

3D Gear Models

The manufacturing of complex components such as gears from 5-axis milling machines has been increasing as advanced production process.

However, this type of production requires exact 3D-data. KISSsoft can output accurate 3D models which can then be used in further processing with CAD or CAM software.

Cylindrical gears

- Straight and helical toothed gears
- Pinion and racks
- All possible flank modifications

The program can output cylindrical gears with straight and helical flanks, as well as pinion and racks, including all possible flank modifications.

In addition to the standard range of modifications specified in ISO 21771:2007, such as crowning, and profile crowning, helix angle modification, and different types of tip and root relieves, you can also apply freely definable topological modifications.

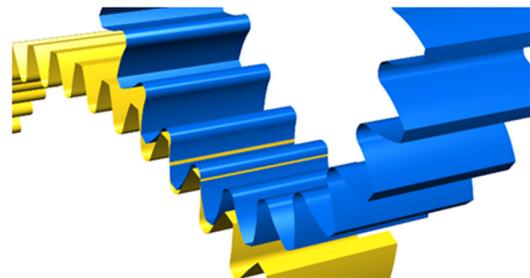
Different modifications can be defined for right and left flanks independently for optimum running performance for each flank.



Skin model to verify contact pattern

The skin model (surface display) makes it easier to verify the load-free contact lines in every meshing position. You can also vary the predefined parameters, such as the axis deviation error, axis inclination error, and center distance to simulate actual assembly condition.

Furthermore, a 3D model for pre-machining can be output, which is calculated using a protuberance tool and the required machining stock.



Bevel gears

- Straight/helical and spiral toothings
- Klingelnberg and Gleason
- VHJ check at the simulation stage

Bevel gears with straight, helical and spiral toothings (tooth depth configurations according to ISO 23509) are available. The cutting methods specified by Klingelnberg (cyclo-paloid®) and Gleason ("face hobbing" and "face milling") for spiral teeth are provided.

You can apply lead and profile crowning, pressure angle and helix angle modification, as well as the twist and the topological modification, for either the driving or driven flank asymmetrically.

All these modifications are then applied to the 3D model directly. The pre-machining steps can also be output as a model. The option of modifying the axis

misalignment now makes it possible to run the widely used VHJ check with load-free condition at the initial stage of the design process by using the skin model.

Worm gears

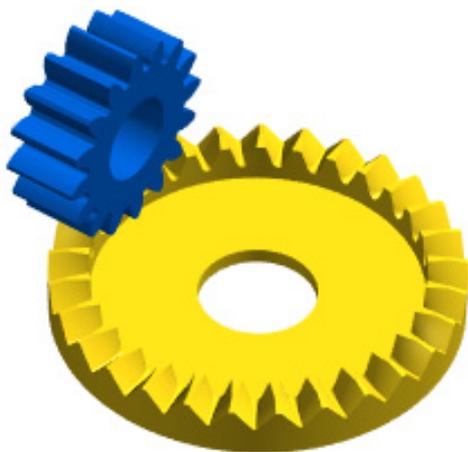
- Cylindrical worm with enveloping wheel
- Worm profiles according to ISO/TR 10828:2015
- Worm wheel cutter modifications

The program outputs 3D models with a cylindrical worm with enveloping worm wheel. The tooth profile for worm is calculated according to ISO/TR 10828:2015. This technical report provides uniform description for the tooth profile types of A, I, N, K and C.

The cutter and cutting process modification of worm wheel includes an option for inputting an oversize worm wheel cutter and modifying the cutter pressure angle and shaft angle to optimize the contact pattern, and therefore improve the running performance.

Face gears

Face gears and pinions can also be output as 3D models. The 3D models used for pinions have the same functionality as those for cylindrical gears.



Beveloid gears

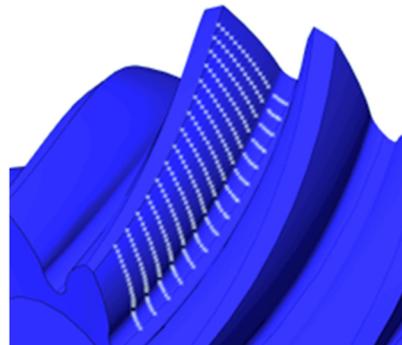
- 3D models with modification options

Beveloid gears, called also conical gears, are generated by using a rack-like tool tilted in a predefined angle. The usual flank modifications, such as helix angle modification or negative crownings, are available to help you optimize tooth contact in a 3D model.

Tooth contact can then be verified using the graphical contact analysis method, and the models can be exported for downstream processes, such as FE analysis and 5-axis milling.

Measurement grid report

Measurement grid reports have been provided to help you measure the topology of the flank and root areas of the tothing. These grids are output directly in the correct format for Klingelnberg or Gleason measuring machines. The measurement grid calculation can be called for cylindrical gears, crossed helical gears, bevel gears, beveloid gears, face gears and worm gears. It is also available for involute splines.



3D export options

The 3D models in KISSsoft are available in both STEP and Parasolid formats. The models can also be output simply as a single tooth form for the CAM generation.

If you are interested in acquiring a test license, please contact us at info@KISSsoft.AG