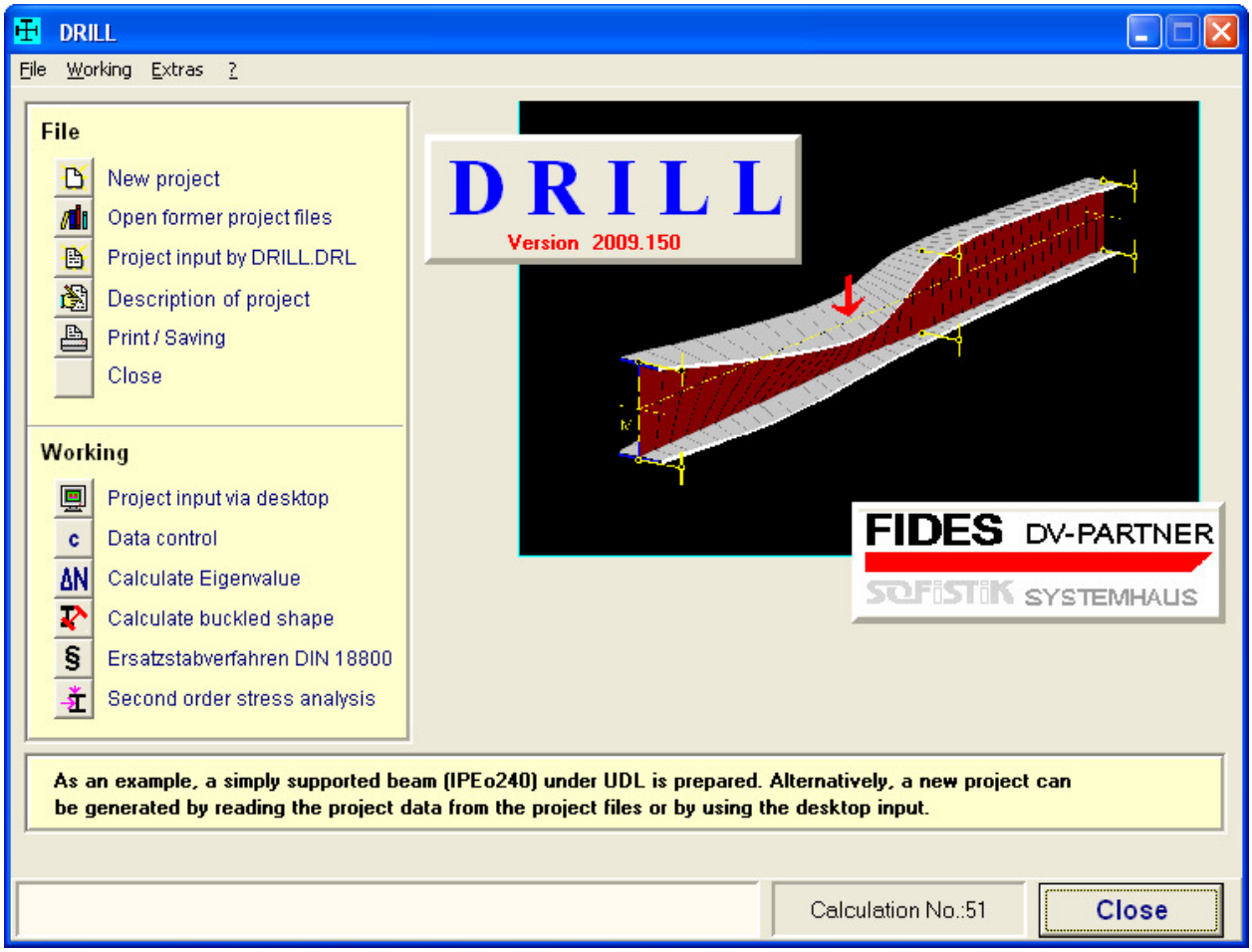
TWIST

Lateral Torsional Buckling of Straight Plate Girders

The aim of this application is, for in-plane loaded straight plate girders or columns, to determine their load capacity due to lateral torsional buckling, to visualize the buckling behavior and to enable capacity checks according to DIN 18800. The application TWIST is based on energy method. The coefficients of the global system matrix, beside the section data and elastic spring, consist of the all possible loads and internal forces.
For approach functions, HERMITE-polynoms of 8th order are used. The are redefined for every single sub span of the girder. With this very accurate approach function for deflections vM(x) and J(x), it is possible to meet the requirements of both, the geometrical as well as the static boundary (respectively transition) conditions, of a multi span girder in an exact way.
This application had been developed by Prof. Friemann for lecturing at TU Darmstadt. Because of its sound mechanical basis, variety and its user-friendly facilities for in- and output, it is also as well applicable for using in an engineering office. TWIST is employed for engineer training at many universities.



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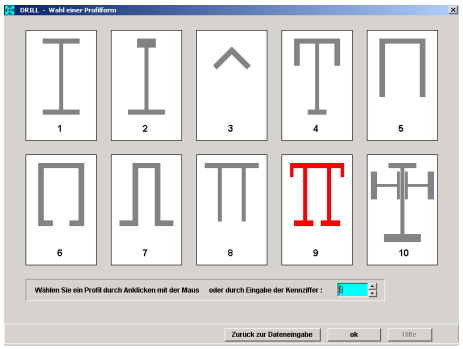
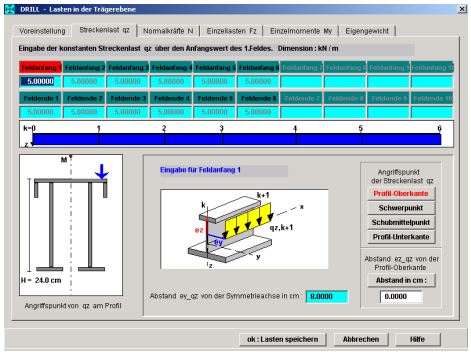
Performance Features

Shell and Input

- simplest, effective, concise way of input of the structure
- grafically controlling of all input values
- all input parameters are sensibly predefined.
- Integrated profile list



- Varied special profiles
- Free definable haunches
- Continous girder upto 10 fields
- Excentrc boundary conditions
- Rotating elastic support
- Schubfeldsteifigkeiten
- Rotating springs of any kind
- Translations strength
- Warping springs
- Predefined deformations
- Excentricity of loads
- Biaxial loadings
- Arbitrary loads in girder plane

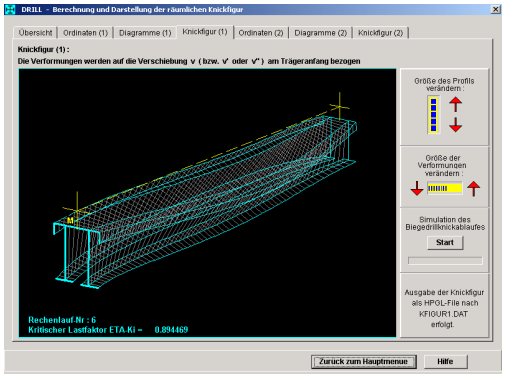


Calculation

- Original DRILL inside! (Prof. Friemann)
- Determination of the critical load factors for M, N and Q
- Determination of Internal forces and moments
- Calculation of eigenvalue
- Verification of the interactions due to DIN 18800
- Substitute beam method
- Verification due to stress theory II. Order
- Verification of the w/t-proportions

Calculation results

- Extensive output of the results in ASCII text format
- Animation of the buckling shape
- Grafic output of the results
- Simple alteration of the geometry afterwards
- Total generation of the editable projekt input file for the calculation



- Extensive grafic output of all internal forces, moments, loads and structure plots
- Envelope curves for extremal values
- Output: mix of text and grafic

Application range

- General steel structures
- Engineering structures
- Construction, statics
- Verification providing
- Building construction and architecture
- Planning of structural framework

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