



K-Réa v6

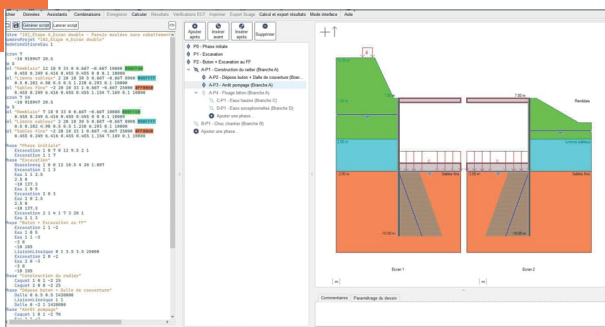
Analysis of **retaining walls** using the **subgrade reaction coefficients** method and in accordance with **Eurocode 7**

Retaining walls

K-Réa is a tool for analysing all types of **retaining walls** (diaphragm walls, secant pile walls, Berlin walls, sheet pile walls, combi-walls, composite walls, etc.) using the **subgrade reaction coefficients method**, taking into account soil-retaining structure interaction effects, construction phasing, and the non-linear behaviour of soils and anchors.

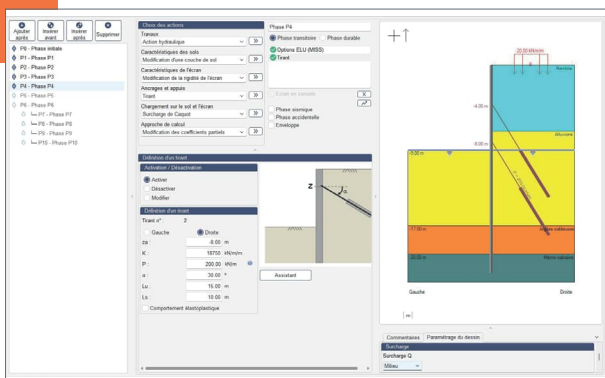
Calculations can be performed for serviceability limit states **SLS** and ultimate limit states **ULS**, using a safety factor derived from **Eurocode 7** or specified by the user.

K-Réa allows for the analysis of two walls interacting via a system of struts and/or tie rods, which is particularly useful when symmetry conditions (loading, structure, stratigraphy) are not met.



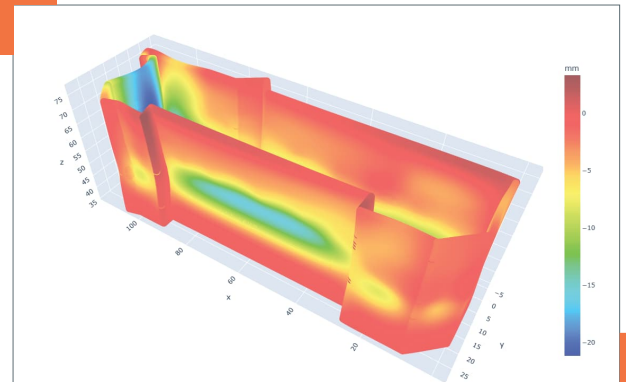
K-Réa also allows for detailed **modelling of phasing kinematics**: wall installation, excavation, anchors, overloads, earthworks and backfilling, changes in groundwater level, etc.

It is also possible to define load combinations that take into account **specific partial factors** applied to different surcharges. The user can choose whether or not to perform the calculation of a combination in each calculation phase.



3D module

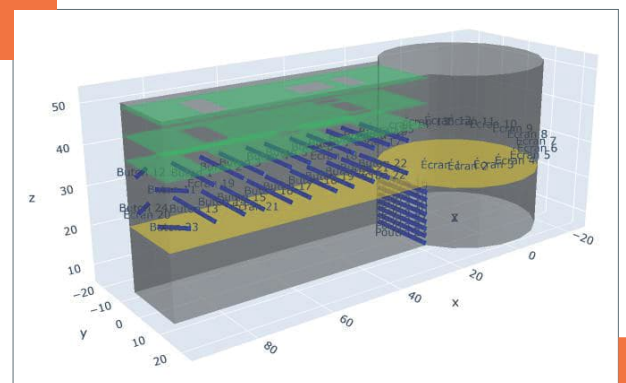
K Réa v6 includes a new calculation module to assess the **three-dimensional effects** of rectangular excavations or those of any geometry, whether open or closed. The module utilises the capabilities of a new calculation engine developed to handle the interaction between **3D structural elements** and the surrounding soil, represented by a series of elastoplastic springs.



The new 3D module is particularly suited to handling:

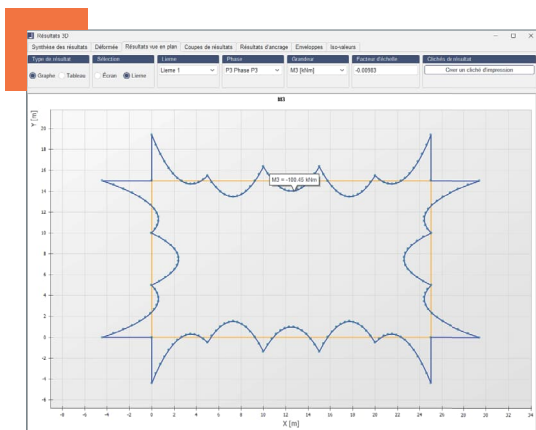
- An assembly of retaining walls (**fixed** or **hinged** connections) with **anisotropic behaviour**;
- An anchoring system comprising **struts** or **tie rods oriented in any direction in space**;
- The presence of tie beams and connecting slabs, which may include **structural opening**;
- A **foundation slab** interacting with the soil at the bottom of the excavation;
- The presence of **localised loads** part of the retaining system.

Running the model provides access to the **3D deformation** of the system as well as the **internal stresses** (bending moments, axial forces, shear forces) in each element: **retaining walls, slabs, struts, tie rods, tie beams, foundation slab**, etc.

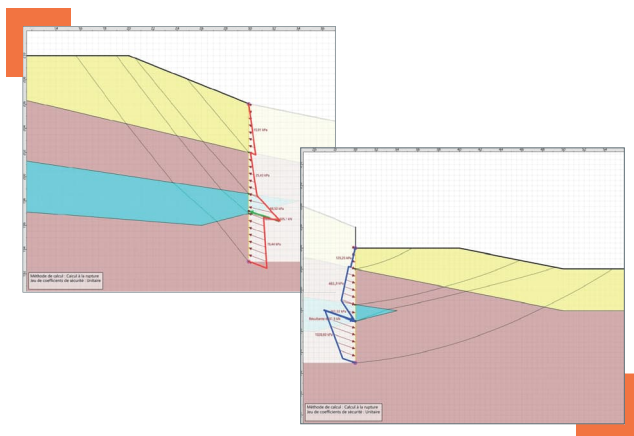


Key features of K-Réa

- A reliable and **robust calculation engine** based on a finite element formulation of the static equilibrium of the wall.
- A **user-friendly interface** for visualising the phasing and forces, with graphical and numerical access to the key results required for design.
- **Script mode** allowing a K-Réa project to be modified or defined entirely using a series of commands.
- Modelling of a **phasing tree structure** to handle complex phasing scenarios.
- Automatic **seismic analysis** taking into account dynamic increments of active and passive earth pressure.
- Analysis of **second-order effects**.
- Ability to model a **2D (single or double wall) or 3D (multiple walls)** retaining structure with a complex connection or anchoring system.

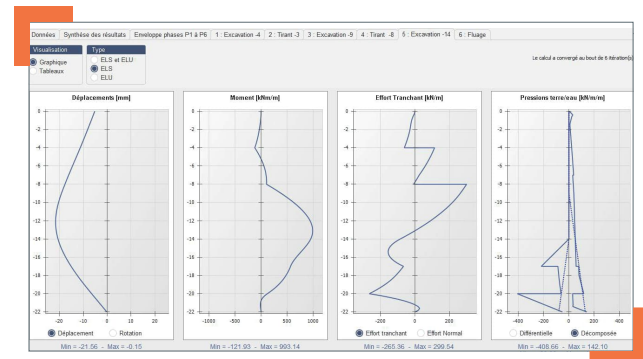


- **Interface with Talren** to import active and passive earth pressure under complex geotechnical conditions.
- **Interface with Scage** to verify the structural strength of the retaining wall.



Available results

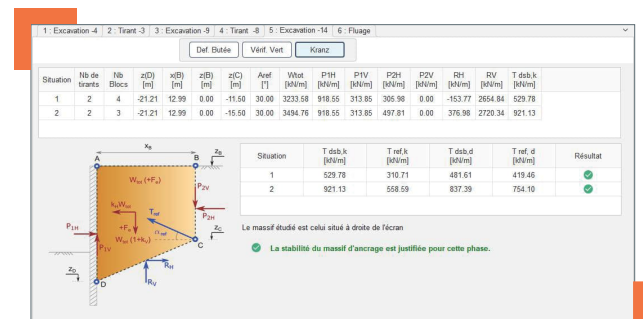
- Displacements, moments, shear forces, axial forces, arching effects and anchor reactions (for each phase and each wall).
- Soil and water **pressures** (active and passive sides).
- Ratio of mobilisable **bearing capacity** to actual bearing capacity.
- Window displaying verification results (**passive earth pressure failure, vertical force balance and Kranz**).
- In 3D mode: access to **stresses** in tie rods, beams and connecting slabs.



ULS verifications

K-Réa incorporates checks in accordance with calculation methods 1, 2 and 3 of Eurocode 7, and in particular in accordance with standard NF P 94 282 French standard implementing Eurocode 7 for retaining walls):

- **MEL / MISS K** models with ULS force calculation;
- Verification of **passive earth pressure capacity**;
- Evaluation of the **vertical force balance**;
- Verification of the stability of the anchorage mass **using the Kranz model** (planar or spiral arc mechanism) taking into account the interaction between anchorage elements;
- Option to modify predefined **partial factors**.



Minimum system requirement:
visit our web site



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