

PLAXIS 2D PlaxFlow

The most used tool for geo-engineering

PLAXIS 2D including PLAXIS Dynamics and PLAXIS PlaxFlow makes 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.

PLAXIS PlaxFlow

Geotechnical applications require advanced numerical tools and constitutive models for the simulation of the non-linear, time dependent and anisotropic behaviour of soils and/or rock in saturated and partially saturated situations.

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.

Modelling:

- Time dependent boundary conditions (linear, harmonic and user defined)
- Various boundary conditions for flow (seepage, head, prescribed boundary flux, infiltration/precipitation, drains and wells)
- Various Soil Water Characteristic Curves (SWCC) (Mualem-Van Genuchten, approximate Van Genuchten and user defined)
- Various predefined data sets for SWCC based on different soil classification systems (standard, Hypres, USDA and Staring)
- Bishop stress and suction as state variables for unsaturated soil models
- Well-known Barcelona Basic Model
- User defined soils model for unsaturated soils

Calculations:

- Automatic time stepping for fully coupled flow-deformation and groundwater flow analyses

- Possibility to simulate mechanical behaviour of partially saturated soils in all existing types of calculations (plastic, Phi/C reduction, dynamics and consolidation analyses)
- Three different modes of calculations; Classical: similar to previous versions of PLAXIS, Advanced: Unsaturated soils, Flow: groundwater flow analyse

Results:

Flow results in addition to displacements and stresses e.g.:

- Darcy's velocities
- Suction
- Degree of saturation
- Relative permeability
- Groundwater head

Applications:

- Simulations of unsaturated soil behaviour
- Earth and rockfill dams (time dependent problems)
- Staged construction in time
- Analysis of rapid drawdown situations
- Slope stability analysis (landslides, effect of environment (rain, flooding etc.) on slope stability)
- Soils with collapse risks (compacted soils)
- Drainage systems

Contact

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