**
The misalignment effects in the contact analysis for P and G have been corrected to have matching effects.

SP 3 - **Scuffing calculation according to DNVGl-CG-0036 improved**
Equivalent tip relief now properly considers tooth form modifications for the scuffing calculation according to DNVGl-CG-0036. If no modification are defined, the equivalent tip relief is calculated according to DNVGl-CG-0036, by considering $6‰ \cdot m_0$ as a tool crowning $C_{a\,tool}$.

Globoid Worm Gears

SP 3 - **Globoid worms with high number of teeth**
For globoid worms with high number of teeth (z > 5), it is now possible to generate the root rounding correctly.

Crossed Helical Gears

SP 3 - **Calculation of d_{Na} and d_{Nf}**
Calculation of d_{Na} and d_{Nf} is improved for crossed helical gears with undercut.

Shafts

SP 3 - **Handling of rigid body modes in the Campbell diagram calculation**
Improvement of the handling of rigid body modes in the eigenmodes characterization used in the Campbell diagram.

SP 3 - **Improved message for an element with wrongly defined load spectrum**
The message for an element with wrongly defined load spectra is now more descriptive, which makes it easier to identify the element with problematic load spectrum definition.

Bearings

SP 3 - **Axial stiffness of rolling bearing in case of classic bearing calculation**
User defined axial stiffness of rolling bearing in case of classic bearing calculation is now properly taken from user input field.

SP 3 - **Basic rating life from SKF cloud service**
Basic rating life from SKF cloud service is now also shown in the results' overview window.

SP 3 - **Displaying critical bearings in different color**
Displaying critical bearings in different color is working again.

SP 3 - **Report for rolling bearing damage, utilization and reliability**
Report sections for rolling bearing damage, utilization and reliability are shown only if there is at least 1 rolling bearing present in the shaft calculation.

SP 3 - **Rolling bearing ring deformation example and section in the manual removed**
An example for rolling bearing calculation with ring deformation and section about rolling bearing ring deformation in the manual were removed since this feature is currently not supported.

SP 3 - **Rolling bearing thermal speed rating and thermally safe operating speed**
Calculation of rolling bearing thermal speed rating and thermally safe operating speed has been improved so that the final results are more precise now. However, this can result in decreased thermal speed rating of the bearing.

SP 3 - **Rolling bearings thermally safe operating speed**
The temperature difference for thermally safe operating speed was not considered properly when input in Fahrenheit.

Shaft-Hub Connections

SP 3 - **Missing units in the overview report for the Z9A module**
The overview report now shows the correct units for tooth thickness and space width.

Bolts

SP 3 - **Unused material types**
All material types are shown in the selection list. Even if no material of that type exists in the database, the type can be use for own input.

Tolerance Chains

SP 3 - **Largest and smallest tolerance value improvement**
If the first table input was negative, the largest and smallest tolerance value is now calculated correctly.

FEM Calculations

SP 3 - **Improvement of the internal communication between KSD and Gear Body Special calculation**

KSD now calls the gear body special calculation to export the reduced stiffness of the gear body if necessary. The user does not have to do any extra calculation in advance.

SP 3 - **The reduced stiffness matrix of a gear body is considered for all definition options**

In some cases of the gear body geometry, the calculated stiffness matrix was not considered for performing any next calculations (e.g. contact analysis).

Scripting

SP 3 - **Highlighting code in SKRIPT**

When the text is highlighted and moved within the SKRIPT editor, an undefined copy-paste takes place, unexpectedly closing the software.

SP 3 - **KISSsoft user interface update after Skript execution**

When a value in the KISSsoft user interface is changed through Skript, the tabs with the data is now updated.

CAD-Interfaces

SP 3 - **Interface to Siemens NX 2306**

Interface to Siemens NX 2306 added.

Forced Response Shafts

SP 3 - **Forced response graphs in shaft calculation modified for combined directions**

In the forced response analysis, the values in directions X, Y, and Z are shown correctly, also now the resultant values in combined directions are modified to show the results for XY, XZ, YZ, and XYZ directions.

KISSsys

SP 3 - **kSysConnectionSlidingBearing is included in the model**

The functionalities of the kSysConnectionSlidingBearing are now included in the model.

SP 3 - **kSysSlidingBearing is included in the model**

All functionalities of the kSysSlidingBearing are included in the model.

SP 3 - **Saving KISSsys model when no license available**

It is possible to save the current state of the KISSsys model, when no license cookies are available, to continue working with the model.

Service Pack 2

Gears

SP 2 - **Gear body calculation logic improved**

If the user changes the rim definition option without modifying anything else in the input, any calculated results are kept and re-calculation is not necessary.

SP 2 - **Improvement in the calculation according to DNV CG-0036**

Slight improvements in the calculation according to the DNVGL-CG-0036, which may result in differences in case depth factor and safety of the hardened layer.

SP 2 - **Path of the imported step file of a gear body can be relative to the KISSsoft calculation file**

If a relative path is defined for the STEP file of a gear body, the file is selected within the same folder of the open KISSsoft file. If a KISSsoft project is active, the relative path leads to the project folder.

Cylindrical Gears Rating

SP 2 - **Load factor for single bin**

If a single bin is chosen for the strength calculation, the resulting inclination and deviation for the proportional misalignment is now considered.

SP 2 - **Planetary face load factor calculation improved to consider planet angle**

The planetary face load factor calculation has been changed to improve the calculation of bending for arbitrary planet positions when shaft files are specified.

SP 2 - **Preview of the smoothed/unsmoothed gap results improved**

The smoothed/unsmoothed results of the gap analysis were mirrored.

SP 2 - **Report and graphics show the mean line load and equivalent misalignments for face load factor calculation**

The reports and graphics for the face load factor calculation now show the values for mean line load and equivalent misalignments regardless of load factor settings.

SP 2 - **Static calculation of planetary gears**

Static calculation of planetary gears is now possible also with 0 rpm speed.

SP 2 - **Tip relief for scuffing and micropitting calculation**

Tip relief used for scuffing and micropitting calculation is considered if applied only on the left flank.

Cylindrical Gears Contact Analysis

SP 2 - **Contact analysis report displays all axis inclination and deviation values in the report if shaft files are not specified**

The contact analysis report shows all axis inclination and deviation inputs if shaft files are not specified.

SP 2 - **Improvements on the consideration of the gear body stiffness influence**

The consideration of the influence of the gear body stiffness on Contact Analysis and Load Factor (ISO6336-1 Annex-E) calculations has been improved. The application of the acting load based on the loaded flank and the helix angle is more accurate.

SP 2 - **Show frequencies of transmission error amplitude spectrum in the contact analysis report**

The frequencies of each harmonic order are added to the contact analysis report for the transmission error amplitude spectrum.

SP 2 - **Stress distribution on the tooth**

Stress distribution graphic in contact analysis is now generated if modifications are applied.

Cylindrical Gears Geometry

SP 2 - **Profile and flank line diagram tolerance band input**

Profile and flank line diagram inputs for the tolerance band are now also considered if only Gear 2 is selected for the input.

Bevel Gears

SP 2 - **Bevel misalignment results improved when load free pattern was selected**

The generated EPG values have been improved when the load-free contact pattern option was also selected.

SP 2 - **Possible to set own convergence criteria for contact analysis**

In tab contact analysis, it is now possible to input the convergence criteria if resolution is set to own input.

SP 2 - **Selecting load free contact pattern does not change the loaded misalignment**

Selecting the load-free contact pattern has no effect on the misalignment of the shafts when loaded.

Crossed Helical Gears

SP 2 - **Backlash calculation from tooth form for crossed helical worms**

It is now possible to calculate Backlash calculation from tooth form for crossed helical worms with a left helix direction.

Shafts

SP 2 - **Driving/driven setting for power loss element**

Power loss element can now be defined as driving (output) or driven (input) element. This is useful in case of connecting bearings where power loss acts as an output torque on one shaft and as input torque on another shaft. Please note that calculation files with power loss element set to driven (input) will only work properly if opened in release 2023-SP2 or newer.

SP 2 - **Interpolation of surface treatment factor between the table values**

The surface treatment factor will be iteratively calculated, so that the value doesn't change erratically. The definition of the surface treatment factor K_V is done with the outer diameter, and no longer with the raw diameter.

SP 2 - **Load spectrum in case of multiple counter gears in shafts**

When loading a model with a newer KISSsoft version, it loads the load spectrum number of rows in case of multiple counter gears in W010.

SP 2 - **Power loss element representation in shaft module**

Power loss elements are now used in shaft calculations to represent any power loss. Centrical loads were used in the past.

SP 2 - **Shaft convergence in case of shafts with several inner and outer contours with non-rounded lengths of high precision**

In some seldom cases when shaft consists of several inner and outer contours with non-rounded lengths of high precision, the shaft calculation didn't converge.

Bearings

SP 2 - **3D representation of thrust spherical roller bearing**
3D representation of thrust spherical roller bearing has been improved for some types of fixation.

SP 2 - **Classic bearing calculation with load spectrum**
Classic bearing calculation with load spectrum in module W050 now considers load spectrum speeds.

SP 2 - **General shaft support in combination with FE solver**
When using FE solver for calculating shaft model with a general support, clearance was not always considered properly.

SP 2 - **Graphics for stress distribution on raceway for double row bearings**
Graphics for stress distribution on raceways will now show stress distribution on both raceways for double row bearings with inner geometry.

SP 2 - **Rolling bearing internal geometry approximation**
Rolling bearing internal geometry approximation has been improved so that it works also in cases where until now it didn't. Current approximations are not changed.

SP 2 - **Rolling bearing subsurface stresses on inner ring**
Calculation of subsurface stresses on inner ring has been revised so that stress σ_z on the surface equals Hertzian contact stress.

SP 2 - **Rolling bearings without inner or outer ring**
Additional check and message is provided for rolling bearings without inner or outer ring and standard clearance set, which is not applicable to such rolling bearings.

SP 2 - **Updated bearing geometry for a few Koyo needle roller bearings**
Few needle roller bearings from Koyo have updated inner diameter, outer diameter and width.

Shaft-Hub Connections

SP 2 - **Hub strength values for splines calculation with K_1 factor**
For the hub in the spline calculation, the strength values R_m and R_p are always calculated with an K_1 factor of 1.

SP 2 - **Hub tip diameter for GO for gauges**
Hub tip diameter d_a for GO gauges according to the DIN 5480 is improved in the special report.

SP 2 - **Multiple interference fit table input not registering**
When entering tolerance values in the multiple interference fit table, the input did not register if the calculation button was clicked while the input field was still active.

SP 2 - **Selection added for the coefficient of thermal expansion**
There are 2 new options in the module specific settings, if the coefficient of thermal expansion for the hub or shaft should be used according to the standard.

SP 2 - **Table data update in polygon module**
The table data update directly after switching the profile.

SP 2 - **Tolerance type can be switched now from own input back to tolerance field**
When defining multiple interference fits, the table allows to choose "own input" to enter the interference. Now it is possible again to switch back to the "tolerance field".

Bolts

SP 2 - **Calculation of M_{Amin} from input M_{Amid}**
The value for M_{Amin} is recalculated from the M_{Amax} and M_{Amid}, when M_{Amid} is an input.

SP 2 - **Fixed bolt graphic in report**
The graphical representation of the bolt connection in the report has been fixed

SP 2 - **The moment of resistance W_p is used for the option 'Exceeding the yield point permitted during operation'**
If exceeding the yield point during operation is allowed, the moment of resistance W_p (elastic not plastic one) is used for the calculation.

SP 2 - **The tightening technique method 'Hydraulic non-frictional and torsion-free tightening' improved**
The tightening technique method 'Hydraulic non-frictional and torsion-free tightening' is improved that the torsion have no influence on the calculation.

FEM Calculations

SP 2 - **Better handling of a wrongly entered shaft diameter for an imported gear body**
When the entered shaft diameter of an imported gear body is wrong, an error message is returned and the gear body calculation is stopped.

SP 2 - **Gear body STEP import algorithmic improvement**
The algorithm for the import of STEP files in gear body module has been improved and made more robust.

SP 2 - **Graphics for Gear Body FEM results are shown now also when the root stress modules are not present**
The graphics for the Gear Body FEM results are now active when the gear body calculation right is present, independently of other FEM modules.

SP 2 - **Handling improvement of the gear body special calculation tab for old k16-files**
When importing an old k16-file the "Rim definition" is set automatically to "Gear body without a rim (B)" as a read-only value. The user can add a rim by modifying the "Definition option" to "Manual Definition". This avoids any import errors in case of old k16-files.

SP 2 - **Improvement of gear body meshing options**
The automesh option of the gear body FEA have been improved to provide better element quality, especially when STEP files are used.

SP 2 - **Search for the fixed BC face around the shaft diameter provided by the user**
Improvement in the search for the fixed BC face, for the case of a gear body imported from a step file.

COM-Interface

SP 2 - **Functions to remove profile and flank line modifications through COM/Script**
Functions to remove profile and flank line modifications through COM/Script are now available. Functions are called DeleteProfileModifications(gear) and DeleteFlanklineModifications(gear), where gear is: 0,1,2,3 (if gear = -1, modification on all gears are deleted).

SP 2 - **Smallest radius in the root rounding**
Values for the smallest radius in the root rounding can now be accessed through COM/script. The variables are ZR[gear].rFilletMinTF (Min. fillet radius from tooth form, right flank), ZR[gear].rFilletMinTFleft (Min. fillet radius from tooth form, left flank), ZR[gear].rFilletMinTFvirt (Min. fillet radius from tooth form on virtual gear, right flank), ZR[gear].rFilletMinTFvirtLeft (Min. fillet radius from tooth form on virtual gear, left flank).

Scripting

SP 2 - **Contact analysis variables in SKRIPT**
The support of contact analysis results improved within COM and SKRIPT.

SP 2 - **Skript examples**
The skript examples have changed to include more meaningful code for learning to use the skript. Additionally some skript functions naming have been updated to make it more understandable, such as "open" is now "open_file".

STEP-Interface

SP 2 - **Pulleys are now created correctly in the step export**
During the step export of the complete 3D model, pulleys are now created.

CAD-Interfaces

SP 2 - **Interface to Autodesk Inventor 2024**
Interface to Autodesk Inventor 2024 is added.

KISSsys

SP 2 - **The load spectrum calculation rights are checked without errors**
When running the load spectrum calculation, the license check uses the right number of parameters.

Service Pack 1

General

SP 1 **- Lubrication data from Total energies added to KISSsoft database**
Lubrication data (oils and greases) from Total energies added to KISSsoft database.

SP 1 **- Manual for the Hirth toothing module when F1 is pressed**
The Hirth module is connected to the manual entry when F1 is pressed.

SP 1 **- User defined units in tables**
User defined units in tables are restored from now on.

SP 1 **- Value display issue in tables fixed**
Under some WEindows language settings, table values were not displayed in all cases.

Gears

SP 1 **- Check for maximum tip radius of pinion type cutter**
In some cases when pinion type cutter was used, a false error message was shown indicating that the tip rounding of the pinion type cutter is too big.

SP 1 **- Export selected gear as GDE**
Additional option to select which gear to export in GDE format.

SP 1 **- Hob and pinion type cutter tool dimension graphic**
Hob and pinion type cutter tool dimension graphic is available.

SP 1 **- Import and export in GDE 3.2 format**
Possible to import and export gear geometry in GDE 3.2 format.

SP 1 **- Improvement in the calculation according to DNV CG-0036**
Several improvements in the DNVGL-CG-0036 calculation, which may result in differences in case depth factor, safety of the hardened layer, effective tip relief, specific tooth load, and scuffing load capacity.

Cylindrical Gears Rating

SP 1 **- Bending safety factor for VDI 2736**

In case of load spectrum calculation, bending factor safety according to VDI 2736 considers all load bins.

SP 1 **- Carrier shaft file does consider deformation deflection in all cases**

In cases where the carrier shaft file is specified for the face load factor or contact analysis, the direction of deformation was sometimes inverted.

SP 1 **- Changes in equation for bulk temprature for micropitting (ISO 6336-22)**

The influence of facewidth on the bulk temperature in micropitting calculation (ISO 6336-22) was adjusted to be conservative. The safety factor for micropitting can slightly change.

SP 1 **- Manufacturing deviations and strength calculation**

Manufacturing deviations are no longer considered in the calculation of optimal tip relief. This might change slightly the calculated safety factors.

SP 1 **- Maximum possible root radius coefficient in fine sizing**

Maximum possible root radius coefficient was not set correctly in fine sizing when the option deep tooth form was used.

SP 1 **- Rainflow calculation and negative torque**

Cases, where the negative torque is slightly < 0 Nm, the determination of load spectrum from time series (rainflow) is more robust.

SP 1 **- Sizing button for torque and number of hours**

Sizing button for torque and number of hours did not work correctly in case of load spectrum and the following 2 settings: - Tooth flank with load spectra: Calculate both cases and document the unfavorable case - Tooth root with load spectra: Calculate both cases and document the more realistic case

SP 1 **- Theoretical contact stiffness graphic**

The positioning of the curves in the theoretical contact stiffness graphic was shifted with regards to the rotation angle of Gear 1.

SP 1 **- Tolerance field for strength calculation for cylindrical plastic gears (VDI 2736, VDI 2545)**

Calculation option "Tolerance fields for strength calculation" was not fully considering the ε_α and ε_γ in the strength calculation of plastic gears, if the option was set to x_{min}, x_{mean} and x_{max} setting.

Cylindrical Gears Contact Analysis

SP 1 - **False torsion warning was shown when calculating face load factor according to Annex E in modules with more than one pair**

Warning messages related to the torsion are shown erroneously in modules with more than one pair when calculating the face load factor according to Annex E. One message read "Torque is not taken into account" and another recommended the user to set the torsion direction 'From shaft calculation'. These messages were shown regardless of torsion settings.

SP 1 - **Planetary CA report display of manufacturing deviations even if not considered**

The contact analysis report displays of any previously entered manufacturing deviations from the factors tab even if not considered in the contact analysis tab.

SP 1 - **Planetary CA resultant load factor now uses maximum dynamic factor**

Planetary CA resultant load factor now uses the maximum dynamic factor between sun/planet and planet/ring if the dynamic factor is considered.

Cylindrical Gears Geometry

SP 1 - **Calculation of d_{Nf} in case d_{Fa} and d_{Ff} calculated from tooth form**

In case when d_{Fa} and d_{Ff} were calculated from tooth form, the theoretical value of d_{Nf} is improved.

SP 1 - **Possible to use straight line for protuberance in case of constructed involutes for cylindrical gears**

There is an additional checkbox available for constructed involutes in tab Reference profile. When set, the protuberance of the constructed involute is changed to straight line.

Gear Pumps

SP 1 - **Re-positioning of the graphics results**

Results shown in the graphics are now re-positioned to reflect the actual position during meshing and contact analysis.

Crossed Helical Gears

SP 1 - **Manufacturing profile shift in tab tooth form**

For gears where base tangent length measurement could not be calculated, the manufacturing profile shift x_E in tab tooth form was set to 0. The following tooth form operations can be affected: - Generate gear with pinion type cutter - Manufacture cylindrical gear with a gear generation process - Theoretical involute/Form grinding

SP 1 - **Static safety factor considering Y_S for plastic materials**

Safety factor for static strength considering Y_S for plastic materials is now using the equation from the VDI 2736-2.

Face Gears

SP 1 **- High accuracy in the face gear for shaft angle not equal to 90°**

Some of the geometries such as the height of the gear body and the assembly distance are more accurate for the face gear with the shaft angle not equal to 90°.

Shafts

SP 1 **- Cross section type for cone elements changed**

The cross section type between cylinder and cone or cone and cone was smooth shaft for equal diameters at the section. From now on it is calculated as shoulder taking the other diameter of the cone.

SP 1 **- Oil level position fixed**

In some cases, the oil level was not shown correctly in the shaft editor

SP 1 **- Tab Strength not permanent**

The strength of the shaft is calculated only if tab strength is open.

Bearings

SP 1 **- Bearing names of some bearings in the database updated**
Some bearing names had hyphen/minus sign (-) replaced with zero (0), for example 70040B0XL02RS0TVP0L055 instead of 7004-B-XL-2RS-TVP-L055.

SP 1 **- Comments for bearing in module Rolling bearing ISO 281, ISO 76**
In case when more than 1 bearing was chosen in module Rolling bearing ISO 281, ISO 76, in some cases bearing 2 had wrong comments in the user interface.

SP 1 **- Fine sizing of internal geometry bearing in module Rolling bearing ISO/TS 16281**
After performing fine sizing of internal geometry bearing in module Rolling bearing ISO/TS 16281 accepting a solution didn't work.

SP 1 **- Graphics for pressure curve in case of double row rolling bearing with proprietary geometry**
When showing graphics of pressure curve for double row rolling bearing with proprietary geometry results for both rows were plot for the same number of sections. This made it unclear which result belongs to which row. Now one row has negative section numbers and the other one positive, i.e. the same as roller length in case of non-proprietary rolling bearing geometry.

SP 1 **- Message when shaft definition of connecting bearings is inverted**
When connecting rolling bearing had wrong (i.e. inverted) definition for inner and outer shaft and bearing calculation did not consider bearing stiffness calculation according to ISO/TS 16281 wrong message about transition and interference fits was displayed.

SP 1 **- Message with information about responsibility when using web services**
When using SKF Cloud Services to calculate various rolling bearing parameters or when connected to Timken online account to obtain rolling bearing internal geometry data a message is printed which clarifies that the data coming from these services is under the sole responsibility of these manufacturers.

SP 1 **- Roller length in case of proprietary rolling bearing internal geometry data**
In case of using proprietary rolling bearing internal geometry data, the roller length and the positions of roller sections are no longer shown in the rolling bearing reports and in the graphics. Instead, only the numbers of rolling element sections are shown.

Shaft-Hub Connections

SP 1 **- Standard ISO 4156 updated to 2021 version**
The splines standard ISO 4156 is updated to 2021 version.

SP 1 **- Tip diameter calculation for ANSI B92.1 in shaft/hub calculation**
Tip diameter calculation for ANSI B92.1 splines in shaft/hub calculation is matching with the values from the norm.

Sketcher

SP 1 **- Selection of elements when sketcher was activated**

Switching to tab sketcher cleared the selection.

Forced Response Shafts

SP 1 **- Graphics of forced response in the shaft calculation: the shaft is not shown in the correct scale**

In the forced response analysis in the shaft calculation module, when we run the analysis for "Reference position" and open the graphics, the shaft is not shown in the correct scale. The shaft length is not consistent with the plot data.

SP 1 **- Rotating speeds of non-reference shafts in Campbell diagram and Forced response**

When calculating Campbell diagram or Forced response with more than 1 shaft the calculation didn't consider correct shaft speeds of non-reference shafts if own shaft speed was set for these shafts.