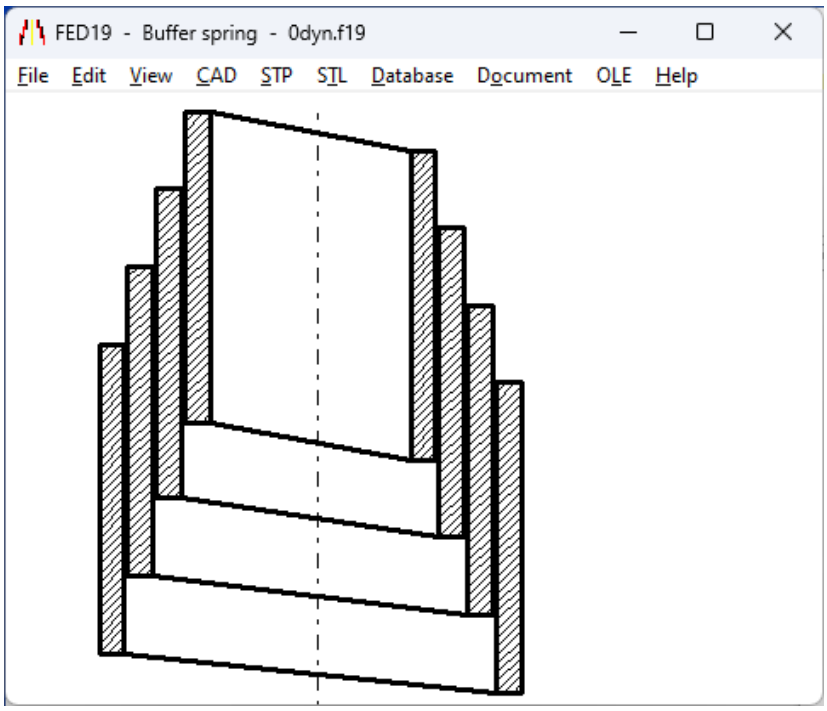
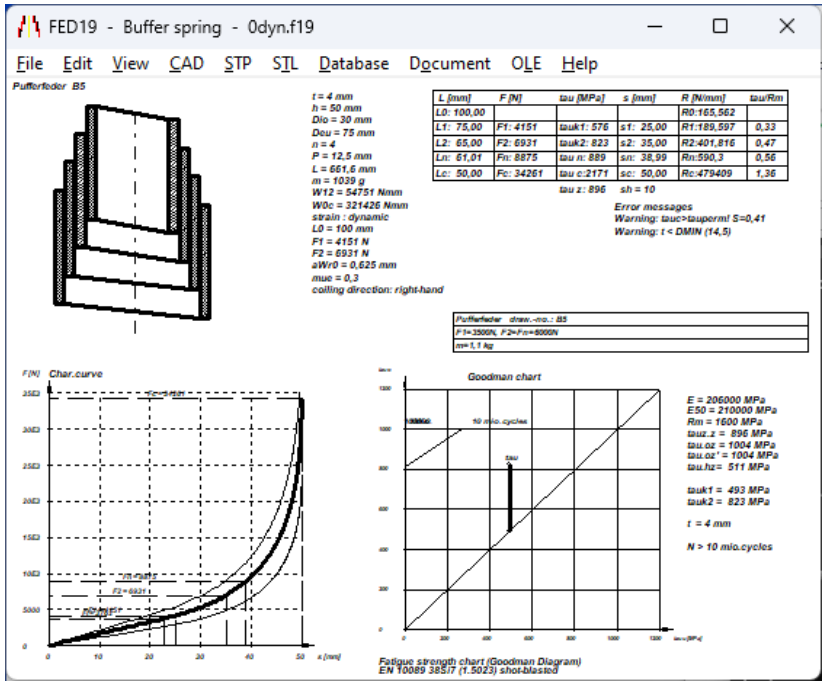
FED19

Software for Calculation of Buffer Springs

for Windows





Buffer Spring Calculation
The FED19 software calculates so-called buffer springs, conical helical compression springs made of spring band.

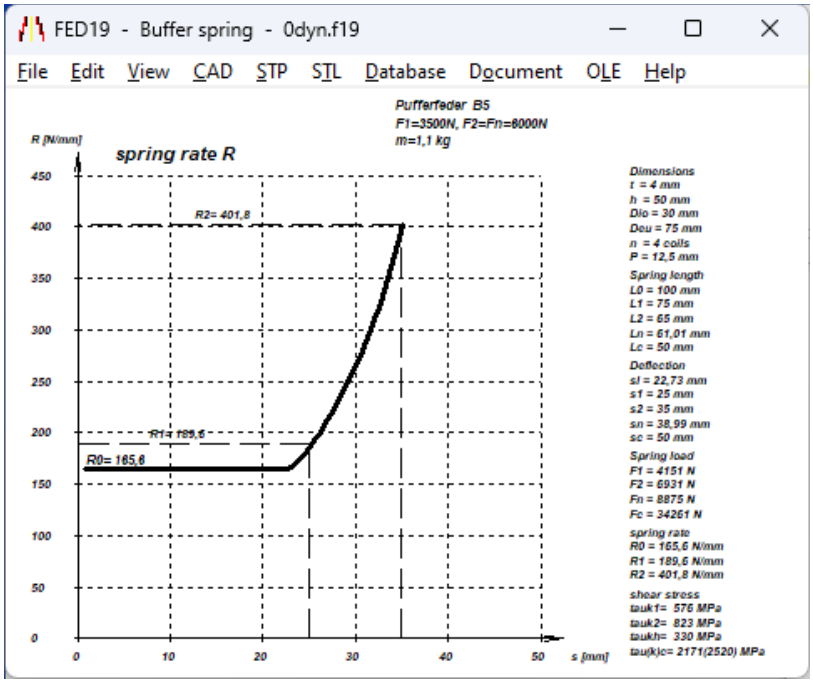
Pre-dinension
In the preliminary design, FED19 calculates the approximate dimensions from a mean spring load and an associated spring deflection. This mean spring deflection sm is assumed to be half the spring length L0 or is equal to the spring length Lm.

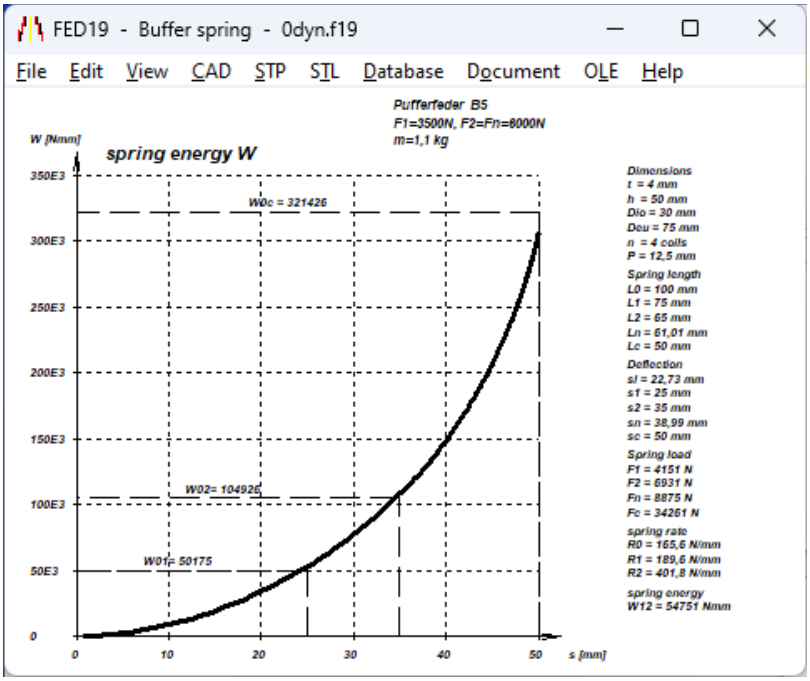
Calculation
From the dimensions of the spring (spring strip thickness and spring strip height, upper and lower coil diameter, spring length and number of coils), FED19 calculates spring forces, spring deflection, spring rate, spring energy, stresses,spring length, weight. The coil pitch (Po/Pu) can be constant or linearly increasing/decreasing.

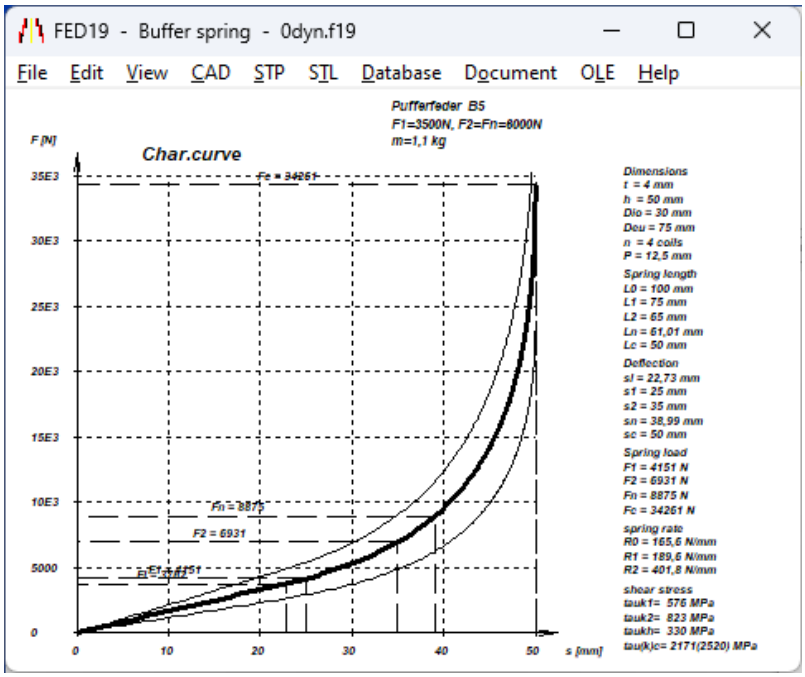
Friction and hysteresis
Buffer springs are torsional stressed, twisting of the strip steel causes friction between the coils. When entering a friction coefficient, the spring characteristic and animation are displayed with hysteresis.

Materials Database
FED19 gets the characteristic values of the most important spring materials (tensile strength, permissible shear stress, shear modulus, modulus of elasticity, density) from the integrated database. The material database can be modified and expanded by the user.

Spring drawings
2D sectional drawings of the buffer spring in any installation length (between L0 and Lc) and a 3D centerline of the helical coil can be displayed graphically and transferred to CAD via a DXF or IGES file.







Diagrams
FED19 displays diagrams of the spring load - deflection characteristic curve, spring rate and spring energy. The diagrams can be printed out or transferred to CAD or documentation via the DXF and IGES interface.

Stress distribution
The shear stress depends on the coil diameter and other parameters. The stress curve along the length of the spring can be displayed graphically with FED19.

Goodman diagram
If the buffer spring is dynamically stressed (which is not recommended due to the friction), FED19 can display a Goodman diagram with fatigue strength. The curves for fatigue strength (>10 million), as well as for 1 million and 100,000 load cycles are drawn.

Load-deflection curve
The characteristic curve (force-displacement diagram) of a buffer spring becomes progressive when the larger coils begin to apply.

Spring rate
The spring rate is constant up to the point where the largest coils touch the ground. From then on, the spring becomes "harder".

Spring energy
The spring enegy is calculated from the integral of the load-deflection curve.

Quick view
In the various quick views, drawings, diagrams and spring data are displayed together on one screen.

Production drawing
FED19 generates a production drawing from the calculated data, which you can print out or transfer to CAD as a DXF or IGES file.

Animation
In an animation, the deflection of the buffer spring is drawn as a drawing and next to it the progressive characteristic curve is drawn point by point in the diagram.

System Requirements
FED19 is available as a 32-bit and 64-bit application for Windows 11, Windows 10, Windows 7.

Scope of delivery
Program with database files, application example, manual (pdf), non-expiring license for unlimited time use.

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.