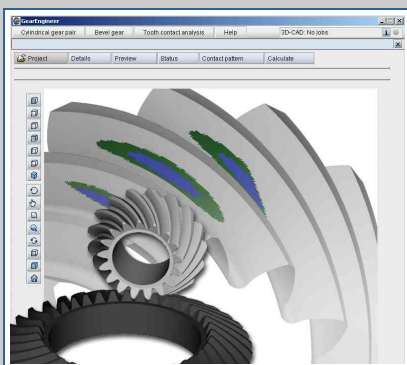
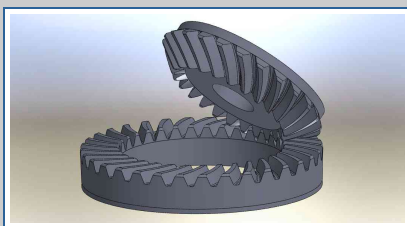
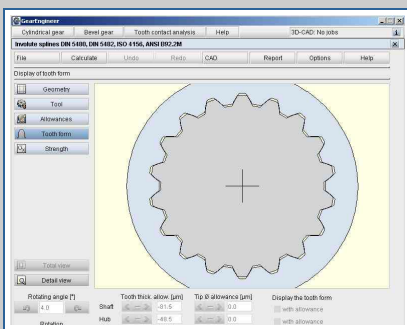
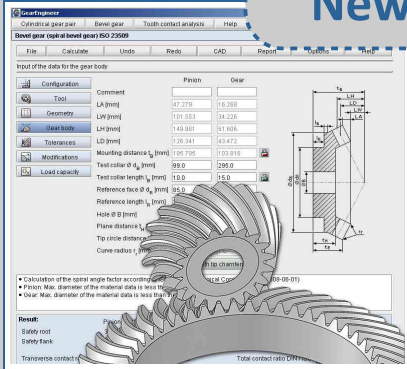


New Gear Technology Provides More Flexibility



Advantages and New Opportunities

GearEngineer is a powerful software for the calculation of the real 3-D geometry of gears. This geometry provides the basis to manufacture cylindrical and bevel gears in conjunction with multi-axis machining centers.

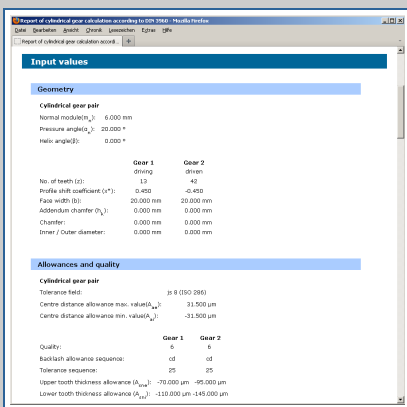
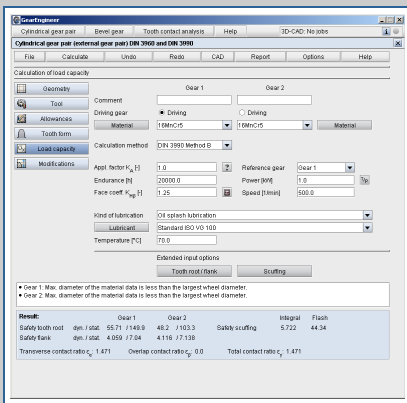
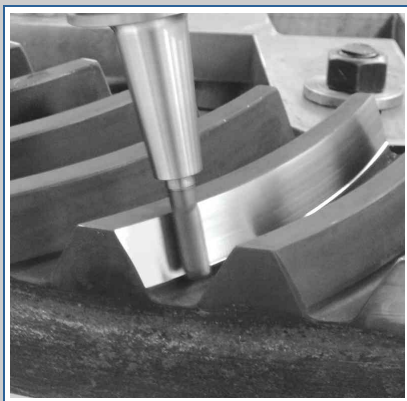
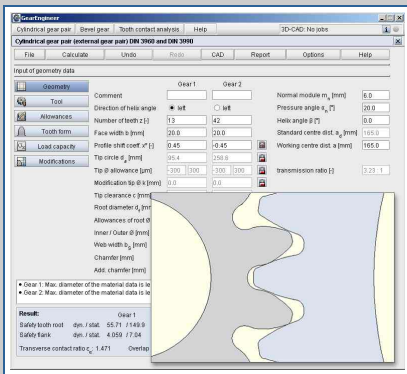
GearEngineer is one of the world's leading software products in this field and was honoured with the MM-Award during AMB 2010.

Using the CNC machining centers to manufacture gears offers the following advantages and new opportunities:

- More flexibility to obtain an optimal gear design, e.g., a freely selectable module, the 20° pressure angle can be customized as needed, special gearings (e.g., full-depth teeth and stub tooth gears) or double helical and herringbone gears, bevel gears
- More compact parts, tool runout is not necessary (e.g., from a hob)
- Reductions in inventory (smaller number of cutting tools), the gears can be manufactured using standard, off-the-shelf and readily available tools
- Complex workpieces can be machined in single setups: e.g., parts with external and internal gearings
- Special gear cutting machines are not required any longer
- Large gears and large module ranges are possible, e.g., for external spur gears up to a max. diameter of 16.000 mm, for internal gears up to a diameter of 3.000 mm or bevel gears up to a max. outside diameter of 4.000 mm
- Dry processing, soft and hard cutting possible
- Suitable for single job production and small batch production (from module 3 or 4 and up)
- Depending on the requirements, the efficiency and manufacturing lead times are similar and even better than traditional manufacturing processes (particularly for large module ranges)
- Gears can be machined to DIN 4 gear quality or better, it is possible to obtain a surface finish as smooth as the surface finish that can be obtained by grinding

GearEngineer calculates the gear tooth form based on a **mathematical simulation of the manufacturing process** analog to traditional manufacturing on bevel gear cutting machines. This leads to a real 3-D gear tooth geometry and thus provides a comparable strength and running behaviour identical to conventionally manufactured gears.





Necessary Requirements

The following requirements are necessary in order to use CNC machining centers to manufacture gears:

- CNC machining centers that comply with the requirements in terms of gear accuracy, boundary conditions for machinery installation have to be considered (e.g., foundation)
- Machining technology and machining strategy have to be coordinated with gear manufacturing
- Real 3-D geometry of the given gear tooth form is used as a starting point for CAM programming

Short Overview

GearEngineer software allows the calculation of involute cylindrical gears, for example:

- External and internal gears
- Spur and helical gears
- Involute splines

Cylindrical gears as well as involute splines (shaft and hub) can be manufactured based on the accurate gear tooth form. The manufacturing of double helical and herringbone gears (with and without space in the center) is also possible. Different types of bevel gears can be also calculated, for example:

- Straight and helical bevel gears including different forms of tooth depth
- Spiral bevel gears

The accurate 3-D gear tooth form for spiral bevel gears according to Klingelnberg's Zyklo-Palloid® method is available (Gleason spiral bevel gears in development). Furthermore, the calculation and output of the tooth form of straight and helical bevel gears with constant and tapered tooth depth is possible. The output format of the 3-D geometry is STEP and IGES.

For the documentation, a single mouse-click is enough to create a calculation report in HTML and PDF format. The software is a single-user version (multi-user license on request) and available in German, English and Chinese.

System Requirements

- WIN XP, VISTA, WIN 7 or WIN 8.1
- JAVA 1.6
- USB port
- Web browser (Internet Explorer, Mozilla Firefox)

