Analysis

CATIA - Generative Part Structural Analysis 1 (GP1)

CATIA V5R18
Analysis

CATIA - Generative Part Structural Analysis

Address transparent and automatic structural analysis to promote up-front CAE during the design phase.

Product overview

CATIA-Generative Part Structural Analysis 1 (GP1) permits designers to perform fast and accurate part stress and displacement analysis. Its transparent and automated approach to part stress analysis is based solely on interactions with the physical definition of the part and its environment (as opposed to interacting with an FEM model). It permits more design/analysis iterations of part behaviour, earlier in the design cycle, to improve product performance. As a result of a common interface and unique integration with the CATIA geometric modeler, CATIA-Generative Part Structural Analysis 1 provides an easy to use and learn scalable environment for the designers and design engineers.

Product Highlights

- Promotes designer assessment of parts' mechanical behaviour and sizing.
- Unique native and associative CAD/CAE integration
- Fast and accurate stress and displacement results
- Easy to use and learn entry solution
- Tightly integrated with knowledge-based engineering

Product Key Customers Benefits

- No boundary between design and analysis

CATIA Generative Part Structural Analysis 1 (GP1) is an easy-to-use tool aimed at designers and design engineers. Due to native CAD/CAE integration, users can easily perform stress and displacement analyses of designs using a consistent interface, at any time in the design process. Structural analysis can be performed on solid, surface and wire frame geometry. The association of the analysis specifications, such as loads and restraints, with the design ensures users can work quickly and consistently. Users can size and validate their designs early in the development cycle, saving time and improving quality.

Straightforward Definitions ... Through a simple selection of geometric features, designers can define how a part is restrained and loaded. These specifications are, then, automatically incorporated in the finite element model, freeing users from dealing with a complex Finite Element Model definition. In addition, a panel is available to help the user understand how the Finite Element Model is related to the design and check its consistency. The restraint types
include clamps for completely fixed parts and sliders that represent sliding surfaces. Loads can include pressure, traction, moment of inertia, gravity, body forces, centrifugal forces and mass.

High performance Using the latest version of the ELFINI sparse solver tool, users can minimize the amount of consumed memory, gain time and therefore, perform large analyses quickly.

Productive analysis through easy and fast computation on large models Launch simultaneous computations on different processes easily, without having to go through complex VISUAL BASIC macro definitions. Users can simultaneously perform large model computations while continuing to work on other processes, greatly increasing user productivity.

Direct and dynamic results review Generative Part Structural Analysis 1 (GP1) helps designers understand the results of an analysis by graphically displaying areas of high stress and large displacement. Detailed analyses on complex parts can be handled in an intuitive and interactive manner. This includes producing cross sectional displays of contours, which can be manipulated dynamically. Values such as Von Mises stress criteria, displacement, and principal stresses are mapped onto the deformed 3D part and displayed as color contours. Results can also be displayed as arrows mapped onto part surfaces. Accuracy of results can be assessed by displaying a color contour plot that helps support decisions on further analysis refinement.

Controlled accuracy If needed, the user has the ability to create, modify and remove the finite elements and their properties, which are automatically generated. The user controls the size of the mesh on the entire part or on a specific area. Users also can employ linear or parabolic elements based on the required precision.

Knowledge-based technology You can capture the knowledge associated with your design analysis and perform optimization. The generative analysis specifications are recognized as knowledge parameters called sensors, providing measures that can be re-used. Thereby you will be able to set rules, checks, and formulas to use best practices and ensure compliance to corporate standards.

Report generation Reports can be automatically generated in HTML format. These reports provide clear and detailed information about the results of the analysis, including images associated with computations. This information is structured in a format which is easy to understand.

Data management The user has the ability to manage the external storage, and the temporary data directory. In addition to interactive analysis, a batch method can be to launch its analysis computation, enabling the concurrent engineering.
Other images
ABOUT CATIA V5R18

CATIA is Dassault Systemes’ PLM solution for digital product definition and simulation.

plm.3ds.com/CATIA