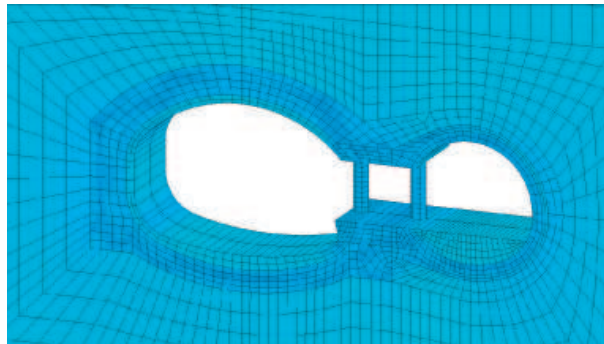


Tunnel Design

SOFiSTiK software is a very powerful and effective FE-package to perform 2/3D FEA based on the solvers TALPA and ASE. In addition to the deformation and stability analysis of tunnel systems, SOFiSTiK offers, as one of the few solutions on the market, extensive design capabilities for various international codes like EC, BRO, BS, SNIP, DIN, etc. Further functionality can be added for seepage analysis using the SOFiSTiK modules HDYRA, seismic and dynamic analysis using DYNA/ASE and CFD analysis using the multiphysics code PHYSICA.



Application Areas:

Tunneling

- Cut and cover
- Shotcreting method (New Austrian Tunneling Method – NATM)
- Tunnel boring machines (TBMs)
- Pipe jacking
- Tubbing-lining
- Special structures like tunnel-junctions, branch of emergency exits, portals etc...
- Renovation/extension of existing tunnels

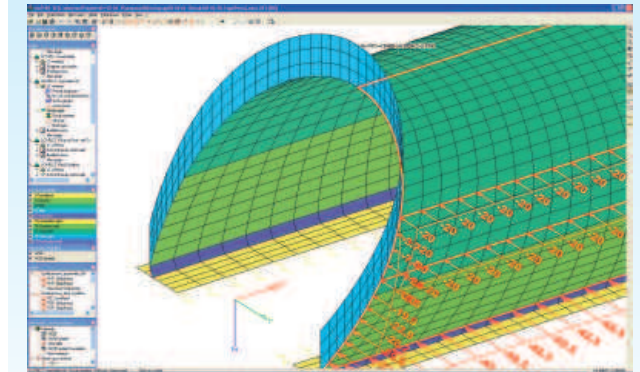
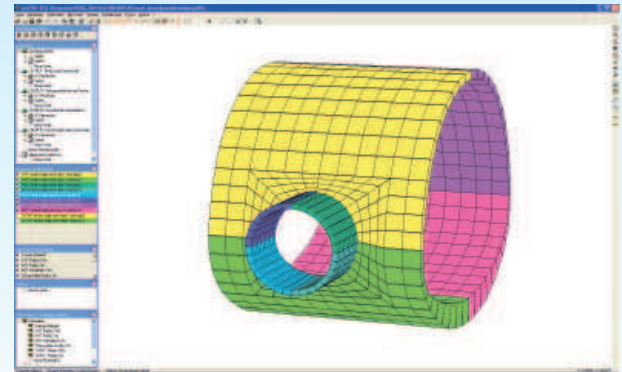
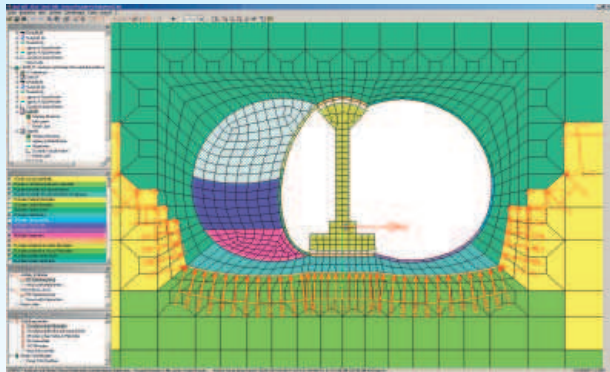
Geotechnics

- Slope failure
- Dams
- Raft-pile-foundations

General

- 3D settlement analysis
- General 3D volume systems

The specialized preprocessor WinTUBE, developed by our partner FIDES DV-Partner, can be used as a very powerful tool for the system, mesh and loading generation, as well as for the management of construction stages. WinTUBE is 100% compatible with the ASE and TALPA solvers and will create a SOFiSTiK database, so ANIMATOR, WinGRAF and URSULA can be used for post-processing as usual.



WinTUBE Features:

- CAD-based functionality
- On/off visibility settings
- User defined views
- Intelligent object selection
- DXF-import
- SOFiSTiK CDB import
- Undo/redo, copy/paste
- Wizards for tunnels, intersections, automatic intersection of structural volumes or surfaces

SOFiSTiK Material Models

Elastoplastic models

- Von Mises, associated
- Drucker-Prager, associated
- Mohr-Coulomb, non-associated
- Gudehus, non-associated
- Lade, non-associated

Hypoplastic models

- Acc. v. Wolffersdorff

Granular soils (GRAN)

- Hyperbolic consolidation acc. to Kondner (triaxial stress state)
- Stress-related stiffness
- Different stiffness in loading and unloading behavior

- Failure criteria acc. to Mohr-Coulomb
- Dilatancy (non-associated plastic yielding)
- Automatic calibration for volumetric loading (cap model)

Swelling soils (SWEL)

- Consideration of the stress dependent swelling strains for the final state

Shear fault planes for jointed materials

- Scalar damage model e.g. for tensile failure

Interface to create user-defined material models