terrasol

setec

Transport and infrastructure
Energy / Civil Engineering
Structures

EPR UK at Hinkley Point

Underground Structures

2013 - 2016

UNITED KINGDOM

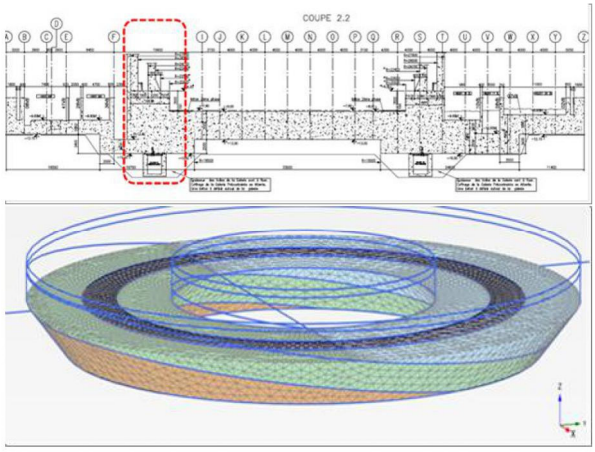
Client

EDF ENERGY

Project managers
SETEC / IOSIS /
TRACTEBEL / HALCROW

Project owner
EDF ENERGY

Miscellaneous
Gallery diameter: 25.7 m,
Gallery height: 3.5 m,
3D model: 382 000 nodes,
Layers tilt: 11°,
Anisotropic soil



Description of the project

In the context of the construction of the British EPRs (Evolutionary Power Reactors), TERRASOL has been entrusted with the design of the prestressing gallery under the plant at Hinkley Point.

The prestressing gallery is used for tensioning the cables of the EPR's inner containment wall. With no structural link to the slab, the prestressing gallery takes the form of a ring 26 m in diameter with a rectangular cross-section (height 3.5 metres).

A ring of mass concrete is built around the gallery in order to limit the impact of the loads transmitted by the plant slab.

Description of the mission

The complexity of the geological context (general dip of the strata towards the north, anisotropy of the deformation moduli) leads to prepare three-dimensional numerical modelling using PLAXIS software (400,000 elements). A specially-developed routine in Visual Basic is intended to make the distribution of pressures (of static and/or seismic origin) under the slab produced by the structure model compatible with the PLAXIS model.

The model was then used as a tool to justify the structural strength of the gallery, optimise the geometry of the mass concrete around it, and define the optimal contact conditions to be guaranteed between the mass concrete and the gallery.

Key features

- Methodology for soil/structure calculations
- 3D finite elements modeling
- Static and para-seismic design

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