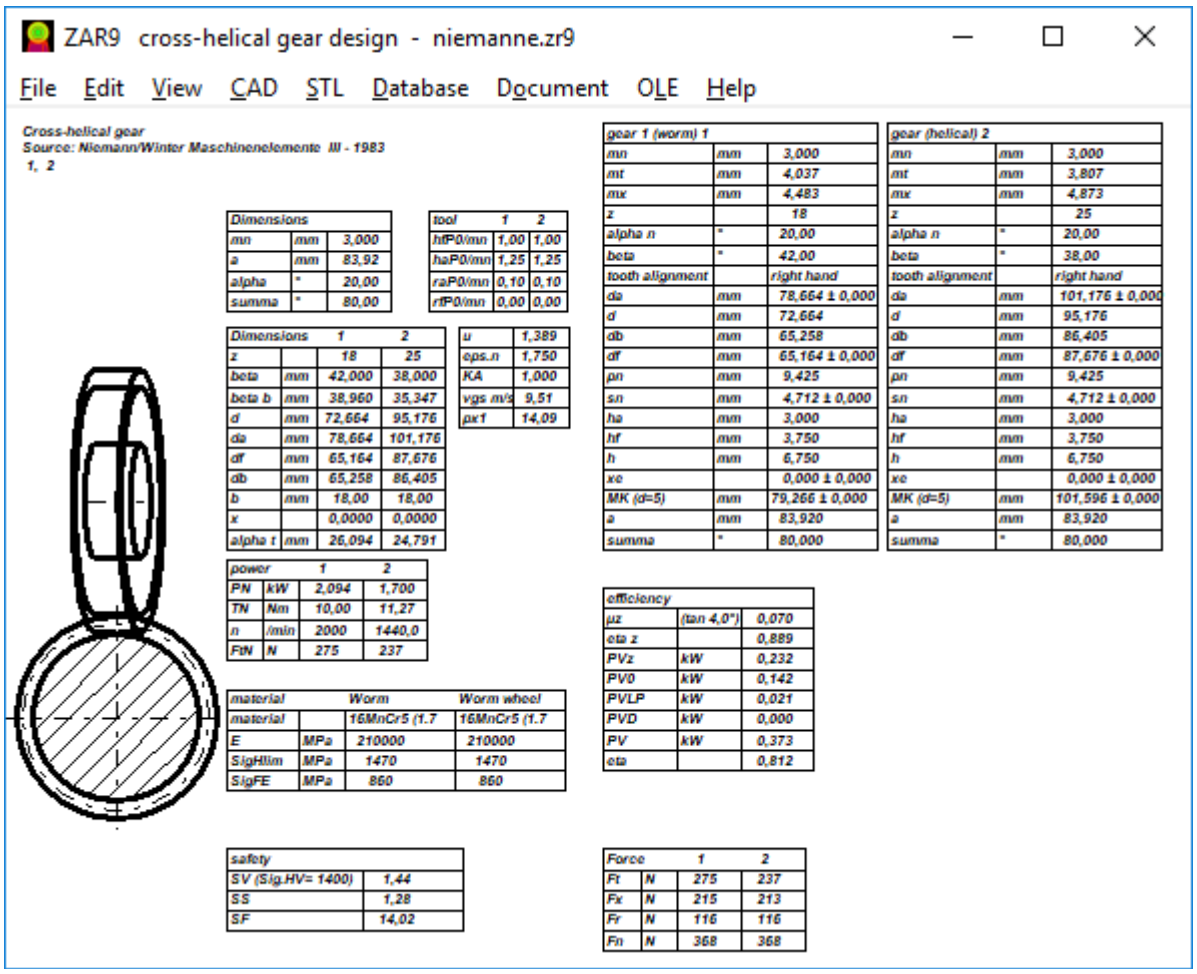
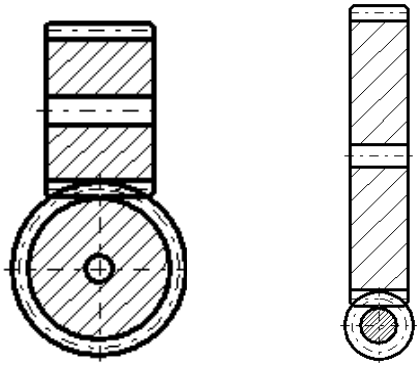
by Fritz Ruoss

ZAR9 – Software for Screw Gears or Crossed Helical Gears

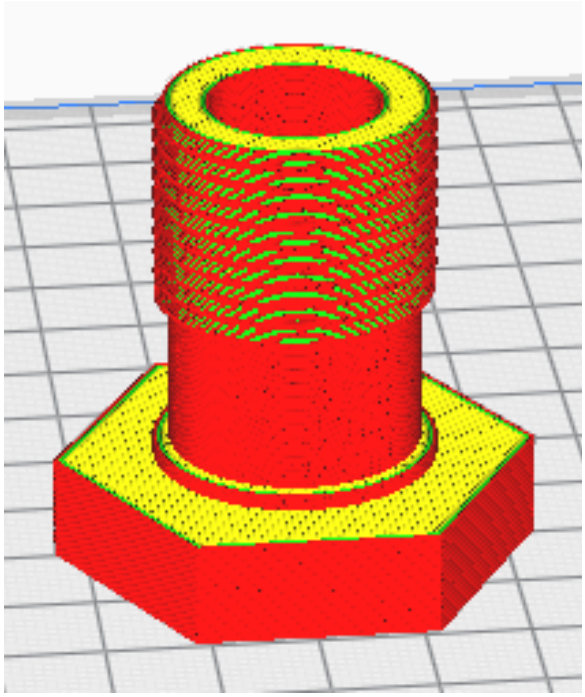


The gear wheels of screw gears or crossed helical gears are actually normal helical gear wheels, as calculated with ZAR1 +. But the axes are not parallel, but crossed. In the normal helical gear, the sum of the helix angles is 0 (beta right-toothed - beta left-toothed), in the helical gear with crossed axes, it can be 1 ° to 90 °. Helical gear can be used for crossed and skewed axes. For example, with gear ratio 1 used for change of direction, and with a gear ratio 50 at pinion teeth number 1 as a replacement for worm gear, when the demands on load and service life are low. The strength is calculated according to Niemann.

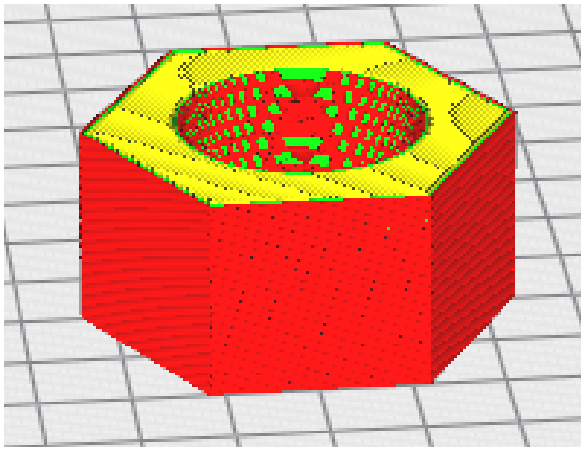


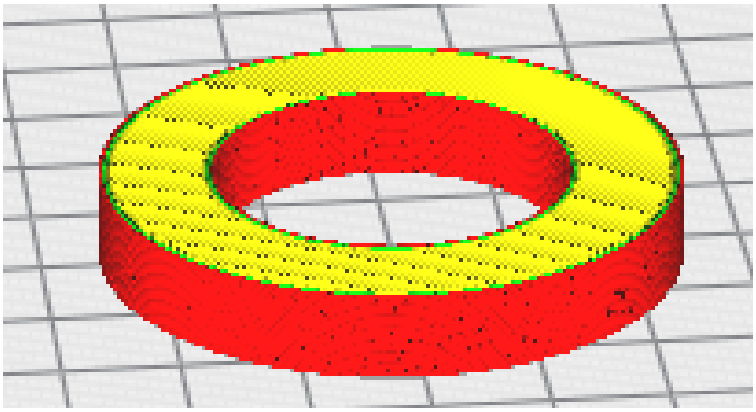
ZAR9 is available now for the price of 650 Euro (single license).

SR1 / SR1+: Create bolt, nut and clamping parts with 3D Printer

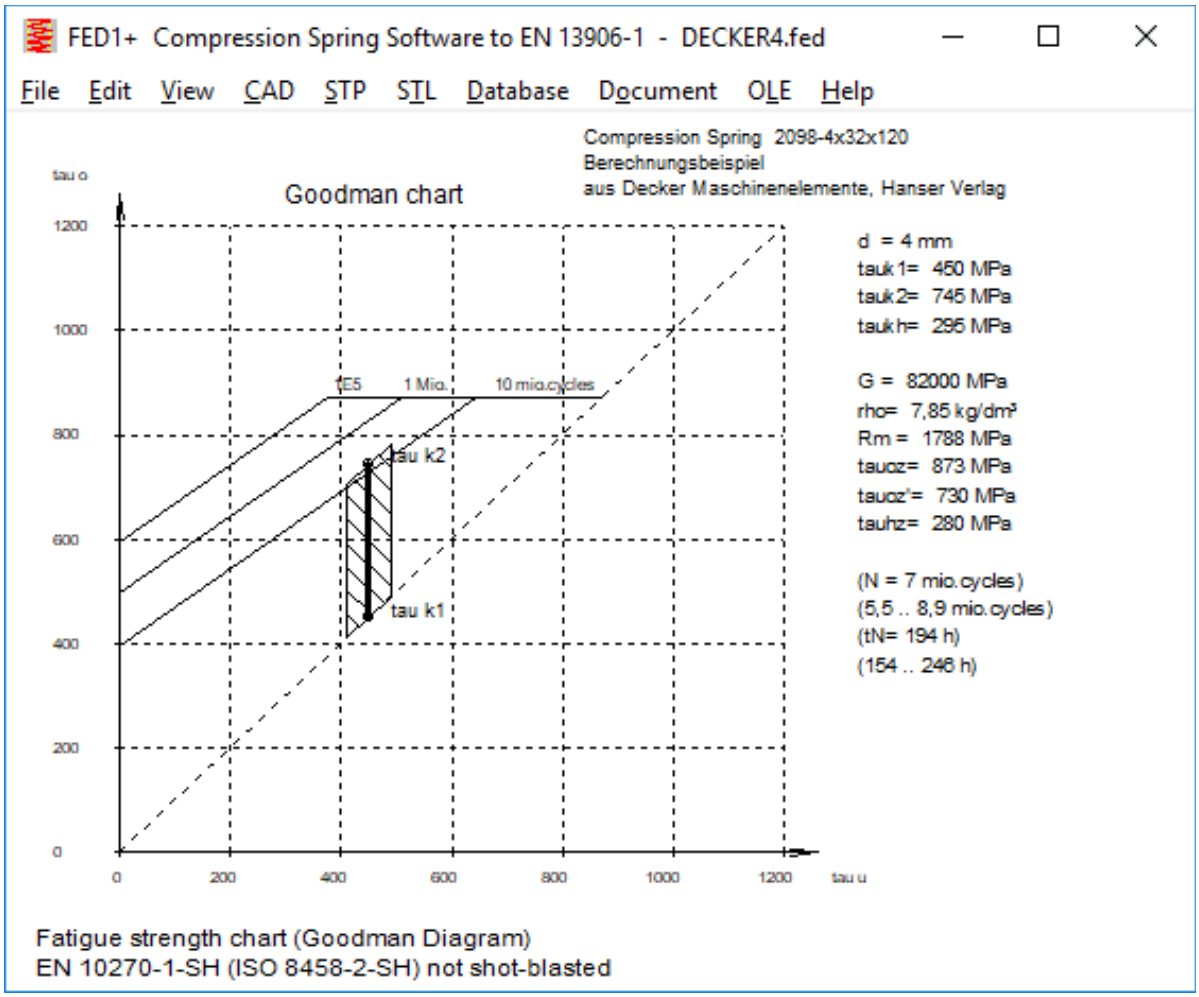


Clamp parts could already be generated and printed as STL files. Now this is also possible for bolt and nut. So you can create a model of the bolted joint with 3D printer. This is especially interesting if self-designed bolts are used.





FED1+ .. FED17: tauoz´ or sigmaoz' in Goodman Diagram



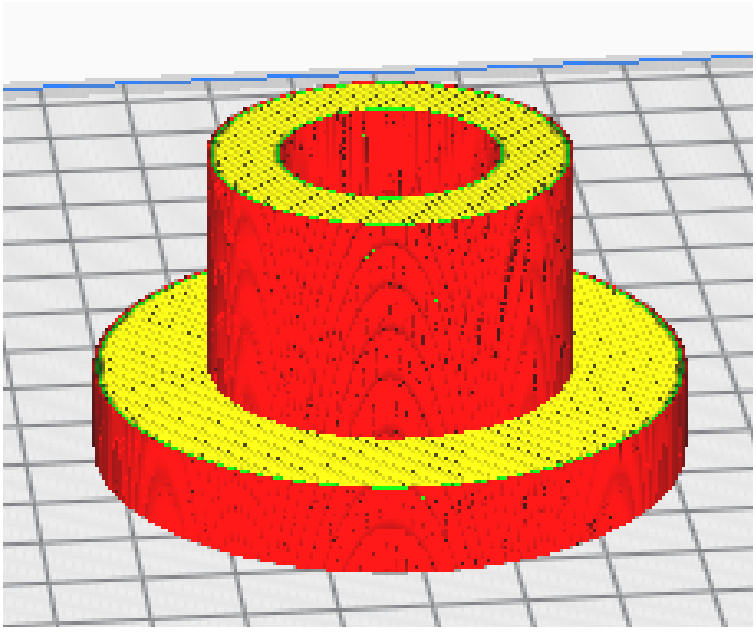
For better traceability of the fatigue strength diagrams, the intersection of the vertical working line tauk1-tauk2 with the fatigue strength curve (10 million cycles) is now listed as tauoz' as a numerical value. This is the permissible upper shear stress for fatigue strength for the given application. The lower shear stress is then tauu = tauk1, the permissible stress variation is taukh = tauoz '- tauu. The same with bending stress in FED3,4,9,10,13,14,15,16. Here, the intersection sigmao' in the Goodman diagram is displayed.

FED4, FED5, FED6, FED7, FED12: Characteristic line of spring in Excel
The load-extension curve can be exported as a table in Excel under "OLE \ Chart F-s".

FED5: 3D Centerline as STP file
The center line of a conical spring can be output for any clamping length as a step file.

FED14
Spring drawing: spring length in inches, if set to imperial units.
Operating temperature saved.

WN1: STL File of Shaft and Hub



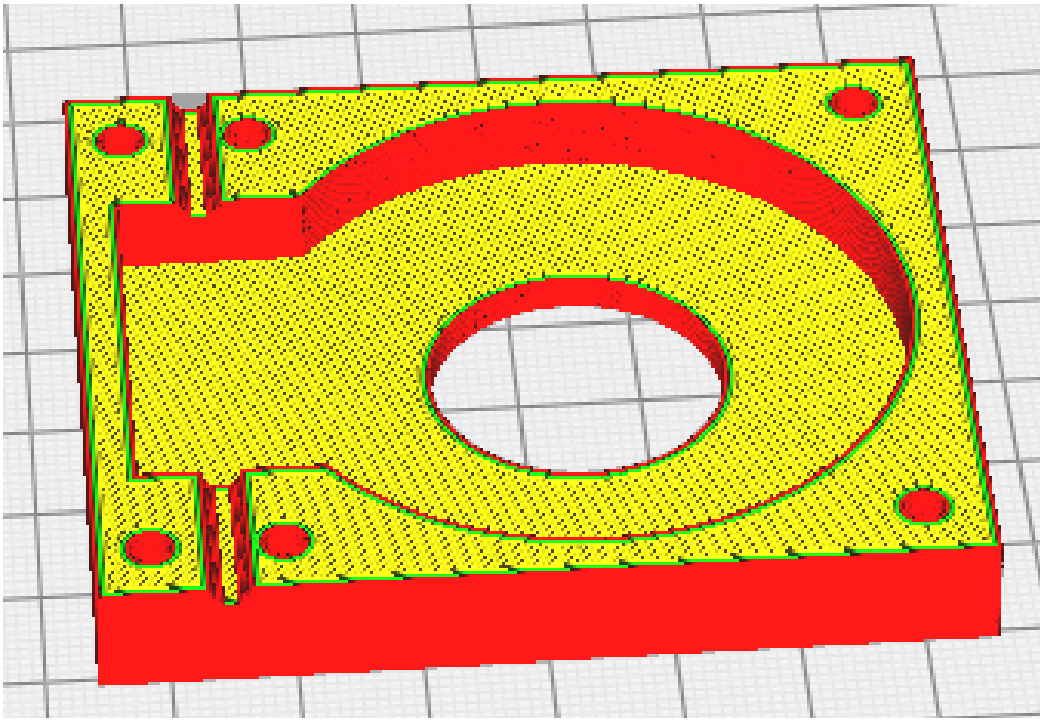
A model of shaft and hub can now be produced on the 3D printer. Only as an illustrative object, the press fit can of course not be produced in the required accuracy and surface quality with the 3D printer.

WN2,4,5,10,WNXE: Warning cffmin < 0

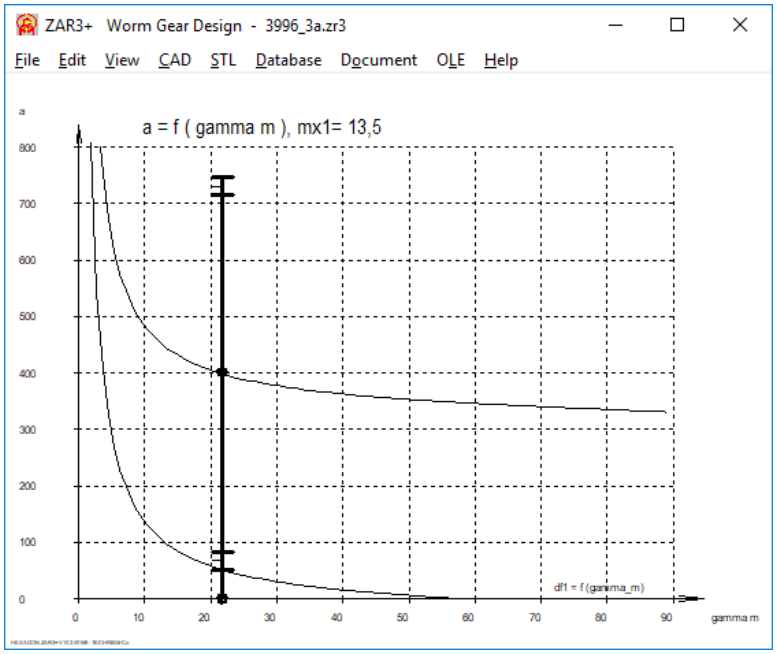
Warning cffmin < 0, if distance between form diameter tooth root to tooth tip diameter of counter wheel too small.

ZAR3 +: Worm gear housing for 3D printing

ZAR3 + generates an STL file for a gearbox housing consisting of 2 halves. You can print with the 3D printer 2 times and assemble a worm gear model.

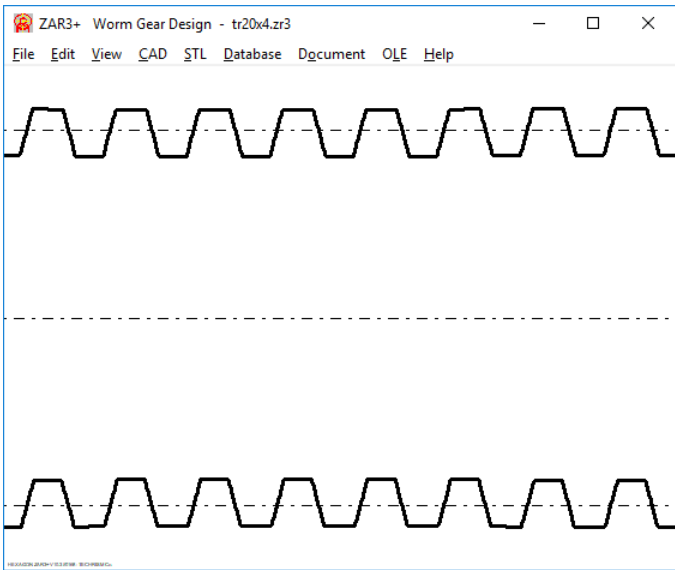


ZAR3+: Diagram a=f(gamma_m): Worm and Worm Wheel dimensions



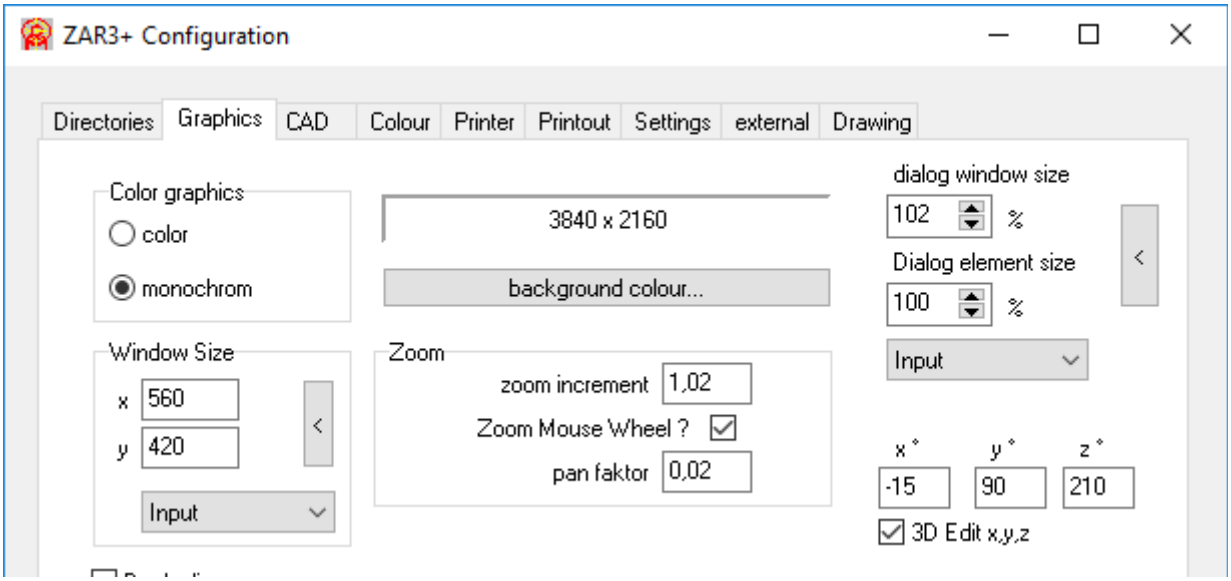
In the diagram with the center distance as function of the helix angle, pitch diameter, tip diameter and root diameter of worm and worm wheel are drawn. An additional curve is drawn for the root diameter of the worm. Thus, you can estimate which helix angle is feasible for a high efficiency and a specific center distance, without the core diameter of the screw becomes too thin.

ZAR3+: Calculate thread dimensions of a screw as worm dimensions



A thread of a screw has the same shape as the single-flight worm of a cylindrical worm gear. The shape of the cylindrical worm is again the same as a helical spur gear with a number of teeth 1 and large helix angle. The dimensions of a trapezoidal thread spindle can be calculated as a worm in ZAR3 +. The wedge angle of a trapezoidal thread is 30 °, then the pressure angle of the worm 15 °. The module of the worm is P / pi, the pitch circle diameter of the worm is the pitch diameter of the thread. However, unlike gears, the head and root diameters of the thread are arbitrarily set or rounded, so you have to extra calculate tooth head height and root height factor for each thread size: hf / mn = (d2-d3) / (2 * m), ha / mn = (d-d2) / (2 * m), axial modulus mx = P / pi, tan gamma_m = z * mx / d2
Number of threads of the screw z is the number of starts of the worm, normal 1.
Also normal ISO threads can be calculated as a screw. With pressure angle 30 °, calculate head and foot height factors also from outside diameter and core diameter.

All programs: Switch on/off zooming with mouse wheel



With the mouse wheel you can enlarge and reduce size of drawings and graphics. Unfortunately, Windows 10 does not always work as it should, sometimes the background image is brought to the foreground and zoomed in when you just type in and unintentionally touch the mouse wheel. Therefore you can now turn off zooming with the mouse wheel ("Zoom Mouse Wheel?").

New price for Complete package

When releasing new programs had been neglected to adjust the price for the complete package. From 1.7.2019 the price for a complete HEXAGON package of 63 modules is 14950 EUR (previously 12900). Update price for a complete package is now 1200 Euros (previously 1000).

HEXAGON PRICE LIST 2019-07-01

Base price for single licences (perpetual)	EUR
DI1 Version 1.2 O-Ring Seal Software	190.-
DXF-Manager Version 9.1	383.-
DXFPLOT V 3.2	123.-
FED1+ V30.9 Helical Compression Springs incl. spring database, animation, relax., 3D,..	695.-
FED2+ V21.3 Helical Extension Springs incl. Spring database, animation, relaxation, ...	675.-
FED3+ V21.1 Helical Torsion Springs incl. prod.drawing, animation, 3D, rectang.wire, ...	600.-
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GR1 V2.2 Gear construction kit software	185.-
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SR1 V23.5 Bolted Joint Design	640.-
SR1+ V23.5 Bolted Joint Design incl. Flange calculation	750.-
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TOL2 Version 4.1 Tolerance Analysis	495.-
TOLPASS V4.1 Library for ISO tolerances	107.-
TR1 V6.0 Girder Calculation	757.-
WL1+ V21.3 Shaft Calculation incl. Roll-contact Bearings	945.-
WN1 V12.2 Cylindrical and Conical Press Fits	485.-
WN2 V10.1 Involute Splines to DIN 5480	250.-
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- **Italiano**: FED1+, FED2+, FED3+, FED4, FED5, FED6, FED7, FED9, FED13, FED14, FED17.
- **Swedish**: FED1+, FED2+, FED3+, FED5, FED6, FED7.
- **Portugues**: FED1+, FED17
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Updates:

Update prices	EUR
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Update Mechanical Engineering Package: 800 EUR, Update Complete Package: 1200 EUR
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Key Code
After installation, software has to be released by key code. Key codes will be sent after receipt of payment.

HEXAGON Industriesoftware GmbH
Stiegelstrasse 8 D-73230 Kirchheim Tel. +49 7021 59578, Fax +49 7021 59986
Kieler Strasse 1A D-10115 Berlin Mühlstr. 13 D-73272 Neidlingen
Mobile: +49 163 7342509 E-Mail: info@hexagon.de Web: www.hexagon.de