

PLAXIS 2D

The most used tool for geo-engineering

The PLAXIS 2D programs including PLAXIS Dynamics and PLAXIS PlaxFlow make up a finite element package intended for the two dimensional analysis of deformation and stability in geotechnical engineering. It is a robust and user-friendly finite element package, developed for Geotechnical Engineering. It offers the tools professionals need in today's and tomorrow's world of high-tech building, to analyse complex projects.

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Geotechnical applications require advanced constitutive models for the simulation of the non linear, time dependent and anisotropic behaviour of soils and/or rock. In addition, since soil is a multi phase material, special procedures are required to deal with hydrostatic and non hydrostatic pore pressures in the soil. Although the modelling of the soil itself is an important issue, many projects involve the modelling of structures and the interaction between the structures and the soil.

Modelling:

- Logical geotechnical workflow
- Easy-to-use graphical user interface
- Automatic recognition of soil layers
- Structural elements; plates, geogrids and anchors
- Unlimited combinations of point forces and distributed loads
- CAD import facilities
- Advanced soil models: compression and shear hardening, creep behaviour, cam-clay model, elasto-plastic behaviour for structural elements, Hoek Brown model, Small strain stiffness method
- Soil test

Calculations:

The Staged constructions mode enables a realistic simulation of construction and excavation processes by activating and deactivating soil clusters and structural objects, application of loads, changing of water tables, etc. The well-proven PLAXIS calculation kernel distinguishes between a Plastic calculation, a groundwater flow and consolidation analysis, and a Phi-c reduction analysis. These can be performed with Updated Mesh to take into account large deformations.

- Convenient and intuitive Phase explorer
- Realistic assessment of stresses and displacements
- Automatic regeneration of construction stages
- Well-proven and robust calculation procedures

Results:

An Extensive range of facilities exists within the PLAXIS Output program to display the results of a finite element analysis.

- Contour, shading, iso-surface and vectors plots
- Extensive report and movie Generator
- Animations
- Curve Manager
- Hint Boxes
- Resulting Force View

PLAXIS Dynamics

The PLAXIS Dynamics module offers the tools to analyse the propagation of waves through the soil and their influence on structures. This allows for the analysis of seismic loading as well as vibrations due to construction activities. PLAXIS Dynamics offers the possibility to perform dynamic calculations in individual calculation phases.

$$(M\ddot{u} + C\dot{u} + Ku = f(t))$$

PLAXIS PlaxFlow

The PLAXIS PlaxFlow module can be used to analyse two-dimensional unsaturated and time-dependent groundwater flow. For many practical applications it is necessary to take into account both deformation and groundwater flow. For time dependent analysis, this leads to mixed equations of displacement and pore pressures, called coupled hydro-mechanical approach, which have to be solved simultaneously. This type of analysis which is based on Biot's theory of consolidation enables the user to simultaneously calculate deformation and groundwater flow with time-dependent boundary conditions in saturated and partially saturated soils.

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