KISSsoft Version 2023

Module list

v2300

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KISSdesign Base Modules

Any Gear Unit Kinematics

Module	Description
KSD-B	**KISSdesign** System extension for creating, sizing and verifying drive trains Kinematic calculation for power splits, switching elements, hydrostatic couplings, etc. Can be programmed using SKRIPT Basic Automated 3D modeling Load spectra in the system (requires ZZ1 or WA8) Loading of drive trains from other KISSdesign files Results display for the most critical element Control of calculation settings at system level Efficiency values can be set for gears, rolling bearings and seals Simplified sizing function for gears, shafts and rolling bearings Required modules: at least WPK and ZPK Rights: S20, S20k8, S20l, S20p, S20q, S20r, S20s, S20u, S20v, S20w

KISSdesign Additional Modules

Modeling

Module	Description
KSD-M1	**Sketcher** Definition of gearbox configuration and kinematics using sketches Rights: S20o
KSD-M2	**Modeling assistant** Group-based modeling with new assemblies (e.g. Wolfrom or Ravigneaux) Rights: S20x
KSD-M3	**Table of variants** Generation of variants within the same kinematics, definition of different gear ratios and shafts for managing gearbox series with different configurations within one KISSdesign file Rights: S20t

Design and Analysis

Module	Description
KSD-D1	**Power loss and efficiency** Calculation of power losses for different meshing, rolling bearings, plain bearings and seals, modification of power loss using factors, torque iteration, taking into account meshing losses from the contact analysis (requires module ZA30 or ZA34) Rights: S20m
KSD-D2	**Thermal rating**

Determination of thermal rating according to ISO/TR 14179, Part 1 and 2, calculation of heat dissipation
Required module: KSD-D1
Rights: S20h

KSD-D3	**Housing Deformation** Calculation of housing deformation on the basis of the bearing forces, determination of bearing offset and tilting of outer ring, iteration of the bearing forces between system calculation and shaft calculation. Requires housing's reduced stiffness matrix (formats according to ANSYS, ALTAIR OptiStruct, etc.) Rights: S20j
KSD-D4	**System contact analysis** Calculation of contact analysis for all toothing stages with iteration of the torque in the transmission Required: Module ZA30 or ZA34 or ZC30 Rights: S20n
KSD-D5	3D assembly space Import 3D STEP files, export the transmission in a 3D STEP file Collision analysis between housing and transmission. Rights: S20k9, S20k10

Dynamics

Module	Description
KSD-V1	**Eigenfrequencies and vibration types for transmissions** Calculation of coupled eigenmodes (torsion, bending and axial), calculation of Campbell diagram, taking into account of the contact stiffness of gears Required module: WA1 Rights: S20i1, S20i2
KSD-V2	**Forced response based on toothing excitation** Calculation of forced response based on the transmission error from cylindrical gear pairs or planetary stages, output of dynamic bearing forces in the time and frequency domain, to calculate the housing excitation with multi-body simulation (for example, RecurDyn), output of dynamic factor for gears. Required module: ZA30 or ZA34 Rights: S20i4
KSD-V3	**Forced response based on shaft unbalance** Calculation of forced response based on shaft unbalance Rights: S20i3
KSD-V4	**Torque ripple** Taking into account the torque ripple of a transmission for calculating the forced vibration, requires a file from the simulation or the measurement. Required module: KSD-V2 Rights: S20i5

Data exchange

Module	Description
KSD-I1	**Data exchange via REXS** Export and import of kinematics and geometry data for gears, shafts and bearings in REXS format Rights: S20k7
KSD-I2	**Export of bearing forces** Export of bearing forces from forced vibration Required: KSD-V2 Rights: S20k11

Dynamics and Export Module Package

Module	Description
KSD-VK	Modules KSD-V1, KSD-V2, KSD-V3, KSD-V4, KSD-I2

KISSsys Base Modules

Gearbox Kinematics

Module	Description
SYS	**KISSsys** Software extension for calculating complete systems with power flow transmission calculation, administration of variants and integrated programming language Group-based modeling with new assemblies (e.g. Wolfrom or Ravigneaux) Import CAD data, collision check Assistant for inputting parallel shafts and planetary stages Automated 3D modeling Quick addition of modules to a model Damage calculation results displayed in tables Template for taking into account additional results (moment of inertia etc.) Planet carrier deformation calculation can be called from KISSsys Interface to GEMS® (requires module CD3) Template for bevel gear displacements (EPG, VHJ) Load spectrum determined from measured torque curve (requires module LKK) Contains this module: GPK Required modules: at least WPK and ZPK Rights: K11, K11a, K11c

Standard Gearboxes

Module	Description
GPK	**Gear calculation package** for sizing and verifying complete gear units, based on KISSsys One- to five-stage cylindrical gear unit One- to four-stage bevel and cylindrical gear unit (requires module ZC1) One- and two-stage worm and cylindrical gear unit (requires module ZD1) One- and two-stage planetary gear unit (requires module ZA1), also with coaxial shafts (requires module WA1) Calculation with load spectra (requires modules ZZ1 and WA8) Required modules: at least WPK and ZPK Rights: K11, K11c

KISSsys Additional Modules

Efficiency

Module	Description
KS2	**Efficiency and thermal rating** Calculation of power losses for different meshing, rolling bearings, plain bearings and seals, modification of power loss using factors, torque iteration, taking into account of meshing losses from the contact analysis (requires module ZA30 or ZA34)

Determination of thermal rating according to ISO/TR 14179, Part 1 and 2, calculation of heat radiation
Rights: K11h

Modal Analysis

Module	Description
KS3	**Eigenfrequencies and vibration types for transmissions** Taking into account of the contact stiffness of gears Calculation of coupled eigenmodes (torsion, bending and axial) Calculation of forced response based on unbalance response Calculation of Campbell diagram Required module: WA1 Rights: K11i1, K11i2, K11i3

Housing Deformation

Module	Description
KS4	**Housing Deformation** Calculation of housing deformation on the basis of the bearing forces, determination of bearing offset and tilting of outer ring, iteration of the bearing forces between system calculation and shaft calculation. Requires housing's reduced stiffness matrix (formats according to ANSYS, ALTAIR OptiStruct, etc.) Rights: K11j, K20a, K20b, K20c, K20d, K20e

KISSsoft Base Modules

Module	Description
ZPK	**Cylindrical Gears** Calculation of cylindrical gear pairs and single gears Calculation of geometry, control measurements (DIN 3960, DIN 3962, DIN 3963, DIN 58400) Tolerances as specified in updated ISO 1328-1,2:2020 Reference profiles according to DIN 867, JIS 1701-1, deep tooth forms and short cut toothing, machining addition, grinding of tooth root Strength calculation for a cylindrical gear, either as specified in ISO 6336 (module ZA10), DIN 3990 (module ZA11), AGMA 2001 (module ZA12), VDI 2545 (module ZA17), VDI 2736 (module ZA21) or GOST 21354-87 (module ZA22) Input of speed for epicyclic gears configuration Calculation of tooth friction and power loss according to Niemann Flash temperature progression Calculation and 2D and 3D display of the tooth form for external and internal toothing Scuffing according to DIN 3990 and ISO/TS 6336-20/21 Micropitting according to ISO/TS 6336-22 (Method B) Calculation of gear mesh frequencies, assembly phase frequencies and hunting tooth frequencies Input of an individual tooth flank modification per tooth Generation of variants for modifications Arc of circle and spline approximation for 2D export (requires module CA1) Extended 2D and 3D display of the tooth form (module ZY1) Tip shortening for involute or imported tooth forms Animation of meshing gears, simultaneous display of more than one machining step, measuring function in the graphic, function for saving data for A – B comparison, collision check, marking of contact point, marking of collision Manual input of active tip and active root circles in the single gear calculation Output of manufacturing drawings Extensive material database Save tools to the database and compare with existing tools Contains this module: ZY1 Rights: Z01, Z01z, Z04b, Z04c, Z05i, Z05t, Z05v, Z19e, Z19m
WPK	**Shafts and Bearings** Calculation of deformations, including for statically overdetermined systems and line loads Shaft rough sizing 3D display of forces and diagrams of bending during shaft modeling Mirror shaft Load a background drawing and display millimeter grid Flank line modification (module WA2) Support with rolling bearings, plain bearings or general supports A shaft strength calculation, according to either DIN 743 (module WA6), FKM Guideline (module WA7), Hänchen & Decker (module WA5) or AGMA 6101-F19 and AGMA 6001-F19 (module WA10) Smith and Haigh diagrams Calculation of rolling bearing rating life (ISO 281, L10h), also via SKF Cloud® Selection of suitable rolling bearing, based on rolling bearing rating life Bearing frictional power loss, input of linear bearing stiffness

Comprehensive bearing database, with some internal geometry details, also via TIMKEN's Cloud service
Calculation of rotation and over-rolling frequencies of rolling bearings
Rights: W01, W01c, W01f, W03a, W05e, W15, W51b, W51c

MPK	**Shaft-hub connections** Cylindrical interference fit, conical interference fit with diametral tolerances taken into account Key, Woodruff key, multi-spline, polygon Involute splined shafts (DIN 5480, ANSI B92, ISO 4156, DIN 5482 or AGMA 6123-C16) AGMA 6123 with calculation of influence on axis inclination and crowning Test for ring bursting. Serration splines according to DIN 5481:2019-4 Go and no-go gauges according to DIN 5480-15 and ISO 4156 Hirth couplings Curved tooth couplings Bolts and pins Clamped connections according to Roloff/Matek, snap rings Extended 2D and 3D display of the tooth form (module ZY1) Contains this module: ZY1 Rights: M01a, M01x, M01b, M01c, M02a, M02b, M02c, M02d, M02e, M03a, M05, M06, Z05i, Z05n, Z09, Z09b
SPK	**Bolt calculation according to VDI 2230, Sheet 1, 2015 and Sheet 2, 2014** Single bolt with axial and shearing force Cylindrical flange connection General connections with user-defined hole pattern (Sheet 2) Calculation according to input FEM results (Sheet 2) Taking into account the temperature differences Rights: M04, M04a, M04b
APK	**Elements for gearbox with shifting elements** Friction clutches according to VDI 2241:1982 Synchronization as specified by Borg/Warner Enables either time or force to be calculated for gear shifting Rights: A10, A20
FPK	**Springs** Tension springs, compression springs (cylindrical and conical compression springs), disc springs (DIN EN 16984:2017, DIN EN 16983:2017 with internal or external slots), leg springs, torsion bars Tolerance standards for wire diameters (DIN EN 10218:2012 and DIN EN ISO 6931-1) Rights: F01, F02, F03, F04, F05, F06
LKK	**Load spectrum generator** Load spectrum generation from time series for gears, shafts and bearings "Simple counting" for generating a load spectrum without taking into account alternating torques "Rainflow counting" for generating a load spectrum from time series with alternating torques for gears Rights: K19, K19a
RPK	**V-belts, toothed belts and chains** Strength and sizing of belt and chain length, roller diameter, center distance, number of belts, with or without tensioning pulley Rights: Z90, Z91, Z92

LPK	**Stress analysis with local stresses** Calculation according to FKM Guideline 2020, 7th edition Taking into account the supporting effect for fatigue and static load For calculation of safety factor and service life on basis of an external FEM calculation Rights: K12
VPK	**Linear drive trains and spindle drives** Calculation, according to Roloff/Matek, of safety against buckling, contact stress and more, for tightening and loosening Rights: K15
TPK	**Chain of tolerances** Maximum and minimum size analysis, expected values, tolerances according to ISO/own input Rights: K10
RCK	**Hardness conversion** Hardness conversion according to DIN EN ISO 18265:2014 from and to HB, HRC, HV, R_m, etc. Rights: K09
HPK	**Hertzian pressure** Calculation of Hertzian pressure for rollers, balls and planes Rights: K14, K14a

Gearbox Base Modules Module Package

Module	Description
KPK-G	Module ZPK, WPK, MPK, TPK, HPK and RCK

Complete Base Modules Module Package

Module	Description
KPK	Module ZPK, WPK, MPK, SPK, APK, FPK, LKK, RPK, LPK, TPK, HPK, VPK and RCK

KISSsoft Additional Modules Gears

Cylindrical Gears

Configuration/Gear Sizing

Module	Description
ZA1	**Planetary gears, three gears, four gears** Rights: Z01a, Z19g
ZA2	**Rack** Rights: Z01b
ZA3	**Rough sizing of macrogeometry** for gear pairs and planetary gear stages

Sizing according to required safeties, determination of the center distance and facewidth for solutions with the same torque capacity, display of multiple variants, specification of total weight
Rights: Z03

ZA4	**Fine sizing of macrogeometry** for gear pairs and planetary gear stages, three gears, and four gears Variation of the module, number of teeth, profile shifts, pressure angle, etc. Calculation of all executable variants, taking into account the installation constraints of planet gears Automatic sizing of deep tooth forms (requires module ZA5) Calculation of transmission error for all variants (requires module ZA30) Specification of cutter and pinion-type cutter lists per gear All solutions are classified on the basis of different criteria Display of results in tables and graphics Rights: Z04, Z04a
ZA5	**Sizing functions and special calculations** Sizing of profile shift using different criteria Calculation of profile shift and tooth thickness allowance taken from measured tooth geometry, pre-machining tools with grinding stock, topping tools Sizing of the reference profile for a required transverse contact ratio Rough sizing of modifications (microgeometry), tip and root relief (linear, progressive and logarithmical), crowning and helix angle modification sizing, taking into account axis inclinations as specified in ISO 6336-1, Annex B or in ISO 6336-1, Annex E (requires module ZA35) Report for tolerances according to ISO 1328, DIN 3961, DIN 58405, BS 436, AGMA 2001 or AGMA 2015 Calculation with manufacturing profile shift Sizing of center distance to take into account balanced specific sliding Profile and tooth trace diagrams (K diagrams) Rights: Z01x, Z15, Z19a, Z19d, Z19h, Z19l, Z19n
ZA6	**Profile modifications with grinding worms and dressing wheels** Calculation of profile modifications on the basis of the geometry of the dressing disc Includes the grinding worms/dressing wheels present in a user-defined file Display of the grinding worms/dressing wheels that are suitable for the toothing Rights: Z19j
ZA7	**Asymmetrical gears** Calculation of the asymmetric tooth form for all cylindrical gear configurations Strength calculation according to ISO 6336 (requires module ZA10), VDI 2545 (requires module ZA17) or VDI 2736 (requires module ZA21) Sizing of root rounding on a tool with different radii Rights: Z01y
ZA9	**Double pinions** Kinematics as a double pinion in a four-gear chain (requires module ZA1) Check for collisions Sizing of center distances (requires module ZA4) Rights: Z01c

Strength Calculation Methods

Module	Description
ZA10	**Strength according to ISO 6336:2019 and ISO 6336:2006 (replaced)** Rights: Z02a
ZA11	**Strength according to DIN 3990:1987** Rights: Z02
ZA12	**Strength according to AGMA 2001 and AGMA 2101** Rights: Z13
ZA13	**Strength according to VDI 2737:2016** Tooth root load capacity of internal gears with influence of gear rim thickness Rights: Z23
ZA15	**Graphical method** for tooth root stress calculation Rights: Z19i
ZA16	**Strength according to AGMA 925:2003** Lubrication gap and flash temperature curve according to AGMA Rights: Z19k
ZA17	**Strength according to VDI 2545:1981** Wear calculation with safety against shearing according to Fürstenberger Rights: Z14
ZA18	**Static strength** for plastics and metal Rights: Z02x
ZA19	**Strength according to BV-RINA and DNV standards** BV-RINA for military vessels, RINA 2010 for commercial vessels, Lloyds Register: 2013, DNV41.2, DNVGL-CG-0036 (2019) Required module: ZA10 Rights: Z02b, Z02d
ZA20	**Strength according to AGMA standards** AGMA 6011, AGMA 6014, AGMA 6011-J14, AGMA 6004, API 613:2021, AGMA 6015 Rights: Z13b, Z13c
ZA21	**Strength according to VDI 2736:2014** For plastics (Sheet 2), wear calculation with safety against shearing according to Fürstenberger Rights: Z14a
ZA22	**Strength according to GOST 21354-87:1987** including manufacturing tolerances and tooth thickness allowances Rights: Z02e
ZA23	**Strength according to ISO 13691:2001** for "high-speed special-purpose gear units" Rights: Z02f
ZA24	**Tooth root stresses with 2D FEM** Calculation of tooth root stresses for cylindrical gear pairs (with straight or helical teeth) Calculation with integrated FEM Solver CM2® FEM results displayed in KISSsoft

Calculations with Load Distribution

Module	Description
ZA30	**Contact analysis for cylindrical gears** taking into account flank modifications and shaft deformation Tooth flank fracture according to ISO/TS 6336-4:2019 (requires module ZZ4) Calculation of the excitation force according to FVA-No. 487 Calculation of path of contact under load Graphical display of the results in the excitation force, efficiency, forces and stresses groups Calculation and display of Hertzian pressure, contact pattern and tooth root stresses along the actual tooth flank Load-free contact pattern and display of the assembly contact pattern Calculation with conical profile shift Calculation of contact stiffness and transmission error under load, based on the actual tooth form Display of specific sliding, sliding velocity and sliding factors for gears under load from actual tooth form Display of friction power and local heat generation along the meshing Wear calculation for plastic (dry run) and steel (cold wear) Calculation and display of the progression of wear Calculation of safety against micropitting according to ISO/TS 6336-22 Calculation of lubrication gap according to ISO/TS 6336-22 and AGMA 925 with actual normal force Calculation of power loss and speed across the meshing Rights: Z24, Z25, Z27, Z30, Z31, Z31a, Z32, Z32b, Z32c, Z36, Z39a, Z39b, Z39c, Z39d and K05w
ZA34	**Planetary stage contact analysis** taking into account flank modifications and shaft deformation Floating sun wheel All other functionalities as described in ZA30 Rights: Z24, Z25, Z27, Z30, Z31, Z31a, Z32c, Z34, Z36, Z39a, Z39b, Z39c, Z39d, K05w
ZA33	**Fine sizing of microgeometry for cylindrical gears** for cylindrical gear pairs and planetary gear stages Microgeometry parameters can be combined and modified Cross variations of amounts and coefficients All solutions are classified on the basis of different criteria Graphical display of the results Required module: ZA30 or ZA34 Rights: Z33
ZA35	**Face load factor K_{Hbeta} according to ISO 6336-1, Appendix E** Calculation of gaping and load distribution while taking into account flank modifications and shaft deformation Variation of tolerances with (+/-)fma and (+/-)fhb Results are displayed in graphics and reports Results for individual planets can be output Rights: Z02c
ZA36	**Calculation of planet carrier deformation**

Calculation of planet carrier deformation under load to determine the misalignment of planet pins
Geometry definition with parameters or by importing from STEP files
Calculation with integrated FEM Solver CM2®
FEM results displayed in KISSsoft
Required modules: ZA35 or ZA34
Rights: Z37

ZA37	**Tooth root stress with 3D FEM** Taking into account the load distribution across the facewidth from the contact analysis Calculation with integrated FEM Solver CM2® FEM results displayed in KISSsoft Required module: ZA30, ZA34 or ZA38 Rights: Z38b
ZA38	**Contact analysis for asymmetric toothing** Contact stiffness according to Weber/Banaschek and Langheinrich Specification of the tooth fixing position M Required module: ZA30 or ZA34 and ZA7 Rights: Z32a

Contact Analysis Module Package

Module	Description
KAP	Module ZA30 and ZA34

Complete Contact Analysis Module Package

Module	Description
KAPK	Module ZA30, ZA33, ZA34, ZA35, ZA36, ZA37 and ZA38

Master Gears

Module	Description
ZA40	**Master Gears** Master gear sizing and checking Rights: Z29

Gear Pumps

Module	Description
ZB1	**Gear pumps Basic** Calculation of the transported volume of oil for gear pumps (without taking return volume into account) for internal and externally geared pumps Cylindrical gears with involute and non-involute tooth forms (requires module ZY2 or ZY7) Can be combined with fine sizing (requires module ZA4) Rights: Z26
ZB2	**Gear pumps Expert**

Calculation and display of pump characteristic during meshing
Enclosed volume during meshing (return volume), volume with a critical inflow area,
inflow speed at the narrowest point, oil inflow at the entry point, volume under pressure at
input, torque on both gears, Hertzian pressure, sliding velocity
Required module: ZB1
Rights: Z26a

Bevel Gears

Module	Description
ZC1	**Bevel gear geometry** Geometry according to DIN 3971 and ISO 23509 Blank dimensions of straight, helix- or spiral bevel gears Conventional manufacturing process, Klingelnberg or Gleason Conversion of Gleason Dimension Sheets for conical (Gleason) and uniform tooth depth (Klingelnberg, Oerlikon) to DIN 3971 and vice versa Rough sizing macrogeometry Calculation of the involute point Separate verification of the inside and outside tooth form (toe/heel) Rights: Z07, Z07m, Z07s1
ZC10	**Generation of 3D model for bevel gears** Straight and helical toothed bevel gears with modifications (apexes not in one point), and bevel gears with spiral teeth and modifications 3D model based on the virtual cylindrical gear tooth forms (cylindrical gear involute) Visual examination of the path of contact by rotating either one gear or both Export of 3D model (requires module CB1) Rights: Z07p
ZC2	**Strength according to ISO 10300:2014 and ISO 10300:2001 for bevel gears** Method B and C Calculation of scuffing for hypoid gears according to ISO/TS 10300-20:2021 Rights: Z07e
ZC3	**Strength according to DIN 3991:1988** Rights: Z07g
ZC4	**Strength according to AGMA 2003-D19** Calculation of bevel gears strength factor Q Rights: Z07j
ZC5	**Strength for bevel gears according to Klingelnberg KN 3030 1.2** for the palloid and cyclo-palloid manufacturing process Rights: Z07a
ZC6	**Strength for hypoid gears according to Klingelnberg KN 3030 1.2** for the palloid and cyclo-palloid manufacturing process Rights: Z07b
ZC7	**Strength according to VDI 2545:1988** Rights: Z07h
ZC8	**Static strength for bevel gear pairs and differentials** Rights: Z07i
ZC9	**Strength according to ISO 10300:2014 for hypoid gears**

Method B1
Calculation of scuffing for hypoid gears according to ISO/TS 10300-20:2021
Rights: Z07f

Module	Description
ZC11	**Strength according to DNV 41.2, DNVGL-CG-0036 (2019)** Root and flank strength, tooth flank fracture, safety hardening depth Rights: Z07l
ZC12	**Fine sizing of macrogeometry for bevel and hypoid gears** Production-specific criteria for forged differential bevel gears Rights: Z07n
ZC13	**Calculation of topological modifications for bevel gears** Calculation of topological modification based on measurement grid data Specification of measurement grid data in formats according to Gleason, Klingelnberg, TBevel, Zeiss Rights: Z07s3
ZC14	**Sizing of the webbing for differential bevel gears** Calculation of the webbing with definition of inside diameter and permissible thrust washer pressure Calculation of the webbing in fine sizing (requires module ZC12) Calculation of the virtual gear on the inside and outside Rights: Z07t
ZC30	**Contact analysis under load** for bevel gears with straight, helical or spiral teeth Taking into account the microgeometry Graphical display of the results in the excitation force, efficiency, forces and stresses groups Calculation of contact lines, transmission error and stress ratios Display of the load-free contact pattern and the assembly contact pattern Calculation of wear Tooth flank fracture according to ISO/DTR 10300-4:2019 (draft) (requires module ZZ4) Calculation of the misalignment values, VHJ, and axis angle error directly from the shaft deformation Calculation of the excitation force according to FVA-No. 487 1.2.3 Rights: Z24, Z25, Z27, Z32c, Z35, Z36, Z39a, Z39b, Z39c, Z39d and K05w
ZC33	**Fine sizing of microgeometry for bevel gears** for bevel gears with straight, helical or spiral teeth Microgeometry parameters can be combined and modified Cross variations of amounts and coefficients Graphical display of the results Required module: ZC30 Rights: Z07o

Worms with enveloping wormwheel

Module	Description
ZD1	**Worm gear geometry** for cylindrical worms and globoid worm gears Geometry according to ISO 14521 and DIN 3975

Control measurements for worms (measurement over 3 pins) and worm gears
(measurement over balls)
Worm sizing with tool module
Rights: Z08

Module	Description
ZD10	**Generation of the 3D model for worms and globoid worm gears** For flank forms ZA, ZI and ZN, ZC, ZK Visual examination of the path of contact by rotating either one gear or both Export of 3D model (requires module CB1) Rights: Z08p, Z08s
ZD2	**Strength according to ISO/TR 14521:2020** Rights: Z08b
ZD3	**Strength according to DIN 3996** DIN 3996:1998, DIN 3996:2012 and DIN 3996:2019 Rights: Z08a
ZD4	**Strength according to AGMA 6034 and AGMA 6135** Rights: Z08c
ZD5	**Fine sizing of macrogeometry for worm gears** Rights: Z08n

Crossed Helical Gears

Module	Description
ZE1	**Geometry of crossed helical gears** for cylindrical worms and cylindrical worm wheels Crossed helical gears with external and internal teeth Control measurements for worms (measurement over 3 pins) and worm gears (measurement over balls) Graphical analysis of meshing when shaft angle is not equal to 90° and in multiple section levels Graphical display of specific sliding Collision check Rights: Z17, Z17h, Z17i
ZE2	**Strength according to ISO 6336/Niemann, Hirn method** Rights: Z17a
ZE3	**Strength according to VDI 2545 and Hoechst method** Rights: Z17b, Z17c
ZE4	**Static strength** Bending and shearing for metal and plastic Rights: Z17d
ZE5	**Strength for plastic according to VDI 2736 (Sheet 3)** Wear calculation according to Pech Rights: Z17e, Z17f
ZE6	**Fine sizing of macrogeometry for crossed helical gears** Rights: Z17n
ZE7	**Crossed helical gear with rack** Rights: Z17g

Face Gears

Module	Description
ZF1	**Face gears geometry** Geometry of face gears with cylindrical pinion gears as counter gear, for shaft angle = 90°, without offset 2D display with tooth form on the inside, at the center and on the outside The checking of undercut and pointed tooth tip is performed graphically in the 2D view, while tip alteration can be varied to prevent pointed tooth tips (with sizing function) Sizing of optimum facewidth Rights: Z06
ZF10	**Generation of 3D model for face gears** For face gears with offset and any shaft angle Visual examination of the path of contact by rotating either one gear or both Export of 3D model (requires module CB1) Rights: Z06f
ZF2	**Strength according to ISO 6336 and literature** Rights: Z06a
ZF3	**Strength according to CrownGear/DIN 3990** Rights: Z06b
ZF4	**Strength according to ISO 10300, Method B** Rights: Z06c
ZF5	**Strength according to DIN 3991, Method B** Rights: Z06d
ZF6	**Static strength** Rights: Z06e

Non-Circular Gears

Module	Description
ZG1	**Non-circular gear geometry** Calculation of geometry on the basis of a preset operating pitch line or transmission ratio 2D output of tooth form Only when combined with a software engineering by KISSsoft AG Rights: Z40

Beveloid Gears

Module	Description
ZH1	**Beveloid gear geometry** Only for external toothing Strength calculation using the cylindrical gear strength calculation Profile and tooth trace modifications, e.g. negative crowning etc. Rights: Z50
ZH10	**Generation of 3D model for beveloid gears** Visual examination of the path of contact by rotating either one gear or both Export of 3D model (requires module CB1)

Rights: Z50p

Gear Manufacturing

Module	Description
ZM1	**Checking of manufacturability with power skiving** Estimation of the collision of the tool and gear, for internal and external toothing Fine sizing of toothing with analysis of the collision risk (requires module ZA4) Taking into account the tool shank Request for offer to supply a tool, from the company Gleason, by sending the gear data Rights: Z19p
ZM2	**Checking of manufacturability with honing** Estimation of the collision of the tool and gear, for external toothing Fine sizing of toothing with analysis of the collision risk (requires module ZA4) Request for offer to supply a tool, from the company Gleason, by sending the gear data Rights: Z19h1
ZM3	**Calculation of topological modifications for cylindrical gears** Using topological measurement data (from measurement grid) of cylindrical gear tooth flank Requires measurement data in GAMA CMM format For verifying noise excitation from manufactured gears, using the "Design – Manufacture - Measure" loop (requires module ZA30) Rights: Z19x
ZM4	**Manufacturing allowances** Twist due to manufacturing for generation grinding, simulation of waviness for flank and profile slope deviation Rights: Z05f, Z05u

Gear Body

Module	Description
ZN1	**Gear body** Calculation of gear body deformation for external toothing with FEM Definition of gear body geometry using coordinates or via data imported from STEP Taking into account a rim with different material Load can be applied manually or in the plane of action of the gear pair Calculation with integrated FEM Solver CM2® FEM results displayed in KISSsoft Rights: K21, K21a, K21b

Tooth Form Calculation

Module	Description
ZY1	**Extended tooth form display** for 2D and 3D graphics, animation of meshing gears, simultaneous display of more than one machining step, measuring function in the graphic, function for saving data for A – B

comparison, tooth form and tool in normal section, collision check, marking of contact
point, marking of collision
Rights: Z05x, Z05j, Z05k

Module	Description
ZY2	**Import of tooth form or tool geometry** Import of any kind of non-involute tooth shape or tool (e.g. from CAD or 3D gear metrology system or DXF), approximation of the normal vectors Definition of the base tangent length of non-involute tooth forms Rights: Z05a
ZY3	**Calculation of reference profile from DXF** For hob cutters and pinion-type cutters, for designing special tools Rights: Z05c
ZY4	**Calculation of the paired gear** Calculation of generated paired tooth form Rights: Z05d
ZY5	**Addition for molding** Compensation for shrinkage, spark gap, modification of pinion-type cutter Rights: Z05e
ZY6	**Tooth form modifications** Circle-shaped entry curve, elliptical root rounding radius (cylindrical and bevel gears) Variable tip relief on side I and II for bevel gears Tooth form can be shifted in radial direction per tooth Rights: Z05g, Z05r, Z05s
ZY7	**Cycloid and circular arc teeth** Constructed involute, straight line flank Rights: Z05h, Z05n
ZY8	**Tool scaling** Scaling of DXF tool or a tooth form with the gear's normal module Rights: Z05q
ZY9	**Elliptical deformation for spur gears** For cylindrical gear pair, gear 1 with elliptically deformed external teeth, gear 2 with circular internal toothing Input of half axis ratio, calculation of the shorter half axis 2D graphic showing elliptically deformed gear 1 meshing with circular gear 2 Rights: Z05p

Other Gear-Specific Modules

Module	Description
ZZ1	**Load spectra and transmittable torque** Calculation of transmittable power with and without load spectrum Calculation of service life with and without load spectrum Calculation of safeties with load spectrum (for cylindrical, bevel, and cross helical gears) Taking into account the direction of rotation of the individual stages, and their load direction (for cylindrical gears) Graphical display of speed and torque classes Rights: Z16, Z16a, Z18, Z18a, K23
ZZ2	**Hardening depth**

Proposal of required hardening depth based on Hertzian pressure (for cylindrical gears or bevel gears)
Graphical display of the results
Rights: Z22

ZZ3	**Backlash** Calculation of backlash after mounting and operating backlash Taking into account tooth and shaft bending (requires module ZA35) for cylindrical, crossed helical and worm gears Rights: Z12
ZZ4	**Tooth flank fracture for cylindrical and bevel gears** For cylindrical gears according to ISO/TS 6336-4 For bevel and hypoid gears according to ISO/DTS 10300-4:2019 (draft) (requires modules ZC2 or ZC9) Rights: Z07k
ZZ5	**Measurement grid points for topology measurement** for flank and root, for cylindrical, bevel and crossed helical gears, worms and globoid worm gears, splines and beveloid gears Output of measurement grid in the formats defined by Gleason and Klingelnberg Required module: CB1 Rights: Z05o
ZZ6	**Plastic Materials Manager** Easy way to generate plastic material files (DAT files) based on the material properties and measured test bench data according to VDI 2736-4 and VDI 2736 modified (requires module ZA21 or ZE5) Save the new materials directly to the KISSsoft database in the right format for calculations Calculation for dry run Evaluation of pulsator test rig results Rights: K17
ZZ7	**Normal backlash based on the effective tooth form** For all cylindrical gear configurations except for racks Calculation of backlash for each point of contact for pitch, based on the effective tooth form over complete facewidth. For the watch-making industry and for special tooth forms. Specification of the tooth form via cycloid, arc of circle or DXF Rights: Z19v
ZZ8	**Special functions for the watch-making industry** Import of DXF files in special format for the watch-making industry Dry run for gears Various special functions for very small gears Rights: Z19w

KISSsoft Additional Modules for Shafts and Bearings

Shafts

Module	Description
WA1	**Shaft systems and bearing stiffness** Definition of shaft systems with several coaxial shafts Taking into account bearing offset, bearing clearance, thermal expansion, linked shafts, calculation of non-linear bearing stiffness from the internal geometry Calculation with rolling bearing stiffness matrices from SKF Cloud® Temperature conditions for inner and outer ring and for rolling body Approximation of internal bearing geometries with optional input of the number of rolling bodies and other data already available from bearing manufacturers Radial bearing can be calculated either with or without an inner or outer ring Rights: W01a, W01b, W03b, W03c, W03d, W05d
WA2	**Flank line modification** Calculation of longitudinal deformation, load distribution with and without modification Sizing of the optimal flank line modification, gear body deformation taken into account Taking into account the gear body deformation stiffness matrix Rights: W10
WA3	**Buckling** for beams and shafts Rights: W13
WA4	**Critical speeds and frequencies** Calculation of torsional, bending and longitudinal frequencies Calculation and display of Campbell diagram Rights: W04, W04x
WA5	**Strength according to Hänchen & Decker** Shaft sizing based on constant equivalent stress and maximum deformation Rights: W06a
WA6	**Strength according to DIN 743, 2012 edition** Shaft sizing based on constant equivalent stress and maximum deformation Verification for multiple notches including an input option for FE results according to FVA 700 I Rights: W06b, W06r
WA7	**Strength according to FKM Guideline, 2020 edition** Shaft sizing based on constant equivalent stress and maximum deformation, Calculation of endurance limit for surface treated parts as detailed in section 5.5 can be performed with an amplitude and equivalent stress verification with different stress ratios per load case Options for coefficient Kf according to 4.3.2, 4.3.3, determination of the core hardness from the tensile strength Rm, Rights: W06c
WA10	**Strength according to AGMA 6101-F19 and AGMA 6001-F19** Rights: W06d
WA8	**Load spectra for shafts and bearings** Calculation of shaft limited life and endurance strength

Bearing calculation with load spectra
Setting of a different temperature for each load bin, affecting the calculation of bearing
clearance and service life according to ISO/TS 16281
Rights: W01s, W06s, W06t

WA11	**Forced response** Shaft vibration calculated on the basis of the unbalance Definition of the angular position of the eccentric mass Rights: W14

Bearings

Module	Description
WB1	**Modified bearing calculation** Calculation of rolling bearing rating life Lnmh Influence of lubrication according to ISO 281-1 Thermally permissible service speed acc. DIN 732 Lubrication, lubricant temperature, friction and contamination can be defined for each individual rolling bearing Bearing rating life and modified rating life calculation using SKF Cloud® Calculation for hybrid bearings according to the GBLM method in SKF Cloud® Rights: W05a
WB2	**Calculation of reference rating life with internal geometry according to ISO 16281** Calculation of rolling bearing rating life Lnrh and Lnmrh (requires module WB1) Diagram of the load distribution in the bearing Diagram of the load distribution over the rolling bodies and races User-specified input of roller profiles Graphic showing stresses under the contact surface Calculation of bearing rating life Lnrh and Lnmrh (requires module WB1) using SKF Cloud® Required module: WA1 Rights: W05b, W05c
WB3	**Plain hydrodynamic bearings** Plain hydrodynamic radial bearings, oil or grease lubricated, according to DIN 31657 and DIN 31657-4: 2019, DIN 31652, ISO 7902: 2020 and Niemann Plain hydrodynamic axial bearings: Calculation of pad thrust bearings and tilting-pad thrust bearings according to ISO 12130 Rights: W07, W07a, W07b, W07c, W07d, W07e, W08
WB4	**Calculation of a single bearing with internal geometry according to ISO/TS 16281** Calculation possible without the WPK module Own input of inner and outer ring deformation values Import load value from the planetary stage calculation Rights: W51
WB5	**Rolling bearing fine sizing** Optimization of the internal geometry of bearings through variation calculation Variants are displayed in a list, or graphically (requires module WB4) Rights: W51a

CAD Interfaces

Additional modules for KISSsoft

2D Export

Module	Description
CA1	**2D DXF and IGES Export** Rights: K05a, K05e

3D Export

Module	Description
CB1	**STEP and Parasolid format export in 3D** using the Parasolid kernel Display and export cylindrical gears with modifications, and straight and helical toothed bevel gears (apexes in one point, without modification), beveloid gear, splines (shaft-hub), shafts, racks Display as skin model for checking paths of contact Export shafts with force elements and rolling bearings Rights: K05u, K05u1, K05u2
CB2	**Integration with Solid Edge (versions 2019-2023)** Generation of 3D gears (cylindrical gears, worms, crossed helical gears, straight bevel gears, splines (shaft-hub), shafts and racks) directly from the calculation, using the KISSsoft menu in Solid Edge Contains this module: CC1 Rights: K05d, K04
CB3	**Integration with SolidWorks (versions 2019-2023)** Generation of 3D gears (cylindrical gears, worms, crossed helical gears, straight bevel gears, splines (shaft-hub), shafts and racks) directly from the calculation, using the KISSsoft menu in SolidWorks Contains this module: CC1 Rights: K05k, K04
CB4	**Integration with Inventor (versions 2019-2023)** Generation of 3D gears (cylindrical gears, worms, crossed helical gears, straight bevel gears, splines (shaft-hub), shafts and racks) directly from the calculation, using the KISSsoft menu in Inventor Contains this module: CC1 Rights: K05m, K04
CB5	**CATIA integration (versions V5 R21-R32, V5-6R2022)** Generation of 3D gears (cylindrical gears, worms, crossed helical gears, straight bevel gears, splines (shaft-hub)) (produced by: SWMS) Rights: K05o*
CB6	**Integration with Creo Parametric (versions 6-9)** Generation of 3D gears (cylindrical gears, worms, crossed helical gears, straight bevel gears, splines (shaft-hub)) (produced by: Applisoft) Contains this module: CC1 Rights: K05q*, K04

CB7	**Integration with Siemens NX (versions NX1953 - NX2206)** Generation of 3D gears (cylindrical gears, worms, crossed helical gears, splines (shaft-hub), shafts and racks) directly from the calculation, using the KISSsoft menu in NX Contains this module: CC1 Rights: K05n, K04

* See Conditions

COM Interfaces

Additional modules for KISSsoft and KISSdesign

Module	Description
CC1	**Basic COM interface** Integration of KISSsoft in your own programs, via the COM interface. Basic KISSsoft functions for loading and saving files, creating reports and performing calculations can be called. Access to all the variables in a calculation and all the reports generated during the calculation Rights: K04
CC2	**Expert COM interface** Numerous sizing and optimization functions can be called, as can scripts (requires module CC3). Contact analysis can be controlled via the COM interface. Required module: CC1 Rights: K04a

Scripting

Additional modules for KISSdesign and KISSsoft

Module	Description
CC3	**SKRIPT Basic** Integrated programming language for loading and running scripts in a KISSsoft file. Basic KISSsoft functions for loading and saving files, creating reports and performing calculations can be called. Runs automatically at specific time points during the calculation Rights: K22
CC4	**SKRIPT Expert** Provides access to all functions that can be accessed using the extended COM interface, in a particular calculation module. External programs can be run, graphics can be generated. Required module: CC3 Rights: K22a

Module package COM interfaces and Scripting

Module	Description
CPK	Modules CC1, CC2, CC3 and CC4

Data exchange

Additional module for KISSsoft

Module	Description
CD1	**GDE exchange format** Gear Data Exchange GDE Version 3.2 in XML format according to VDI 2610 Cylindrical gear export Rights: K05f
CD2	**GAMA exchange format** GAMA cylindrical gear export (only macrogeometry) Rights: K05g
CD3	**Interface to GEMS®** Data exchange with GEMS® (Gleason's bevel gear manufacturing and analysis software) via KISSsys and KISSsoft Export and import of bevel and hypoid gear geometry, operating data and misalignments Display of results from GEMS® load contact analysis in KISSsys Rights: K11k6, K05j
CD4	**Tooth form export** Export of tooth form and tool geometry in X and Y coordinates, normals or radiuses of curvature Data in the transverse section, normal section or axial section Rights: Z05b

Reliability

Additional modules for KISSdesign, KISSsys and KISSsoft

Module	Description
KLR	**Reliability** Calculation and display of reliability according to Bernd Bertsche with 3-parameter Weibull distribution, VDMA 23904 and AGMA 6006 Input of Weibull shape parameter and coefficient for failure-free time For cylindrical gears, planetary stages, bevel gears and rolling bearings Rights: K18

Languages

Module	Description
LA1	German: Software user interface, reports, graphics, messages, Right: K02
LA2	English: Software user interface, reports, graphics, messages, Right: K02a
LA3	French: Software user interface, reports, graphics, messages, Right: K02b
LA4	Italian: Software user interface, reports, graphics, messages, Right: K02c
LA5	Spanish: Software user interface, reports, graphics, messages, Right: K02d
LA6	Russian: Software user interface, reports, graphics, messages, Right: K02e
LA7	Portuguese: Software user interface, reports, graphics, messages, Right: K02f
LA8	Chinese: Software user interface, reports, graphics, messages, Right: K02g
LA9	Japanese: Software user interface, reports, graphics, messages, Right: K02h

Services

Software Engineering

KISSsoft AG also provides software engineering and consultancy services. Our expertise and experience have been gathered over many years, working on a multitude of different projects in a wide range of industries. We would be glad to make you a specific offer. You will find more detailed information on our homepage under: https://www.kisssoft.com/en/products/engineering-and-consulting

Training courses

In our training courses, you will learn how to use our software efficiently. You will find more detailed information about which planned public training courses are currently available and also registration forms on our homepage under https://www.kisssoft.com/de/products/training.

Please contact us directly if you would like information about company-specific training courses. We would be glad to make you a specific offer.

Workshops

You will be able to work on your project with KISSdesign, KISSsys and KISSsoft in a workshop, under the guidance of a KISSsoft instructor. The specialist theoretical knowledge you need will be explained to you. The workshop topic will be agreed by you (the customer) and KISSsoft AG. We would be glad to make you a specific offer.

Licenses, Purchase and Rental

License models

There are a number of different license models available. You will find more detailed information at: https://www.kisssoft.com/en/products/product-overview/brochures/license-models-de.

Single user license

The single user license runs on a dongle. The calculation program can be installed on various computers, but calculations can only be performed with a dongle in a USB port. The single user license is also available as a node-locked license without a dongle.

Network license

We offer a network license for an unrestricted number of users, but the number of simultaneous users is limited to the number of access rights. We charge an extra 25% on listed prices for a simultaneous user. The license is restricted to one geographical location. Additional sites or global licenses are available at an extra cost (on request).

Purchase

Purchasing licenses enables you to use them for an unrestricted time period. Additional modules can be purchased at any time. Only single user licenses (with a USB dongle or tied to a specific computer) and network licenses can be purchased. A single user license can also be upgraded to a network license. Updates, support and patches will all be provided if you purchase a service contract. See below. Compatibility with new operating systems is not guaranteed for licenses without a service contract. There is no minimum amount for a purchase.

Rental

Rental permits the use of licenses for a limited period of time. Rental is only available for stand-alone licenses. Additional modules for purchased licenses cannot be rented. Modules can neither be added nor removed for the duration of the rental period. The rental option is available for single user licenses (tied to a specific computer) and for network licenses. The rental price includes updates, support and patches. The minimum rental period is 6 months. The rental fee is 48% per annum, with a minimum charge of EUR 500.00 per rental agreement.

Maintenance contract

The maintenance contract applies to purchased licenses and ensures KISSsoft will run smoothly and efficiently in the long term. Price: 15% of software value per year, minimum charge of EUR 100.00 per year. Additional conditions are detailed in the sample contract.

* Third party suppliers

Modules marked with * have been developed by one of our partners. These modules might have different sales conditions. Details on request.

Universities

Special sales conditions apply for universities. Please refer to our website for more information.

Delivery

Courier shipping costs: EUR 170.00, for a license value under EUR 1000.00.

Offer

The KISSsoft software has a modular structure: a variety of calculation modules are available. You can simply buy the modules you need, to suit your application.

Getting to know our software

You can use our free 30-day test version for independent evaluation and select your modules package before purchasing a license. We look forward to receiving your inquiry. Please send it to info@KISSsoft.com.

Price conditions

The prices listed are in EUR and apply to the purchase of a single user license for use for an unlimited period of time. For information on network licenses and rental licenses, see page 29. We accept no responsibility for errors and reserve the right to change prices without advance notice. Taxes, custom duties and delivery costs are not included.

Description of modules

The KISSsoft product description describes the exact content of the individual modules. You will find it at https://www.kisssoft.com/en/products/technical-description.

License Conditions

Licenses are subject to the License Conditions, which you accept by installing or using KISSsoft. The License Conditions are also an element of a commercial offer and we will provide you with a copy of it on request.

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