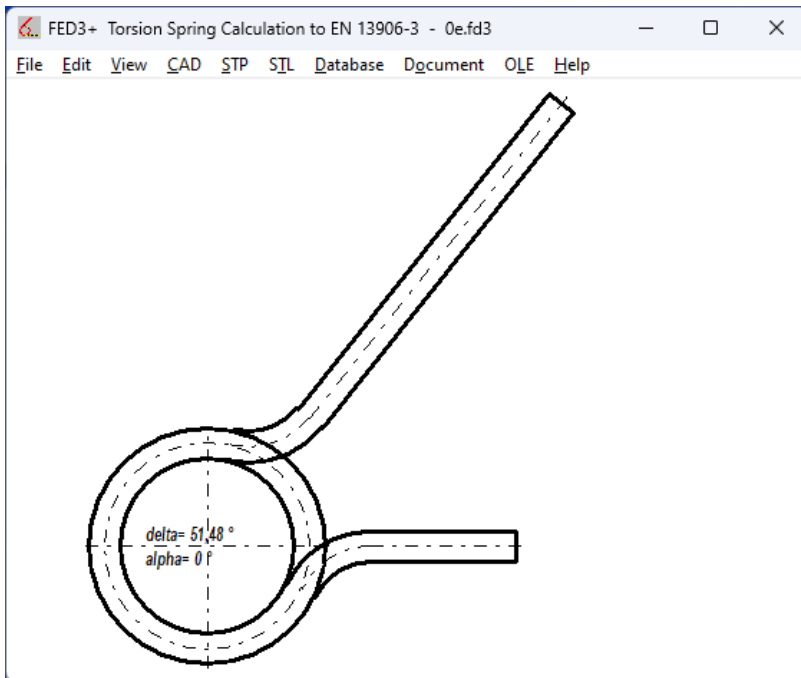# F E D 3 +

Software for Calculation of
Helical Torsion Springs

for Windows

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Torsion Spring Calculation

FED3+ provides two methods for calculating cylindrical torsion springs:
- dimensioning by entering one or two loads (torques), stroke angle and operating angle
- re-calculation of existing torsion springs by entering their dimensions.

The FED3+ software obtains the properties for the spring materials from the integrated material database (tensile strength, bending strength, shearing modulus, modulus of elasticity, density). This saves you from searching in tables and reading out the characteristic values from diagrams. The software also calculates the tolerance for the wire diameter according to EN 10218 or EN 10270, as well as the tolerances of coil diameter, spring load, leg angle, leg length, bending angle and bending radius in accordance with DIN 2194. The legs may be fixed clamped or holded, tangential or bended.
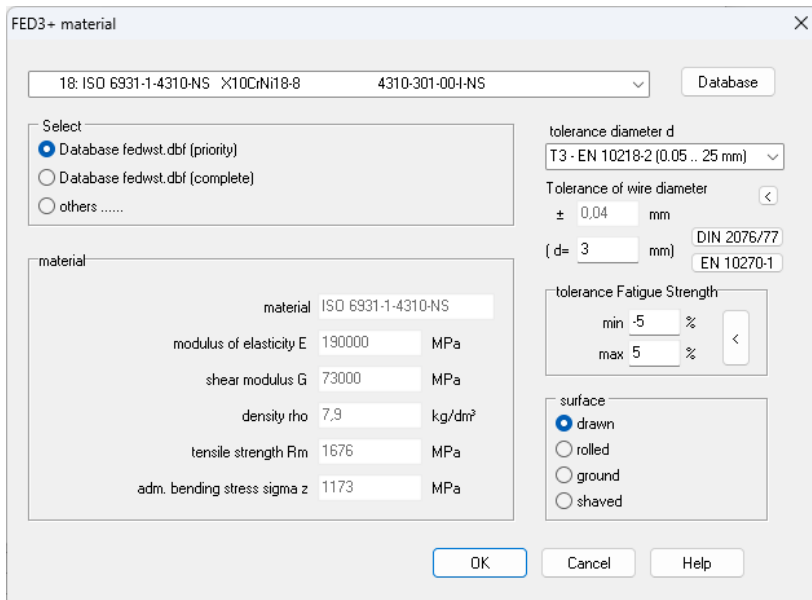
On-Line Input

On-line input provides the advantage of having the most important entries and results together on the screen with possible warnings and error messages. After each entry, a new calculation is carried out in split second. This means you can easily try out different variations or carry out a tolerance analysis.
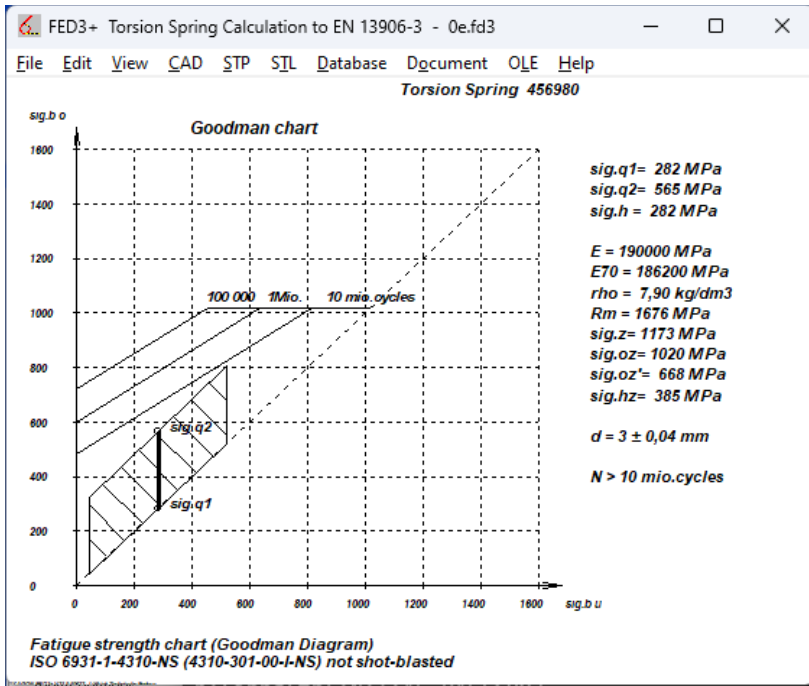
Output

You can have the input values and calculation results printed as text printout or graphic screenshot. All torques with their rotation angles, stresses, dimensions with tolerances, spring work wire lengths and so on, are printed. Warnings and error messages appear if permissible stress, spring positions or limitations are exceeded.

Diagrams

The spring characteristic curve with rotation angle and torque, Goodman diagram or SN diagram, relaxation diagrams, stress diagrams, and Quick View with drawings, diagrams and results are displayed graphically on screen. Each screen graphic can be printed or exported to CAD via DXF and IGES interfaces.

Goodman Diagram
You can see in the fatigue strength diagram whether or not the permissible variation of stress has been adhered to for dynamically stressed springs. The curves for fatigue strength safety (>10 million) as well as for 1 million and 100,000 load cycles are shown.
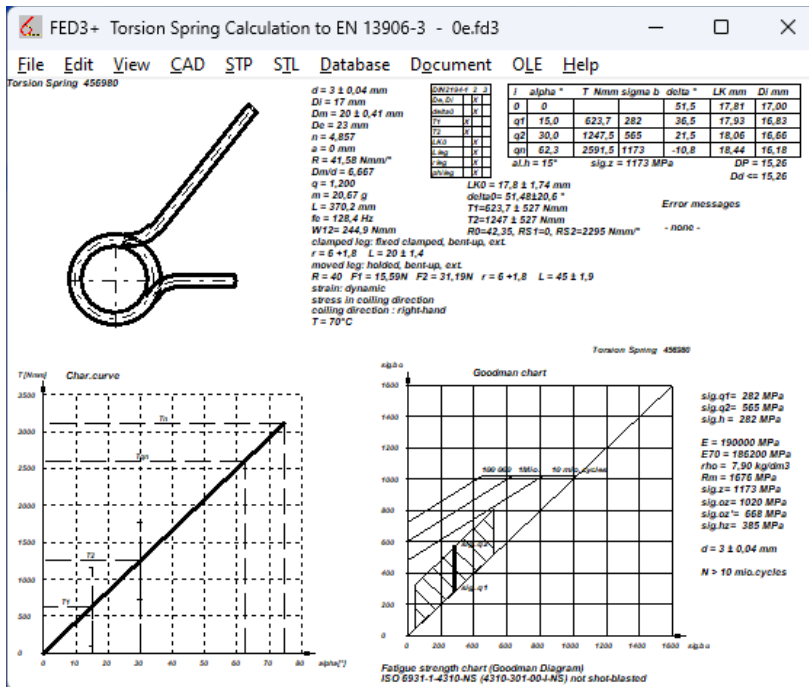
Relaxation
For the most spring materials, FED3+ calculates relaxation of the spring depending on material, load, temperature and time.

Production Drawing
FED3+ allows you to produce a complete production drawing with all spring data in an ISO 7200 drawing header, ready to be printed, or generated as DXF or IGES file.

Spring Drawing
A true-scale spring drawing for any spring angle is displayed on screen, or saved as DXF or IGES file.

3D Drawing
FED3+ generates a 3 dimensional helical centerline of the torsion spring to be used in CAD via DXF or IGES interface, or draw in perspective 3D view on screen.
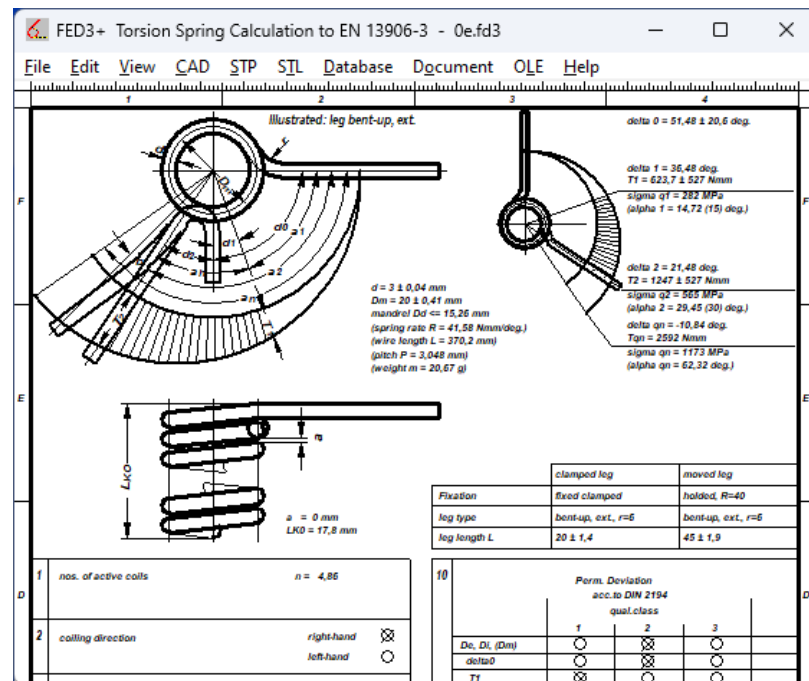
Animation
FED3+ animation simulates the motion of the spring between two specified operating angles on screen.

Wire Section
FED3+ not only torsion springs of round wire, you can also configure square, rectangular, elliptic, oval wire or circular tube.

User Interface
FED3+ provides a comfortable user interface, which enables users with little computer experience to work easily. A help picture and text can be called up for each input. Running the demo mode shows calculation of an example application.

Export Formats
DXF, IGES, STL, HTML, TXT, DBF, Excel, FD3.

System Requirements
FED3+ is available as 32-bit app or as 64-bit app for Windows 11, Windows 10, Windows 7.

Scope of Delivery
FED3+ program with example applications and help images, user manual (pdf), perpetual license.

Software Maintenance
HEXAGON Software is continuously improved and updated. Registered users are regularly kept informed of updates and new editions.

Guarantee
HEXAGON gives a 24 month guarantee on full functionality of the software.