



Why choose CESAR ?

↓ Key Advantages

Full-featured

CESAR associates mechanics, hydrogeology, heat transfer, and dynamics, required for modelling geotechnical projects.

Technical support

itech and IFSTTAR experienced teams provides you with the appropriate level of response and training for your technical questions.

Open tool

Far from being a black box, CESAR is open to data editing, Python scripting and interfacing with third-party tools.

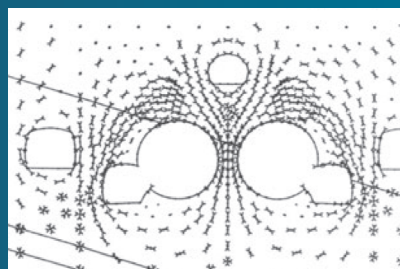
↓ An experience acknowledged by professionals

CESAR

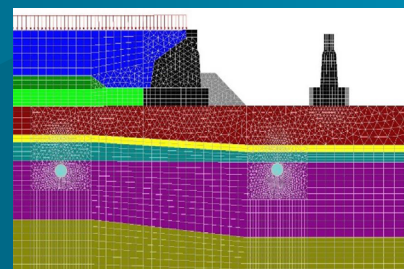
is a finite element software for structural analysis designed and verified by the Université Gustave Eiffel (formerly known as IFSTTAR, or LCPC - Central Bridges and Roadworks Laboratory). Under continuous development since 1983 in order to meet civil engineering standards, CESAR is dedicated to underground works, civil works, soils mechanics, hydrogeology and environmental challenges.

Since 2003, itech joined the software's development team and brings its expertise in designing powerful and accessible user interfaces.

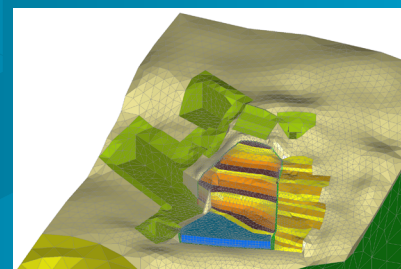
Thus, the close collaboration between Université Gustave Eiffel and itech brings CESAR as a highly featured and professional software both in 2D and 3D.



v3 - Simcsol, Channel Tunnel



v4 - Vinci, Wastewater collectors



v5 - Terrasol, Odéon Tower



A key player in research on cities and territories, transport and civil engineering, IFSTTAR, the Université Gustave Eiffel was created on January 1st, 2020. It integrates IFSTTAR, former LCPC.

The Institute's missions are to carry out, guide, lead and evaluate research, developments and innovations in the fields of urban engineering, civil engineering, materials and natural hazards.

Their research teams are leading the scientific development of CESAR.



Founded in 1986, itech is a IT services company playing a major role in the field of software publishing for the Construction and Civil Engineering industries. Its expertise:

- Publishing and distribution of commercial software
- Development of «tailor-made» business software
- Specific studies
- Training courses

Its products (CESAR / C-TUNNEL / GEOS / ALIZE / ACORD) are used daily by more than 1500 customers.

Technical and commercial support:

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cesar-lcpc@itech-soft.com

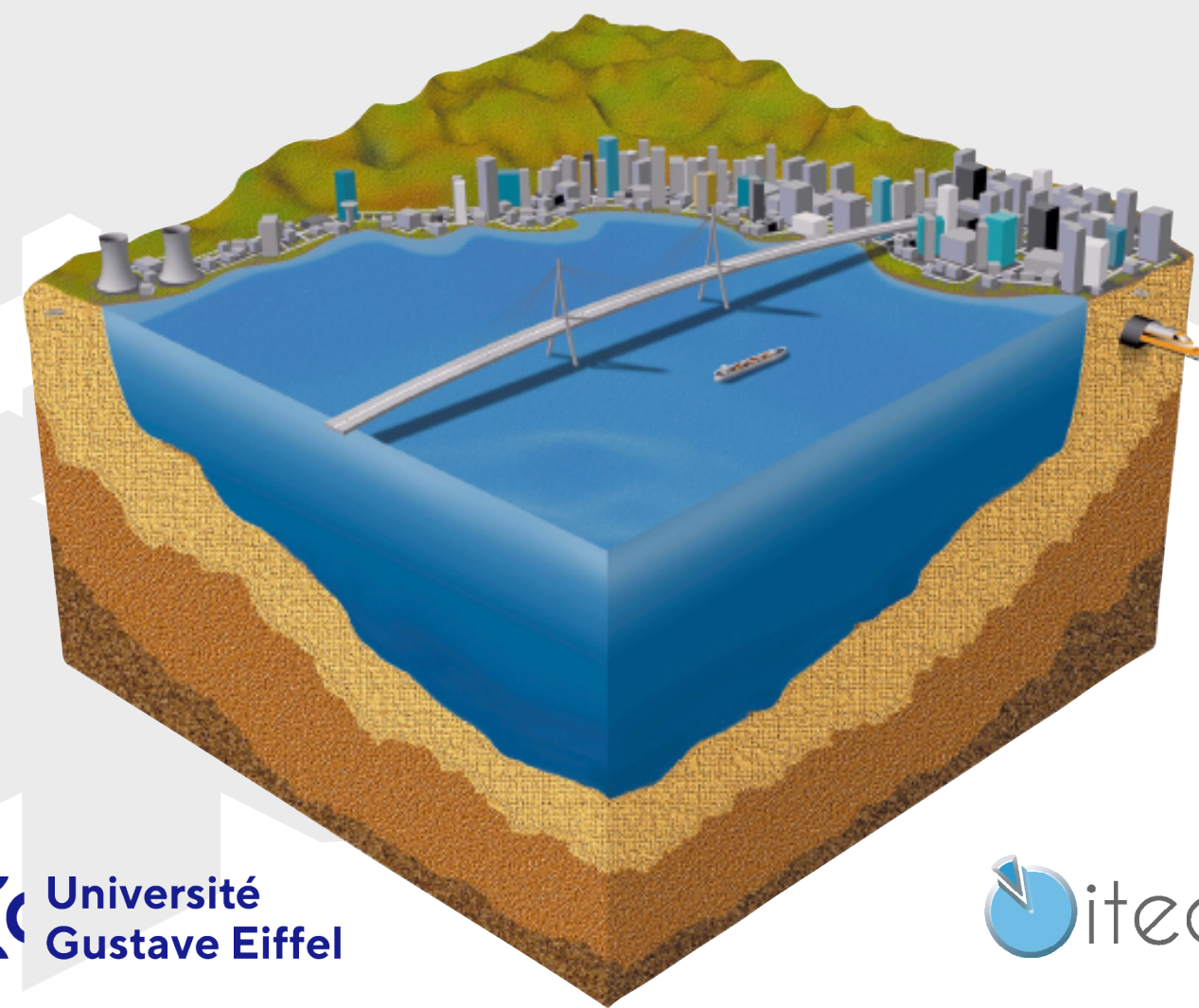
www.cesar-lcpc.com
Free demo version
Videos / News



2D & 3D Finite Element Software for your geotechnical projects

www.cesar-lcpc.com

- Soil & rock mechanics
- Soil-structure interaction
- Shallow and deep foundations
- Excavations works
- Tunnels and underground structures



Geotechnical analysis with Cesar

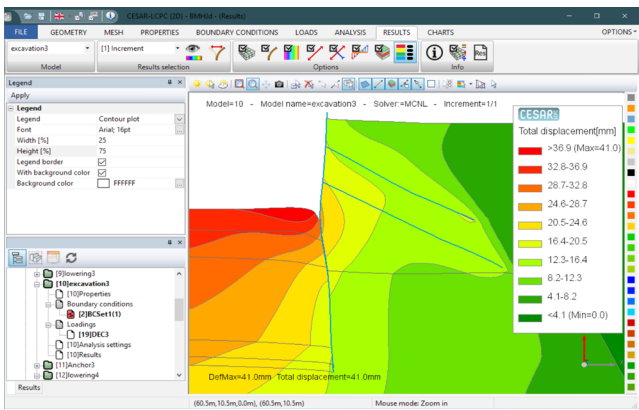
CESAR-LCPC is a calculation software enabling modeling and analysis of geotechnical problems. Proven, powerful and user-friendly, it covers a wide scope of soil and rock mechanics applications (deformation, stability...). It is a valuable tool for geotechnical engineers for embankment, excavation, foundation or tunnel studies, and more.

↓ Deformation and stability

CESAR is bundled with constitutive laws (linear and non-linear elasticity, Mohr-Coulomb, Hardening Soil, Cam-Clay...) relevant to the study of deformations and stresses in soil masses.

Consolidation analysis (coupling) allows the study of primary and secondary settlement of soil masses.

Finally, CESAR features the required calculation procedures in order to obtain safety coefficients in regards to stability (c-phi reduction procedure) or stresses (e.g. limit pressure search).



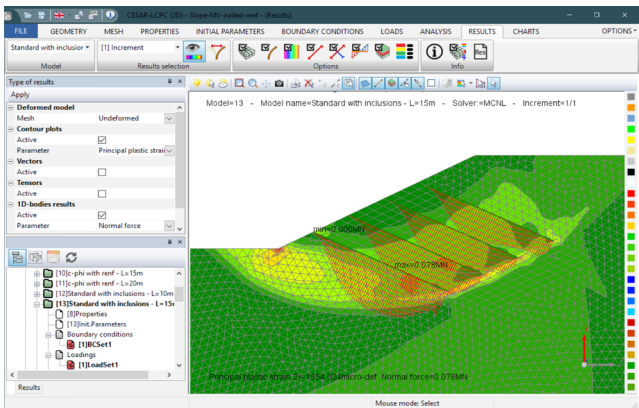
Retaining wall supported by multiple rows of anchors

↓ Soil-Structure Interactions

CESAR offers intuitive and comprehensive tools for simulating consecutive passes of embanking or excavation, integrating realistic construction stages.

Numerous pre-defined elements are available to model structures and their interaction with the soil mass, or the reinforcement of soil masses (anchors, geogrids, bolts...).

These tools enable geotechnical engineers to predict ground movements induced by endured throughout construction.



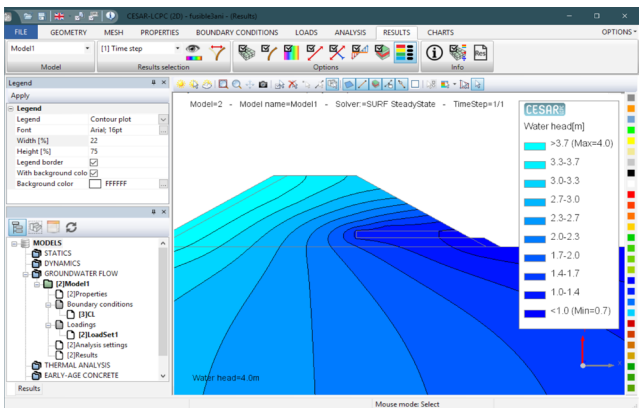
Stability analysis of a soil nail reinforced slope

↓ Groundwater

CESAR is bundled with the required tools for modeling the water table as a mechanical load.

The user can also perform independant hydrogeological calculations: transient and steady state flows, in saturated or unsaturated soils (Gardner and van Genuchten models).

The user is able to model complex hydrogeologic problems with varying water levels and flow conditions.



Hydraulic load field in a dike

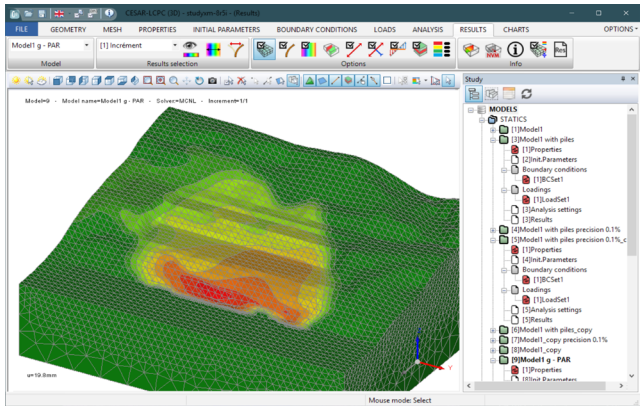
AND MORE...

↓ Concrete and structural engineering

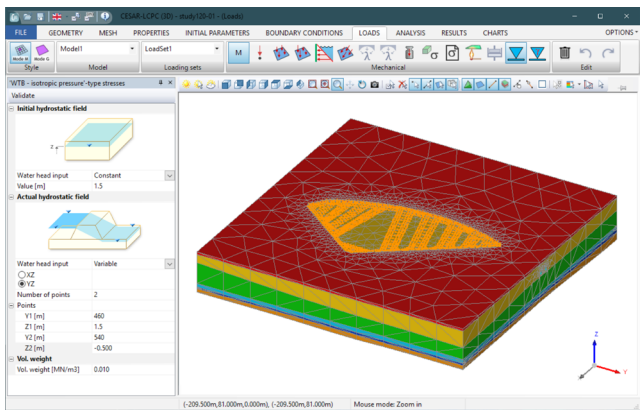
CESAR also offers specific functionalities for thermal analysis, vibration analysis, concrete maturation... As such, CESAR can contribute to the understanding of the overall behaviour of a project and to the expertise of failure mechanisms.

↓ Research

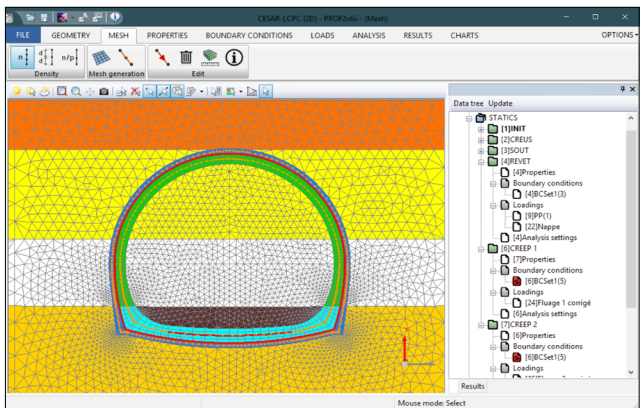
Since its inception, CESAR has been continuously used by research teams. It is well fitted for validating design methods and innovative equipment, and for assisting with understanding phenomenons in Civil Engineering.



Slope stability model after LandXML import



3D mesh for staged construction of a braced excavation



2D mesh and staged construction of a tunnel section

↓ A Comprehensive Tool

- > Plane-stress or axisymmetric 2D analysis
- > 3D meshes by extrusion or filling algorithm
- > Staged construction modelling
- > Rich library of constitutive laws (Mohr-Coulomb, Hardening Soil, Cam-Clay, Hoek-Brown...)
- > Soil-structure interactions
- > Safety coefficient calculation (phi-c reduction, limit pressure)
- > Influence of water table level variations on the structure
- > Thermal and hydrogeologic studies within a single piece of software
- > Wide range of load cases and boundary conditions
- > No limitation in number of load sets and constructions stages
- > Easy transition from 2D to 3D through a common user interface
- > Numerous tools for relevant and detailed post-processing

↓ Innovative features

- > Soil reinforcement through homogenization methods
- > Lateral friction on anchor bars
- > Toolbox for user-defined constitutive models
- > Loads due to delayed effects
- > Tensor model for geogrids
- > LandXML import

Try CESAR for free!

Download a demo version on www.cesar-lcpc.com
Tutorials and videos are available to get you started.

A USER-FRIENDLY AND POWERFUL INTERFACE

- CESAR offers a fully integrated CAD workspace. Intuitive icons, clear and documented dialogs guide you throughout the model's design.
- The calculation sequence is easily defined through a tree view that allows viewing and sharing common input data (properties, loads, boundary conditions).

New user interface
New geometry-based modeling method

