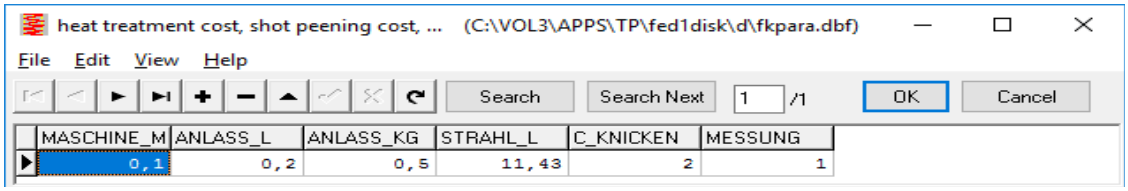
HEXAGON Newsletter 165 Sept. / Oct. 2017

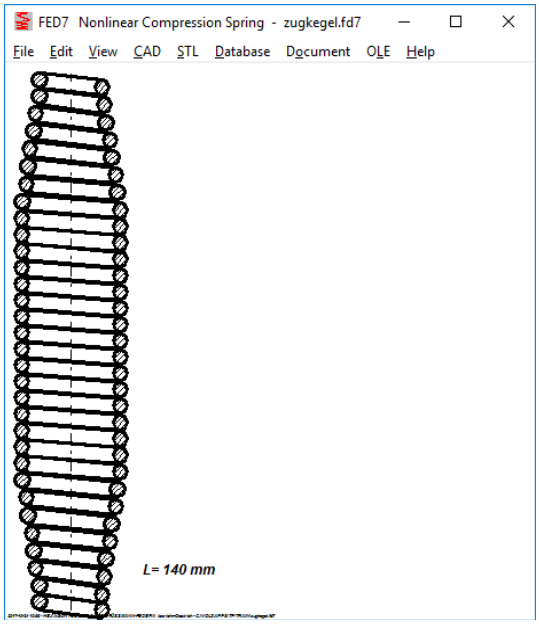
by Fritz Ruoss

FED1+, FED2+: Cost calculation

Cost calculation was improved, especially for wire diameter < 1mm. Material cost and cost for grinding are loaded from database FKWS and FKSCHL dependent from material and wire diameter. An additional database file FKPARA.DBF now includes parameters for cost calculation of heat treatment, shot blasting, machine cost, cost for 100% measure and sorting, and extra cost coefficient for buckling springs at setting length.



Machine cost is calculated with 0,10 Euro per meter of wire length for example (MASCHINE_M). 0,10 EUR/m = machine cost 150 EUR/60min divided by feeder speed 25 m/min. Heat treatment cost calculated with 0,20 EUR for a volume of 1 liter (ANLASS_L) or 0,50 EU per kg (ANLASS_KG). Volume for space requirement of a spring is calculated as cuboid ($V = De^2 * L0$). Cost of shot blasting i.e. 80 EUR for a volume of 7 liter makes 11,43 EUR/l (STRAHL_L). If spring has to be pre-set, cost is loaded from FKSETZ.DBF (load-dependent). If springs are buckling at setting length, an extra cost coefficient C_KNICKEN is applied. If springs have to be measured and sorted because of extra small tolerances, extra cost for 100% measuring and sorting (1,00 EUR of MESSUNG) and scrap are calculated.

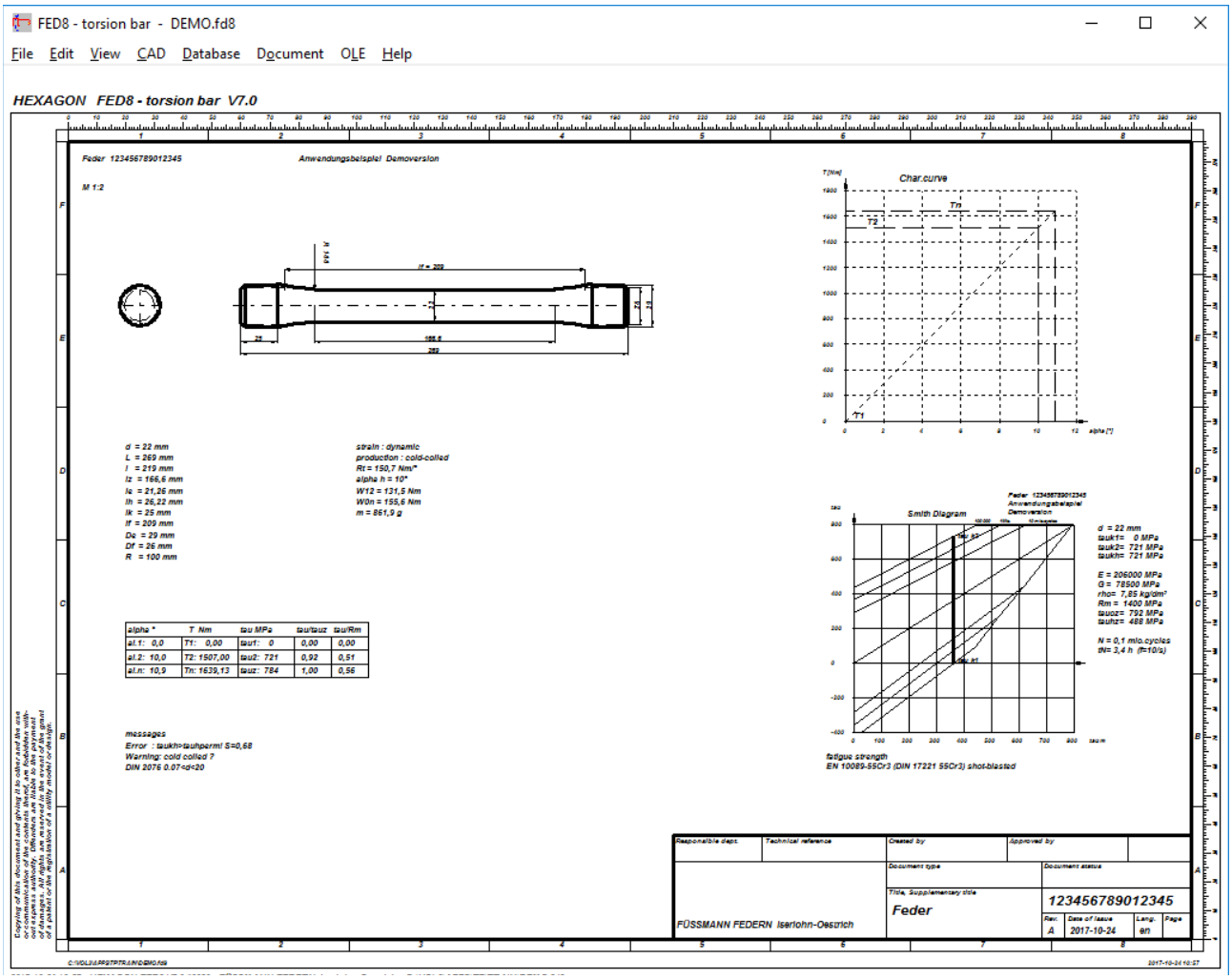


FED7 – Insert Special Shape Spring

In FED7 you can generate pre-defined "special shapes" (conical spring, barrel spring and hourglass spring) and you can add the generated special shape to the already defined coil sections. Cause "special shape" was inserted behind and not before the selected coil section, it could not be defined as first coil section. This was corrected now, for example you can now define a cylindrical spring as one section, then add a conical spring before and behind of the cylindrical part.

FED8: Quick4 View

New Quick4 View includes spring drawing, tables with dimensions, loads, stresses and diagrams altogether in an ISO 7200 drawing frame.

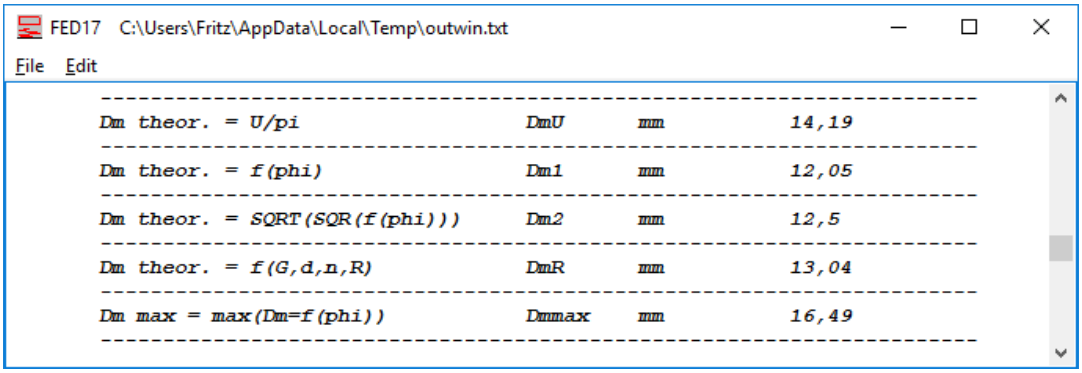


FED17 – Calculate reference diameter

Virtual diameter of a cylindrical spring with equivalent spring rate to the calculated magazine spring has been added to the printout:

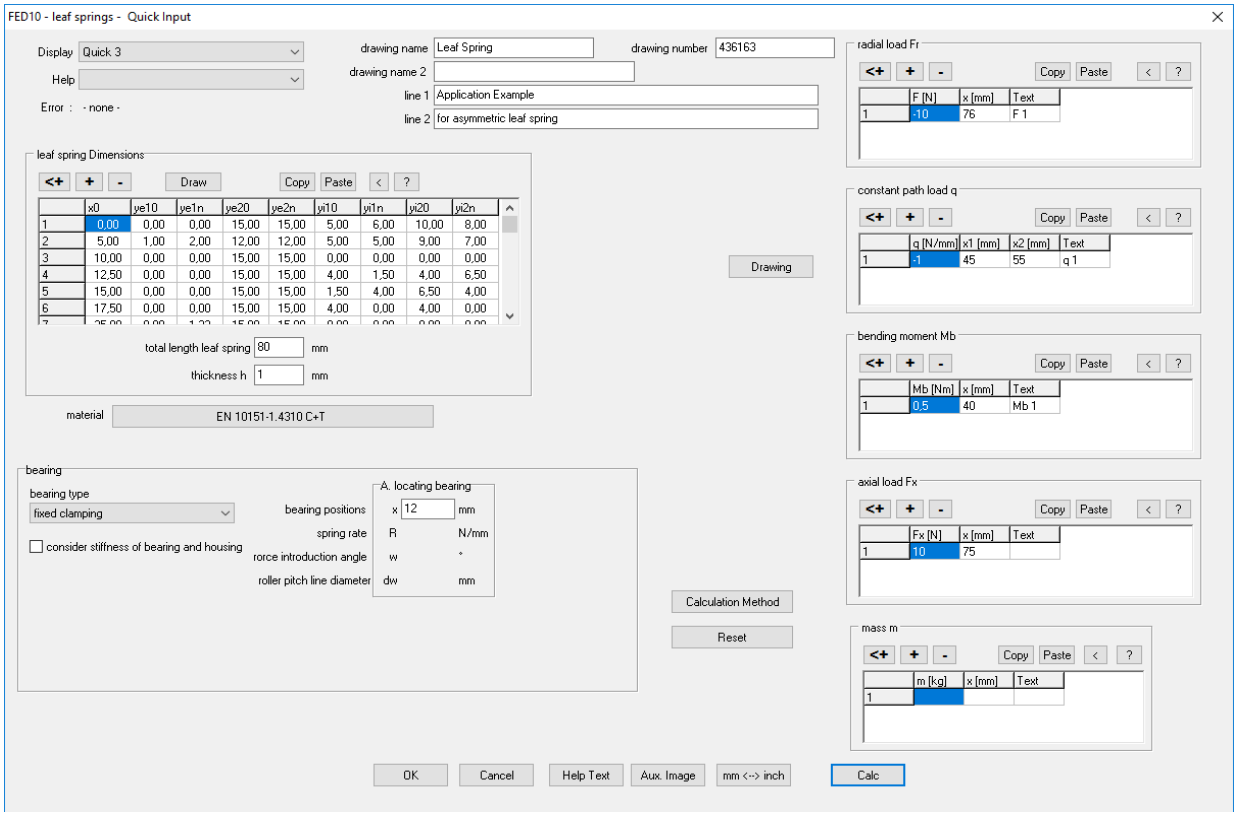
DmR = ((G*d^4)/(8*n*R))^1/3

This diameter is required if you use FED7 to calculate a progressive magazine spring. Please consider that only spring load and spring rate is correct in this case. Stresses are higher and must be calculated by means of FED17.



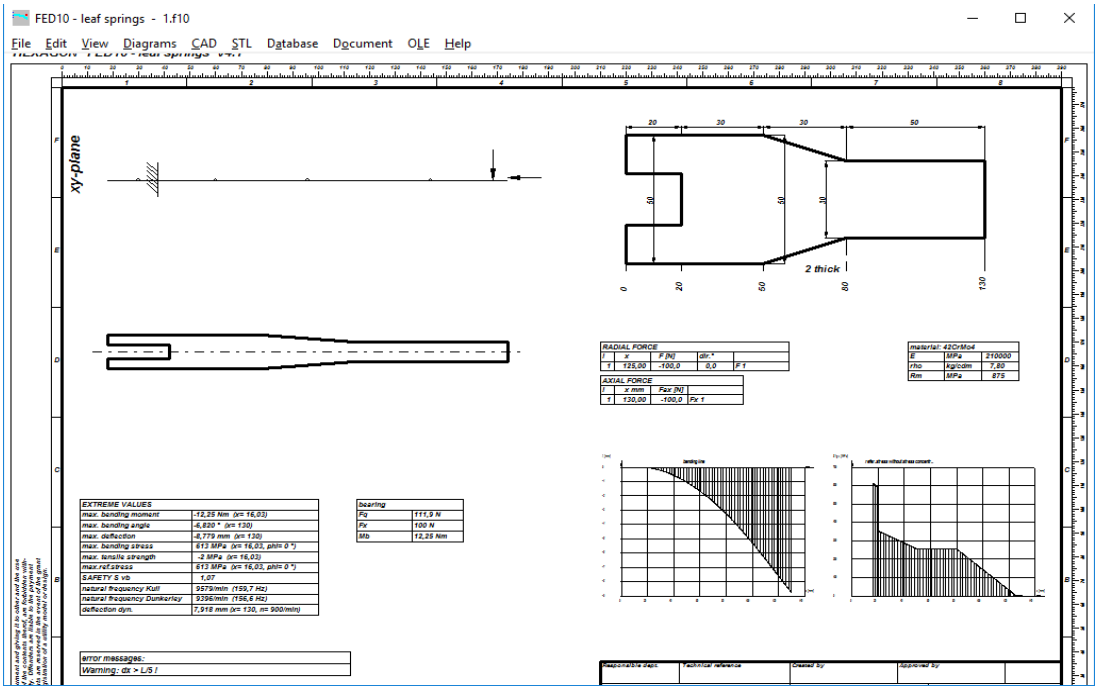
FED10: Quick Input

New Quick Input includes all dimensions, forces, bending moments, external mass, material and bedding altogether in one dialogue window. At "Display" you can select the desired diagram or result table in the background window, which is actualized with each click into “Calc” button.

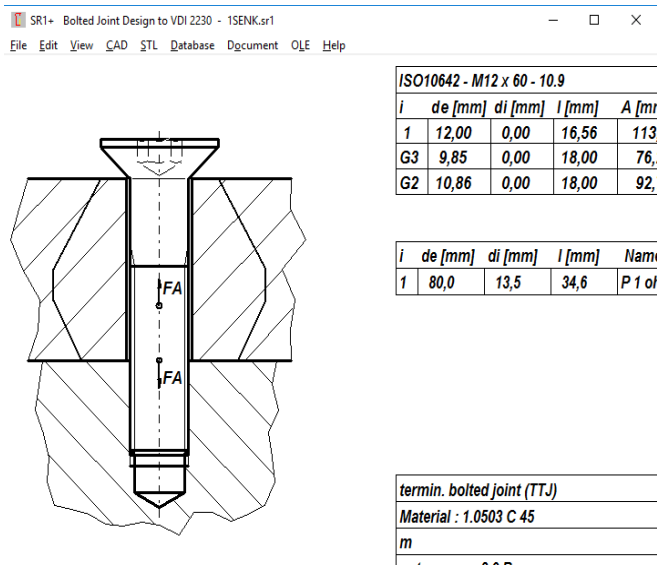


FED10: Quick4 with bending line and stress curve

Diagrams with bending line and stress curve have been added to Quick4 graphic (if space not occupied by tables with loads). Diagrams can be drawn if sum of radial loads, axial loads, path loads, and bending moments is less than 4.



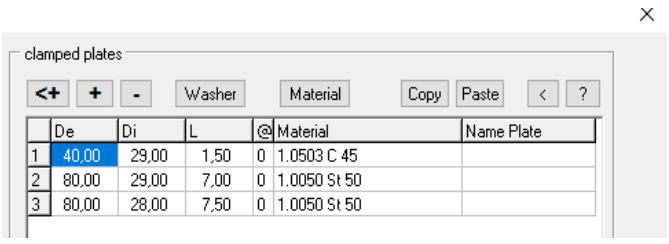
SR1/SR1+: Length of Countersunk Screw



Calculation of bolted joints with countersunk screws cannot be found in VDI 2230. Deformation cone of clamping plates under countersunk screws is not researched until now. SR1 calculates countersunk screws like cylindrical head bolts. However, drawing and calculation were slightly different until now. For calculation, countersunk head was assumed to be sunk in the first clamping plate, but to be drawn so, height of the first clamping plate must be shortened by the countersunk head height. You got a warning "countersunk screw" with the suggestion to use a cylindrical head screw instead. This warning was moderated in the new version by a hint to reduce the first clamping plate by the height of the countersunk head, and that screw length of countersunk screws is measured with head and not until head. Calculation and generated drawing in SR1 are conform now, calculated thread length in nut plate and on drawing are identical. Bolt thread sections of countersunk screw are calculated without head height now. If you select a countersunk screw, input text for bolt length changes from "shaft length" into "screw length".
If you update to a new version, please check earlier calculations with countersunk screws. Maybe you have to reduce the first clamping plate by the countersunk head height.

SR1+: Quick Input: Table with clamping plates

Row moving was enabled in the clamping plate table by click and hold left mouse key then pull to the desired row. If you forgot a washer, you can enter it at the end and then move it on first row. Selection of material database and material now by double click (instead of buttons Material and <). New “Copy” and “Paste” buttons allow exporting and importing of clamping plates by spread sheet.



SR1+: Quick Input MA +/- tol

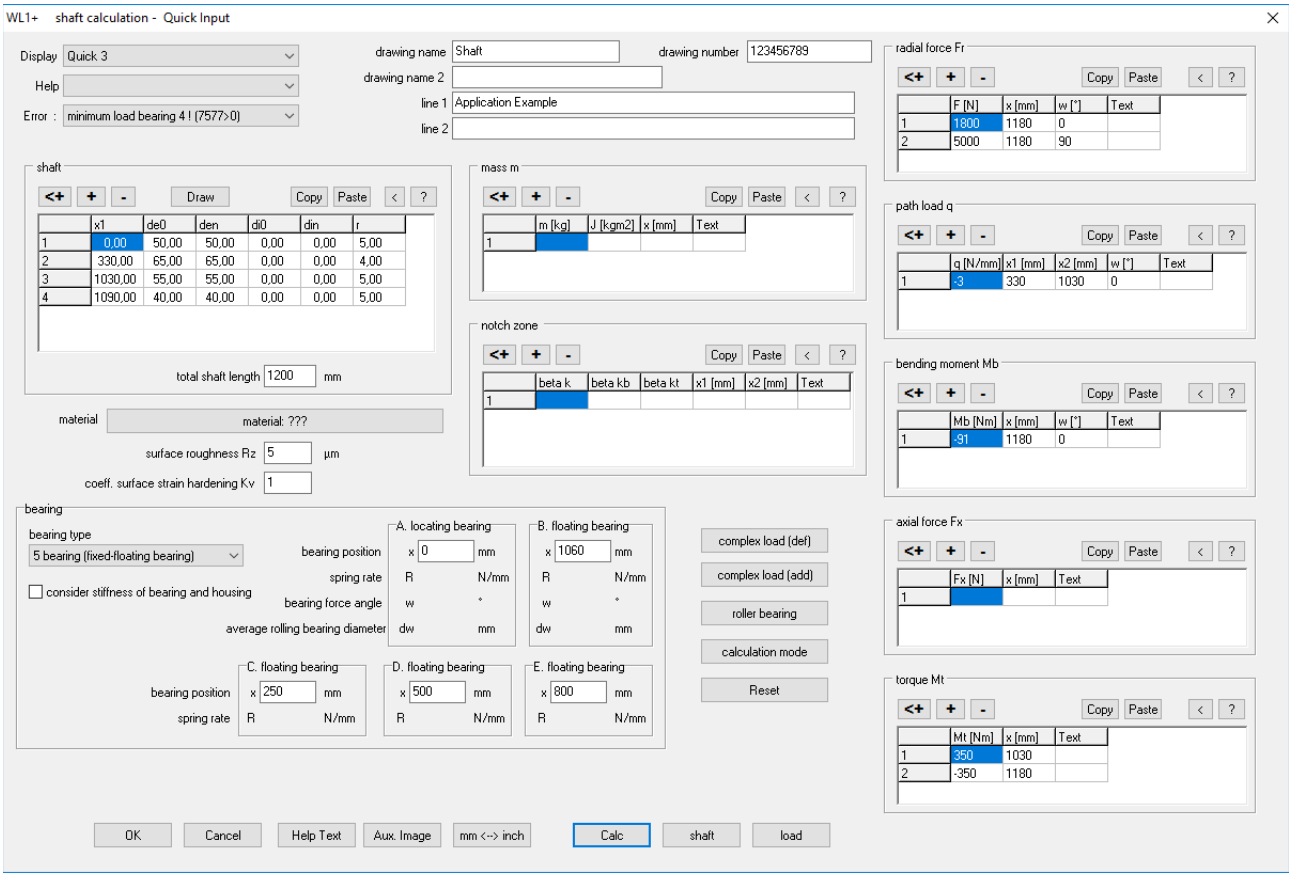
MAnom +/- tolerance can be entered instead of MAmax and MAmin.

SR1+: Top View and Bottom View

Washers and clamping plates are drawn at "top view" and "bottom view", if not larger than 1.5*d.

WL1+: Quick Input

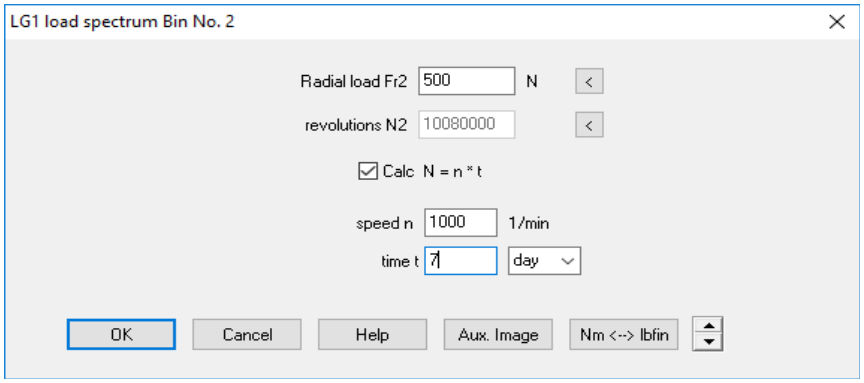
In Quick Input you can enter all input data (shaft dimensions, material, bedding, radial load, axial load, bending moment, path load, torque, .) in only one dialogue window now. Other new features are Copy and Paste buttons and a function to draw the shaft contour. At "Display" you can select one of 45 diagrams, drawings and result tables which will be updated after each click into the “Calc” button.



For optimal use of the new Quick Input, a large monitor with at least 1280x1024 pixel is required. Or better a higher resolution (i.e. 1920x1080) so that the graphic window with calculation results is not overlapped by the input dialogue window. For notebook, tablet or small monitors, the old input windows with separate input of shaft dimensions, material, bedding, forces, bending moment, torque etc. are still available.

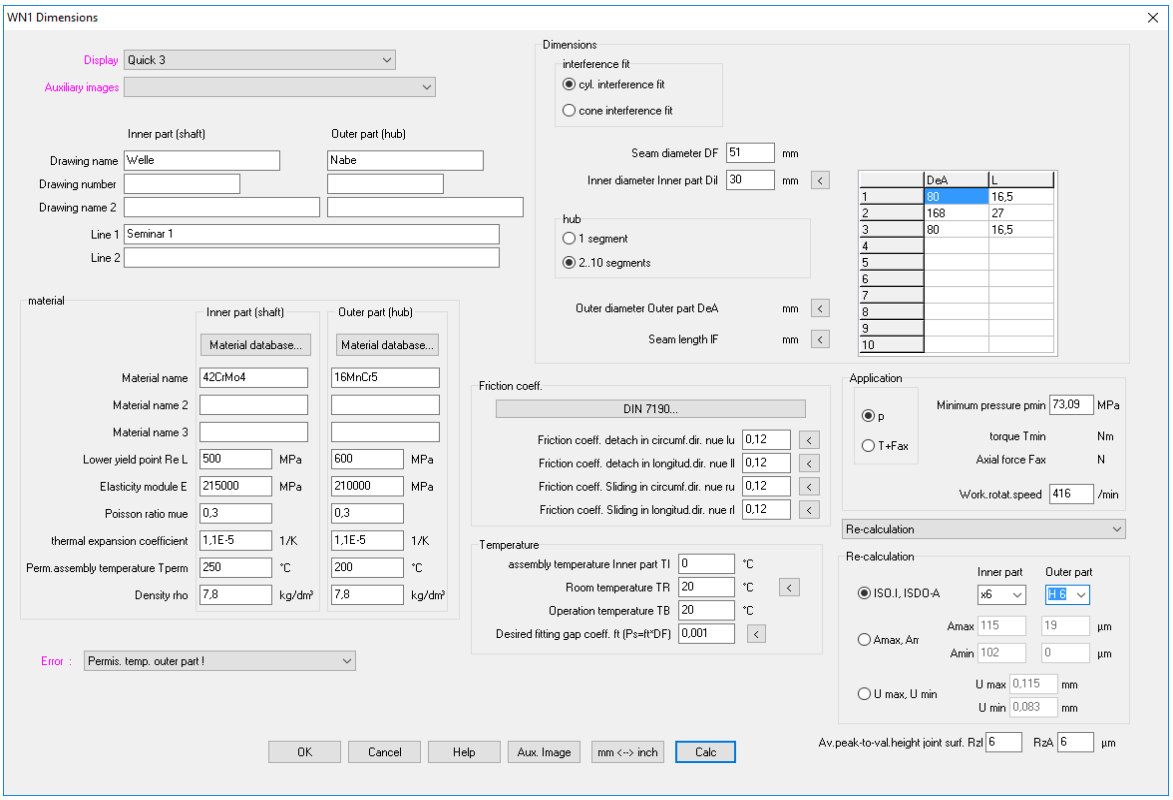
LG1: Load Spectrum

New input window for load spectrum eases input of revolutions by converting from time and speed. And maximum number of bins was increased to 255.



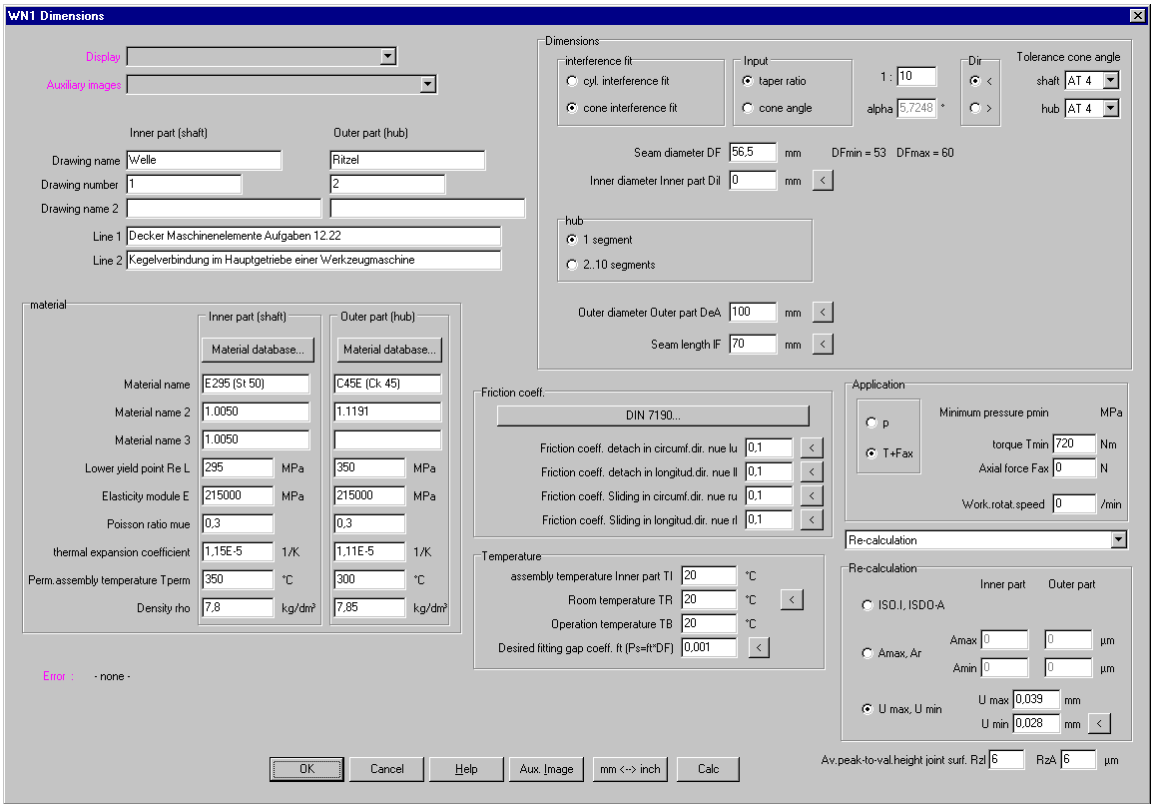
WN1: Quick Input

New Quick Input allows input of all dimensions, material, load, friction coefficients, temperatures for cylindrical or tapered interference fits or shrink fits in only one dialogue window.



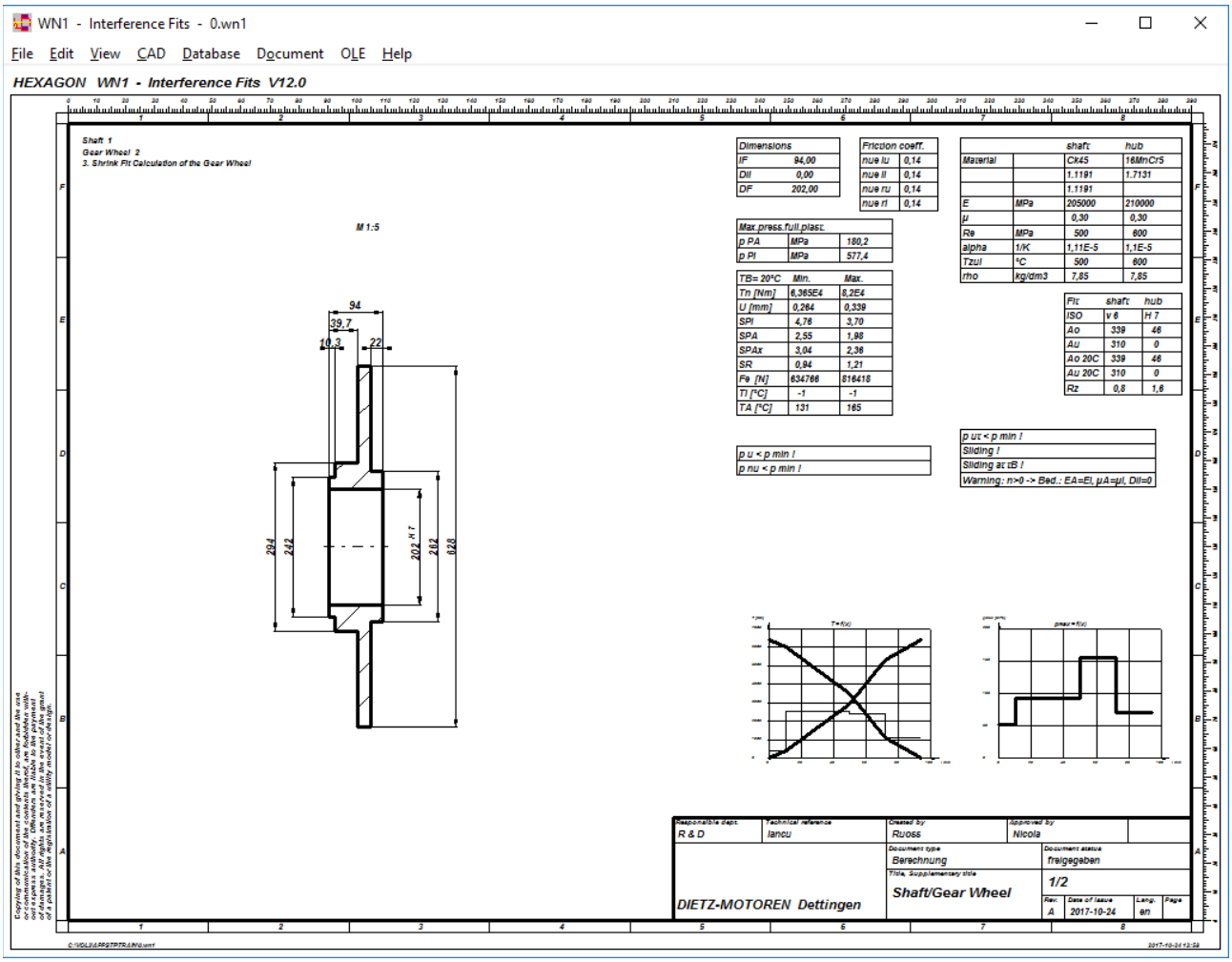
WN1: Taper Interference Fit: Min and Max Values

Same as for cylindrical interference fits, min and max interference amount can be entered for taper interference fits, to calculate min and max stress, mounting force and dismantling force.

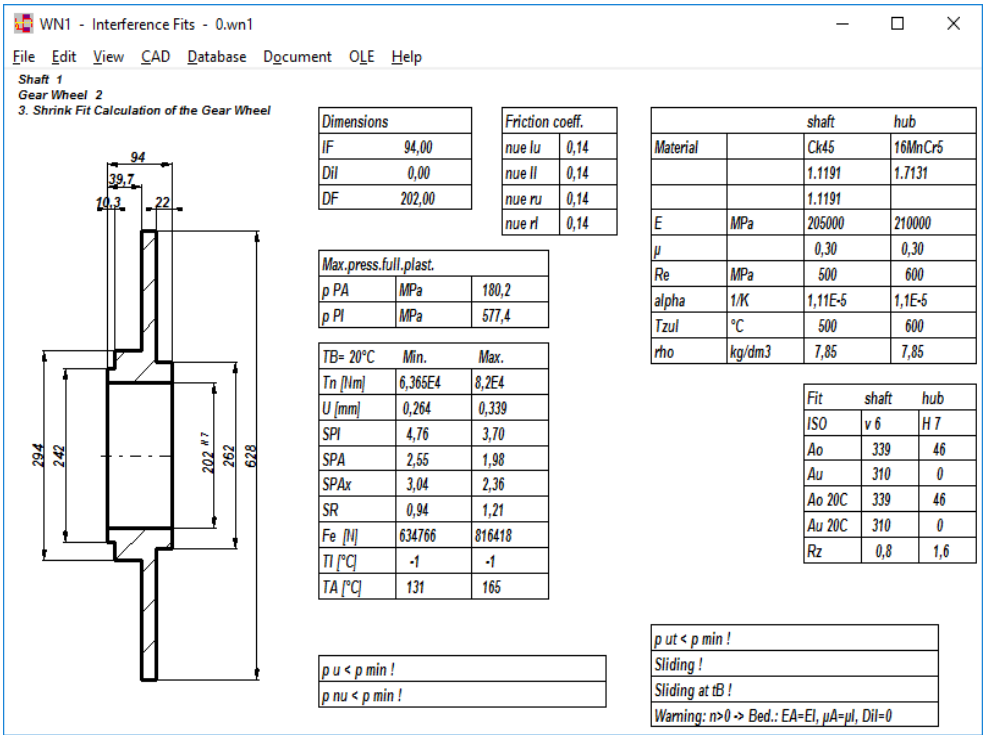


WN1: "Quick2" View and "Quick4" View

New Quick4 View includes drawing, diagrams and tables with calculation results in an ISO 7200 drawing header on one screen.

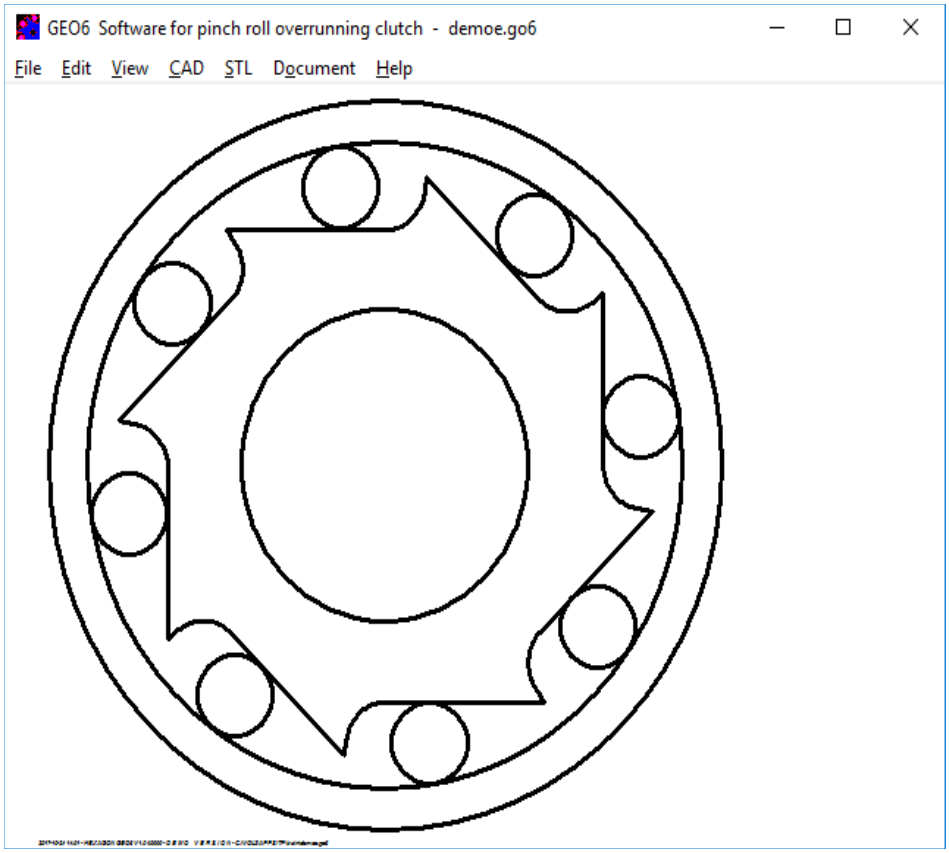


New Quick2 View provides a quick overview about calculation results and dimensions of the joint.

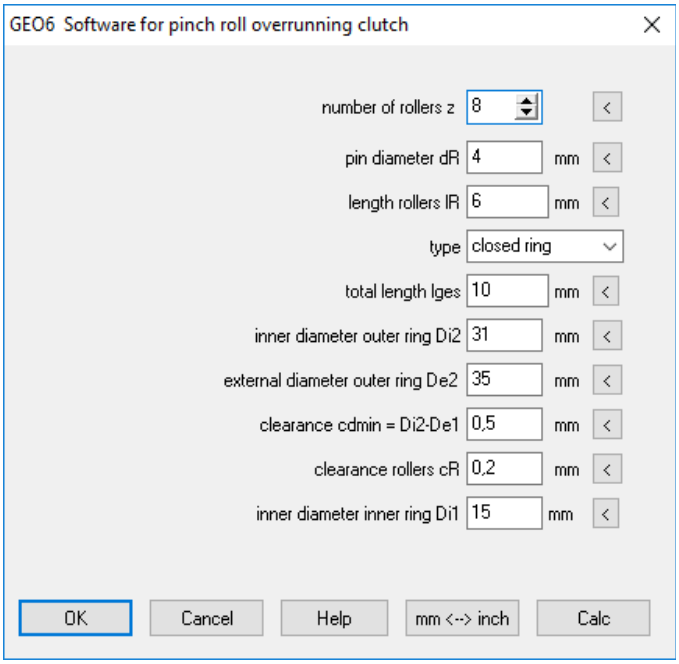


GEO6: New Software for Pinch Roll Overrunning Clutch

Our new software GEO6 calculates inner ring and outer ring of a pinch roll overrunning clutch.



Geometry of inner ring and outer ring is generated by GEO6.



You can generate inner ring and outer ring as STL file, produce by means of your 3D printer, then build a full functioning model.

HEXAGON PRICELIST 2017-11-01

PRODUCT	EUR
DI1 Version 1.2 O-Ring Seal Software	190,-
DXF-Manager Version 9.0	383,-
DXFPLOT V 3.2	123,-
FED1+ V29.7 Helical Compression Springs incl. spring database, animation, relax., 3D,..	695,-
FED2+ V20.5 Helical Extension Springs incl. spring database, animation, relaxation, ...	675,-
FED3+ V19.0 Helical Torsion Springs incl. prod.drawing, animation, 3D, rectang.wire, ...	480,-
FED4 Version 7.3 Disk Springs	430,-
FED5 Version 15.7 Conical Compression Springs	741,-
FED6 Version 16.3 Nonlinear Cylindrical Compression Springs	634,-
FED7 Version 13.3 Nonlinear Compression Springs	660,-
FED8 Version 7.0 Torsion Bar	317,-
FED9 Version 6.0 Spiral Spring	394,-
FED10 Version 4.1 Leaf Spring	500,-
FED11 Version 3.3 Spring Lock and Bushing	210,-
FED12 Version 2.4 Elastomere Compression Spring	220,-
FED13 Version 4.0 Wave Spring Washers	228,-
FED14 Version 1.4 Helical Wave Spring	395,-
FED15 Version 1.4 Leaf Spring (simple)	180,-
FED16 Version 1.1 Constant Force Spring	225,-
FED17 Version 1.2 Magazine Spring	725,-
GEO1+ V6.1 Cross Section Calculation incl. profile database	294.-
GEO2 V2.6 Rotation Bodies	194,-
GEO3 V3.3 Hertzian Pressure	205,-
GEO4 V4.2 Cam Software	265,-
GEO5 V1.0 Geneva Drive Mechanism Software	218,-
GEO6 V1.0 Pinch Roll Overrunning Clutch Software	232,-
GR1 V2.0 Gear construction kit software	185,-
HPGL-Manager Version 9.0	383,-
LG1 V6.6 Roll-Contact Bearings	296,-
LG2 V2.2 Hydrodynamic Plain Journal Bearings	460,-
SR1 V22.7 Bolted Joint Design	640,-
SR1+ V22.7 Bolted Joint Design incl. Flange calculation	750,-
TOL1 V12.0 Tolerance Analysis	506,-
TOL2 Version 4.0 Tolerance Analysis	495,-
TOLPASS V4.1 Library for ISO tolerances	107,-
TR1 V4.0 Girder Calculation	757,-
WL1+ V21.0 Shaft Calculation incl. Roll-contact Bearings	945,-
WN1 Version 12.0 Cylindrical and Conical Press Fits	485,-
WN2 V10.0 Involute Splines to DIN 5480	250,-
WN2+ V10.0 Involute Splines to DIN 5480 and non-standard involute splines	380,-
WN3 V 5.4 Parallel Key Joints to DIN 6885, ANSI B17.1, DIN 6892	245,-
WN4 V 4.6 Involute Splines to ANSI B 92.1	276,-
WN5 V 4.6 Involute Splines to ISO 4156 and ANSI B 92.2 M	255,-
WN6 V 3.0 Polygon Profiles P3G to DIN 32711	180,-
WN7 V 3.0 Polygon Profiles P4C to DIN 32712	175,-
WN8 V 2.2 Serration to DIN 5481	195,-
WN9 V 2.2 Spline Shafts to DIN ISO 14	170,-
WN10 V 4.1 Involute Splines to DIN 5482	260,-
WN11 V 1.3 Woodruff Key Joints	240,-
WNXE V 2.0 Involute Splines - dimensions, graphic, measure	375,-
WNXK V 2.0 Serration Splines - dimensions, graphic, measure	230,-
WST1 V 10.2 Material Database	235,-
ZAR1+ V 26.0 Spur and Helical Gears	1115,-
ZAR2 V7.9 Spiral Bevel Gears to Klingelnberg	792,-
ZAR3+ V9.0 Cylindrical Worm Gears	620,-
ZAR4 V5.2 Non-circular Spur Gears	1610,-
ZAR5 V11.5 Planetary Gearings	1355,-
ZAR6 V3.9 Straight/Helical/Spiral Bevel Gears	585,-
ZAR7 V1.4 Plus Planetary Gears	1380,-

ZAR8 V1.4 Ravigneaux Planetary Gears	1950,-
ZARXP V2.1 Involute Profiles - dimensions, graphic, measure	275,-
ZAR1W V1.7 Gear Wheel Dimensions, tolerances, measure	450,-
ZM1.V2.5 Chain Gear Design	326,-

PACKAGES	**EUR**
HEXAGON Mechanical Engineering Package (TOL1, ZAR1+, ZAR2, ZAR3+, ZAR5, ZAR6, WL1+, WN1, WN2+, WN3, WST1, SR1+, FED1+, FED2+, FED3+, FED4, ZARXP, TOLPASS, LG1, DXFPLOT, GEO1+, TOL2, GEO2, GEO3, ZM1, WN6, WN7, LG2, FED12, FED13, WN8, WN9, WN11, DI1, FED15, WNXE, GR1)	8,500.-
HEXAGON Mechanical Engineering Base Package (ZAR1+, ZAR3+, ZAR5, ZAR6, WL1+, WN1, WST1, SR1+, FED1,+, FED2+, FED3+)	4.900,-
HEXAGON Spur Gear Package (ZAR1+ and ZAR5)	1,585.-
HEXAGON Planetary Gear Package (ZAR1+, ZAR5, ZAR7, ZAR8, GR1)	3,600.-
HEXAGON Involute Spline Package (WN2+, WN4, WN5, WN10, WNXE)	1,200.-
HEXAGON Graphic Package (DXF-Manager, HPGL-Manager, DXFPLOT)	741.-
HEXAGON Helical Spring Package (FED1+, FED2+, FED3+, FED5, FED6, FED7)	2,550.-
HEXAGON Tolerance Package (TOL1, TOL1CON, TOL2, TOLPASS)	945.-
HEXAGON Complete Package (All Programs of Engineering Package, Graphics Package, Tolerance Package, Helical Spring Package, Planetary Gear Package, TR1, FED8, FED9, FED10, ZAR4, GEO4, WN4, WN5, FED11,WN10, ZAR1W, FED14, WNXK, FED16, FED17, GEO5, GEO6)	12,900.-

Quantity Discount for Individual Licenses

Licenses	2	3	4	5	6	7	8	9	>9
Discount %	25%	27.5%	30%	32.5%	35%	37.5%	40%	42.5%	45%

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Discount/Add.cost	-50%	-20%	0%	10%	15%	20%	25%	30%	35%

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Language Version:

- **German and English :** all Programs
- **French**: FED1+, FED2+, FED3+, FED4, FED5, FED6, FED7, FED9, FED10, FED13, FED14, FED15, TOL1, TOL2.
- **Italiano**: FED1+, FED2+, FED3+, FED4, FED5, FED6, FED7, FED9, FED13, FED14, FED17.
- **Swedish**: FED1+, FED2+, FED3+, FED5, FED6, FED7.
- **Portugues**: FED1+, FED17
- **Spanish**: FED1+, FED2+, FED3+, FED17

Updates:

Update prices	EUR
Software Update (software Win32/64 + pdf manual)	40,-
Software Update (software 64-bit Win + pdf manual)	50,-

Update Mechanical Engineering Package: 800 EUR, Update Complete Package: 1000 EUR
Maintenance contract for free updates: annual fee: 150 EUR + 40 EUR per program

Hexagon Software Network Licenses

Floating License in the time-sharing manner by integrated license manager
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Conditions for delivery and payment

General packaging and postage costs for delivery on CD-ROM: EUR 60, (EUR 25 inside Europe)
Delivery by Email or download (zip file, manual as pdf files): EUR 0.
Conditions of payment: bank transfer in advance with 2% discount, or by credit card (Master, Visa) net.

Key Code

After installation, software has to be released by key code. Key codes will be sent after receipt of payment.

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