



European Edition

GRAITEC
ADVANCE

Advance Design

BIM SOFTWARE FOR FEM STRUCTURAL ANALYSIS
INCLUDING INTERNATIONAL DESIGN CODES

 **GRAITEC**

www.graitec.com

Centre Pompidou - Metz, France
 Architects: Shigeru Ban and Jean de Gastines, in collaboration
 with Philippe Gumuchdjan
 Construction Company: Entreprise Générale Demathieu & Bard
 Engineering Office: CTE

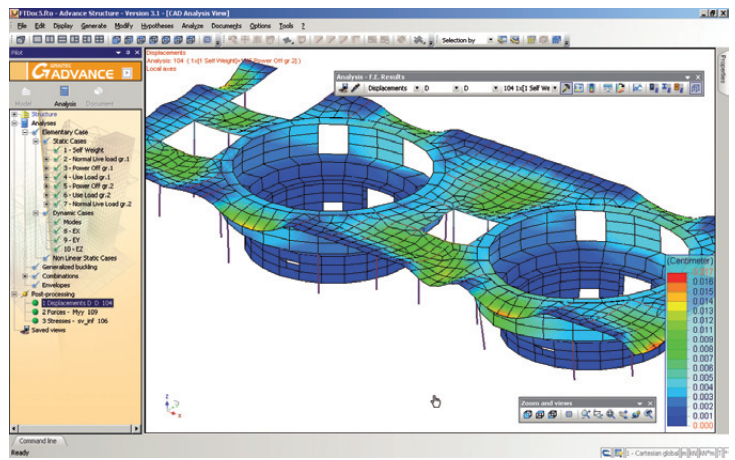


Advance Design

Advance Design® is the result of 24 years GRAITEC experience in structural analysis.

Advance Design® is aimed at structural engineers who require a professional and easy-to-use solution for simulating and optimizing all their projects. Advance Design® includes a user-friendly structural modeler, an automatic load and combination generators, a powerful FEM analysis engine (static, dynamic, time history, non linear, buckling, large displacement analysis, etc.), comprehensive wizards for designing concrete and steel members according to Eurocodes, efficient result post-processing and automatic report generators. Advance Design® automatically updates all reports, including graphical results when modifications are made to the model.

Advance Design® is part of the GRAITEC structural BIM solution and provides data exchanges with Autodesk Revit as well as with all major industry file formats: IFC, CIS/2, SDNF, PSS, DXF.



Supports for electric generators created by Hidroproject Design



Banessa Business and Technology Park,
 Bucharest, Romania
 Design Office: Injineriile structurale Srl



Grenoble Stadium, France
 Design Office: CTE SA Mulhouse
 Architecture Office: Chaix & Morel
 et associés, Paris



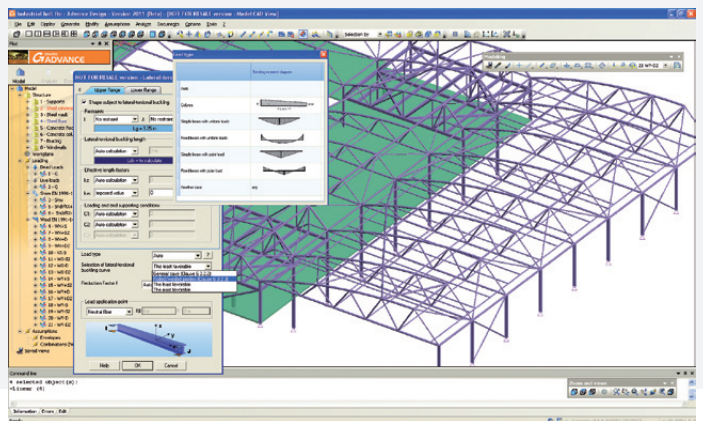
La Fondation, University of Economic, Juridical and
 Social Sciences
 Design Office: Hagemüller Ingenieure, Colmar
 Architecture Office: Moraglio - Pilson / Emergence

Eurocodes

Advance Design integrates the latest version of the Eurocodes

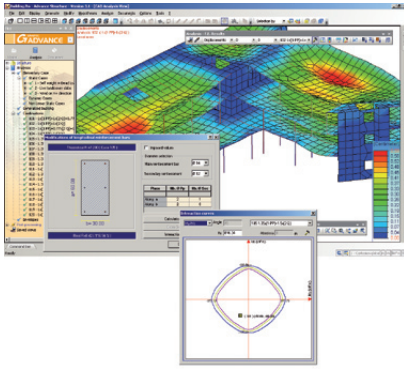
The Eurocodes are a set of about sixty European standards for coordinating analysis and design methods in the construction field (concrete structures, steel structures, mixed concrete/ steel structures, masonry, timber, aluminium, rules for geotechnical works and earthquake-resistant rules).

Version 2011 of Advance Design integrates these standards, notably EC1 for actions (actions, combinations, climatic generator, etc...), EC2 for dimensioning reinforced concrete, EC3 for dimensioning steel shapes and connections, EC8 for seismic analysis. Coming next are EC5 for timber and EC4 for mixed structures.



1

RAPIDLY MODEL A STRUCTURE AND LOADINGS



The software has a complete library for structural elements, supports and loads. These easily customizable elements adapt to all situations: numerical eccentricities, braces, ties with initial prestressing, etc.

The CAD has advanced functions that are simple and adapted to modeling for structural analysis. For example, by indicating the presence of levels, Advance Design automatically places elements on the right side. In this mode, a wall is created with 2 clicks!

For loadings, the generation of climatic and seismic actions is also automated. The “load case family” concept completely automates the creation of combinations, even in mixed models, taking into account load cases concomitances.

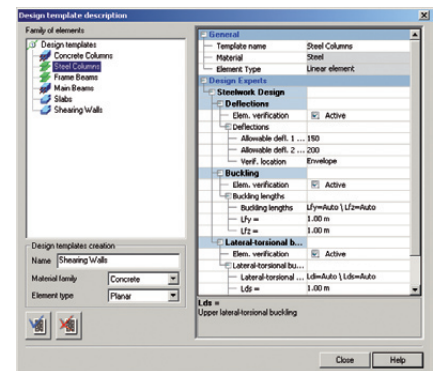
Once the model is finished, Advance Design controls the coherency. If no errors are found... your model is ready for analysis!

2

STRUCTURE ANALYSIS TO DESIGN IN ONE CLICK!

Advance Design calculation sequence automatically links the meshing, calculation and design (reinforced concrete / steelwork). With advanced features, the scientific components of Advance Design facilitate the updates of your project:

- Meshing controlled through global and local parameters. Each element has its own properties for locally setting specific behavior (e.g., progressive meshing along an element), using geometric elements (e.g., points, lines, surfaces) to impose specific boundary conditions.
- Static and dynamic calculation, linear and non-linear analysis, large displacements, generalized buckling, etc.
- Calculation of theoretical reinforcement of reinforced concrete elements, interaction curves on any sections, reinforcement ratio estimates, etc.
- Verification of buckling, lateral-torsional buckling and deflections of steel elements, optimization of profiles, design of connections, etc.



3

RESULTS POST-PROCESSING: AVOID REPETITIVE TASKS!

All of our analysis proves that the majority of your time is spent on results post-processing, calculations and creation of the final design report.

The post-processing of all results (finite elements, reinforced concrete, steelwork) within an integrated environment facilitates the comprehension of the model operation and the creation of complete and coherent documents.

In addition, Advance Design provides a revolutionary solution for automation! With its “Result Memory” technology, you no longer have to take screen captures or recreate reports... Advance Design takes care of everything!

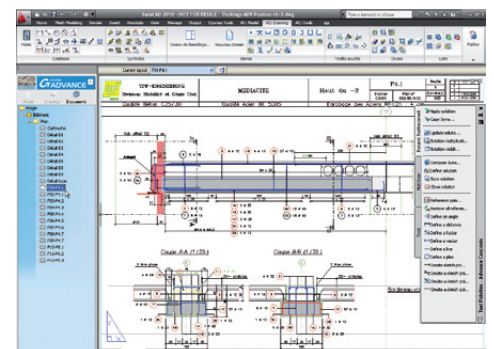
Would you like to enhance your study and facilitate its comprehension by your partners? Place several cameras around the structure and send your partners a video (AVI format) of the deformed structure!

4

CREATE GENERAL ARRANGEMENT DRAWINGS WITH ADVANCE CONCRETE AND ADVANCE STEEL

Advance Design is part of the GRAITEC Advance CAD / Design suite. This modular end-to-end solution offers the advantage of fluid workflow that will save you a considerable amount of time.

For example, perform a structural analysis (e.g., load distribution, bracing study, seismic analysis, etc.) create calculation reports in Advance Design, start the creation of drawings in Advance Steel, without re-entering data, in the best conditions!



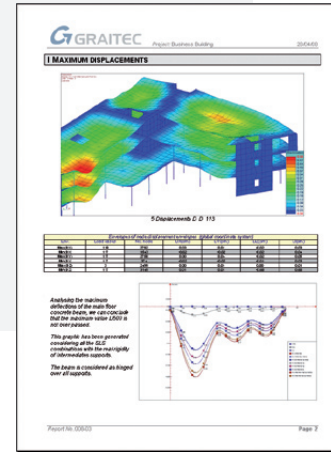
TPF Engineering / “Les Jardins de la Source” - block of flats

Result Memory

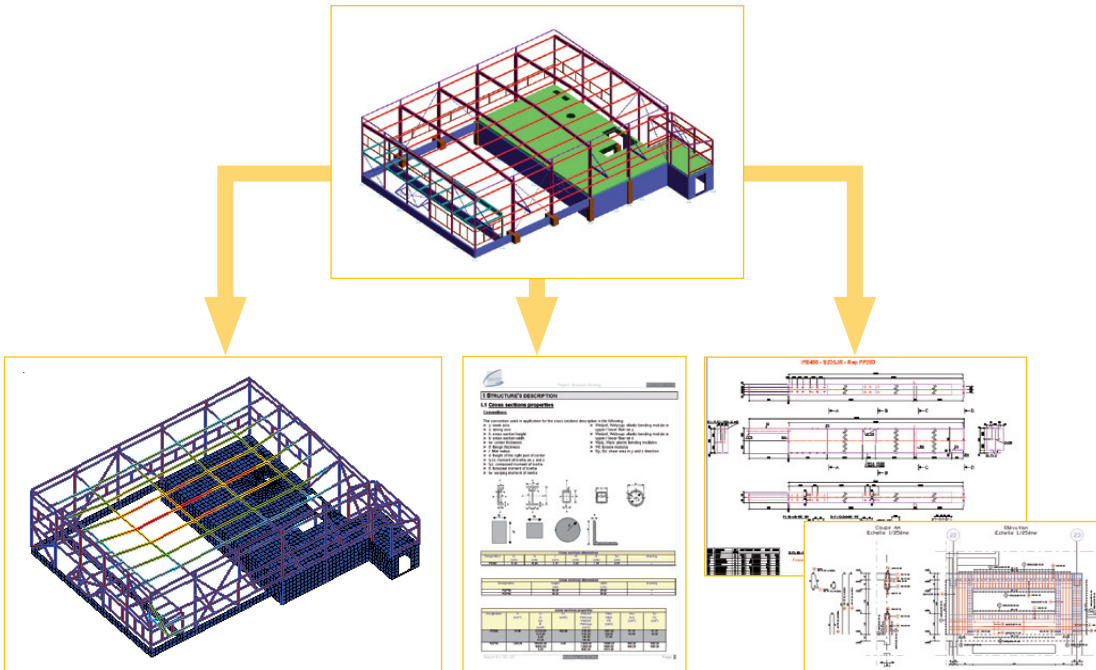
Result Memory technology. How does it work?

When a graphical view is stored in memory, Advance Design not only saves the current image, but also the context that generated this image: view angle, zoom, filter of displayed elements, colors and display characteristics, nature of results (iso-values of displacements, values of theoretical reinforcement, magnified stress), load cases, units, etc.

The views saved, using this technology, may be inserted in a design report, whose global content (current hypotheses, graphical views) may also be stored in memory. During each calculation, Advance Design automatically recreates all the graphical views and rewrites the design report using the specified criteria.



Advance Design® is part of the GRAITEC structural BIM solution, automating the entire structural design process, from engineering analysis and design to detailing and fabrication.



Reports

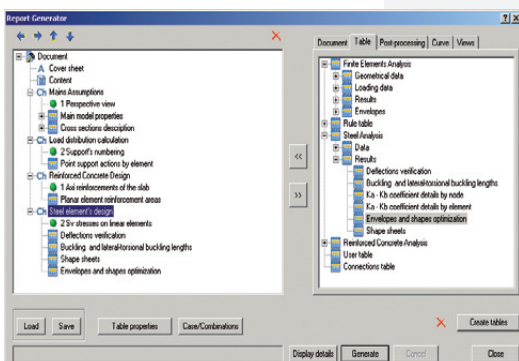
Create clear and efficient reports in a matter of minutes!

Advance Design provides an intelligent and extremely powerful report builder. It creates the content pertaining to the model by filtering available hypotheses and results.

You can create reports with your requirements and include:

- hypotheses
- graphs or drawings with ID numbers
- results in table or graphical format
- a cover page with an index table and revision dates table
- a summary and automatic page numbering

The automated integration of external files (e.g., recall of conventions) and the use of Microsoft Word® templates enable the use of your graphical layout. And with "Result Memory" technology, the entire content is systematically updated!

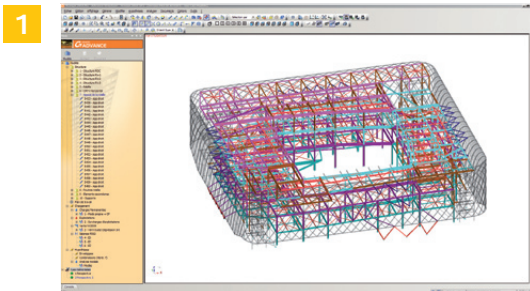




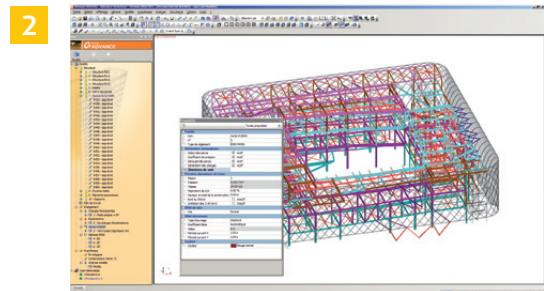
Minatec Amphitheatre, Grenoble, France
 Architecture Office: Groupe6, architectes
 Design office: TEC BAT, Bourgoin-Jallieu
 Photo : J.C Caillaud, Groupe6

YOUR PROJECT AT A GLANCE

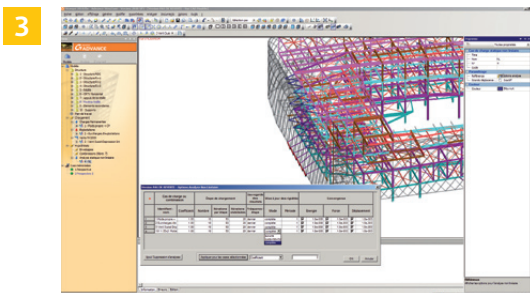
Rapidly model your structure, loadings and supports, and control your hypotheses.



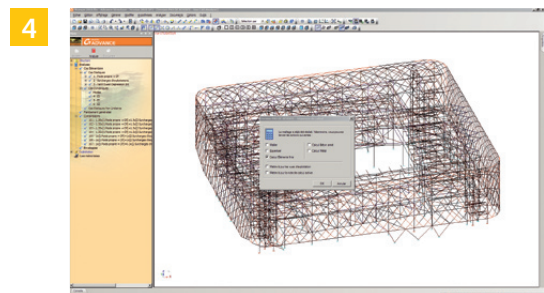
Structure modeling



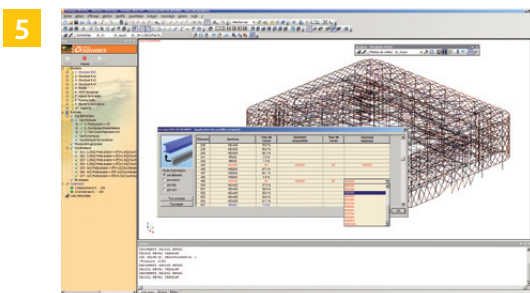
Automatic generation of climatic loads



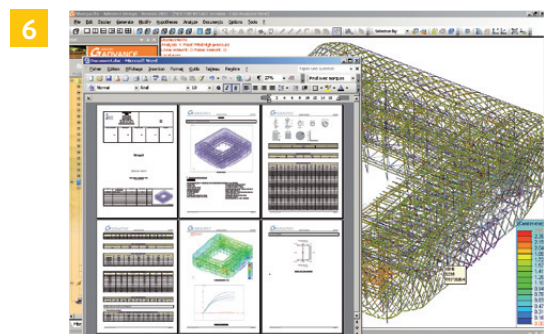
Hypotheses definition



Meshing and calculation

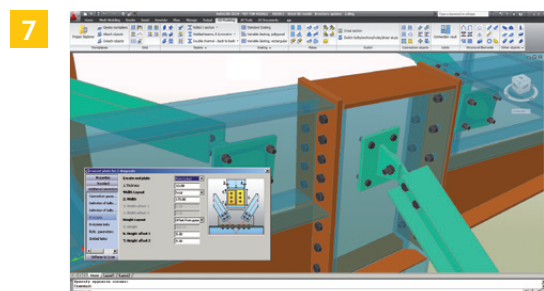


Graphical post-processing



Automatic creation of calculation reports

Advance Design eliminates repetitive tasks linked to the post-processing by storing graphical views and reports and replaying them at each calculation iteration. Next, the creation of all general arrangement drawings is automated using GRAITEC Advance suite!



Link to Advance Steel for drawing creation

CHU Hospital Heliport, Nantes, France
Architecture Office: SEXTANT Architecture
Design office: ETCO Ingenierie / CALDER Ingenierie



GRAITEC ADVANCE

THE STRUCTURAL BIM SOLUTION FOR CONSTRUCTION PROFESSIONALS

Better tools, improved workflow, increased productivity...

- 100% dedicated to Structural Design, Engineering and Detailing
- Automatically creates and updates construction and fabrication drawings
- FEM analysis and structural optimization
- Multi-user environment and integrated document management
- Eliminates data re-entry with unique bi-directional synchronization technology



Advance Steel

Advance Steel® is specifically designed for structural engineers and steel detailers who require a professional and easy-to-use 3D structural steel detailing software that automates the production of drawings, BOMs and NC files. Advance Steel® drastically increases productivity and drawing quality, while reducing the risk of errors.



Advance Design

Advance Design® is specifically dedicated to structural engineers who require a professional and easy-to-use solution for simulating and optimizing all their projects. Advance Design includes: a user-friendly structural modeler, an automatic load generator, a powerful FEM engine, comprehensive wizards for designing concrete and steel members according to Eurocodes and efficient post-processing and report generators.



Advance Concrete

Advance Concrete® is specifically designed for structural engineers and reinforced concrete detailers who require a professional and easy-to-use 3D software that automates the production of drawings, BOMs and NC files. Advance Concrete® drastically increases productivity and drawings quality, while reducing the risk of errors.

THE Software Suite that optimizes structural design and detailing... Are you ready for GRAITEC Advance?



Advance Design is a component of a project that is recognized as innovative in Europe. For this reason, it is backed by the EUREKA label (FT-EXPERT 3335 Project).

Minimum recommended configuration:

Pentium IV with min. 2 GHz, 2 GB RAM and 128 MB graphic card.
Windows 7, Windows Vista or Windows XP Professional.
This configuration may change depending on the evolution of operating systems.

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For almost 25 years, GRAITEC has been committed to developing high performance CAD and analysis software for the construction industry.

Over 30,000 customers now rely on GRAITEC's complete suite of fully compatible and integrated products covering design and detailing for the reinforced concrete and steel construction industries.

GRAITEC is a true software, engineering and R&D organization involved in the complete structural solution lifecycle: New technology R&D, CAD and design software development, quality assurance, training, support, specific solution/project consulting and outsourcing.

GRAITEC provides consistently improving cutting edge products matched by comprehensive support services to fulfil the highest production and quality requirements.

GRAITEC is a unique source for complete construction software expertise!

Headquartered in France, GRAITEC has subsidiaries in the USA, Canada, UK, Germany, Czech Republic, Romania, Russia and Singapore and works closely with Value Added Resellers worldwide.

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