About SAMTECH

Founded in 1986, SAMTECH is now the European leading provider of scientific analysis/optimization software (FEA, MBS, MDO), professional solutions and associated services. SAMTECH develops and commercializes:

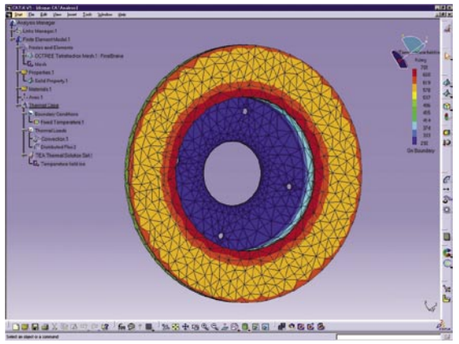
"***General-purpose software tools***": this SAMTECH offer includes the general linear and implicit non-linear Finite Element Analysis package SAMCEF with the CAD/CAE modeling environment FIELD, the general explicit and fast dynamics code EUROPLEXUS; the task management and optimization platform BOSS quattro; TEA Mecano and TEA Thermal CAA V5 Based as non-linear thermo-mechanical solution embedded in CATIA V5 and SAMCEF Gateway CAA V5 Based, the SAMCEF integrated interface within CATIA V5.

"***Professional solutions***": this SAMTECH offer is based on its general-purpose software tools and is dedicated to specific domains of application like rotor dynamics, modeling of composite structures, mechatronic modeling of machine-tools, modeling of large deployable or inflatable structures, modeling of high voltage substations, modeling of pipes for automotive industry…

"***Third party and customized solutions***" like the SAFE tool (fatigue analysis of aeronautic structures) and the Application COMPOSITES (analysis of aeronautical structures made of composite materials) from AIRBUS, where SAMTECH provides its clients with services such as development, reengineering, packaging and deployment of proprietary professional solutions on the customer site.

"***Customized multi-physics solutions***", based on OOFELIE. OOFELIE is commercialized by Open Engineering, the SAMTECH subsidiary, that allows SAMTECH to be present on the multi-physics design markets and to provide services for the development of original highly coupled analysis solutions covering specific needs.

Visit **www.samcef.com** for further details on SAMTECH Product/Service offer!



- Need some information about SAMCEF Gateway ?
- Need some information about linear, non-linear modeling and thermal analysis with SAMCEF Gateway ?
- Need some information about SAMTECH expertise ?

Contact our specialists !

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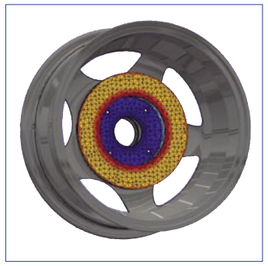
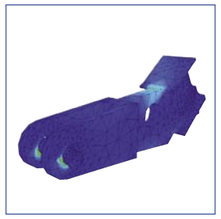
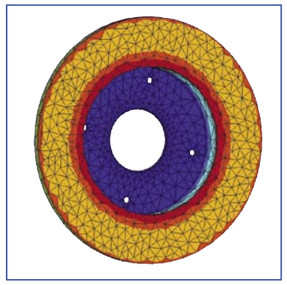
SAMTECH, Integrating CAE towards Professional Solutions

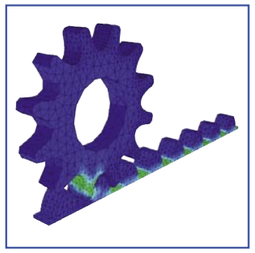
SAMCEF Gateway

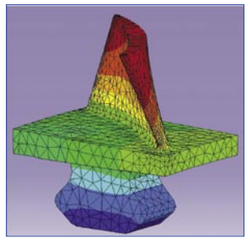
Driving SAMCEF simulations from CATIA V5











SAMCEF Gateway offers to SAMCEF users numerous facilities for the modeling and the analysis of Linear and Non-linear problems within CATIA V5.

DASSAULT SYSTEMES SOFTWARE PARTNER

SAMTECH, Integrating CAE towards Professional Solutions

CAA V5 BASED

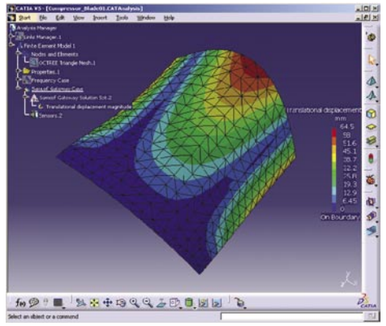
SAMCEF Gateway allows SAMCEF users to export SAMCEF data from a CATIA V5 analysis document. SAMCEF Gateway gives access to linear static, modal, non-linear structures and thermal analyses of SAMCEF. The post-processing of SAMCEF results is also driven by SAMCEF Gateway for all problems that have been defined within CATIA V5.

YOUR BENEFITS: AVOID EXPENSIVE RE-DESIGN, REDUCE DESIGN CYCLES

With SAMCEF Gateway, CATIA V5 users are able to quickly produce linear, non-linear, mechanical and thermal models by adding specific features to an existing model built within their environment.

SAMCEF Gateway speeds up the design work thanks to the use of a single user interface for the geometry definition, the analysis data definition, the meshing, the translation into SAMCEF files and the post-processing.

SAMCEF Gateway provides users with extended solving capabilities, in a fully associative environment.



With SAMCEF Gateway, SAMTECH answers customer needs from medium and large industries wishing using SAMCEF embedded in CATIA V5 in order to eliminate the expensive iterations during design process.

WHATEVER YOUR INDUSTRIAL SECTOR

With SAMCEF Gateway, SAMTECH targets design activities of SAMCEF customers from the whole mechanical industry (Aeronautical, Space, Defense, Ship Building, Energy, Car, Trucks, Railway, Sport industry…), using CATIA V5 as CAD and F.E. Analysis platform.

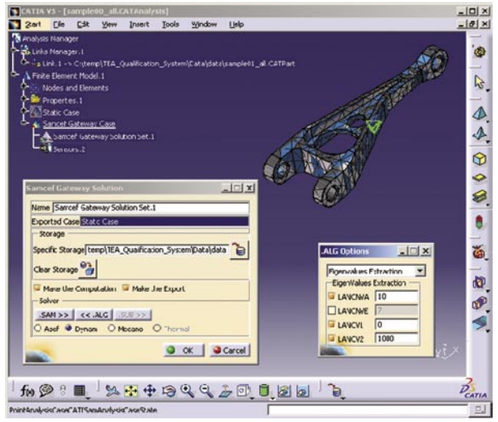
ADVANCED F.E. ANALYSIS CAPABILITIES

The domains addressed by SAMCEF Gateway are the following:

- Linear F.E. static, dynamic analyses;
- Non-linear structural Analysis;
- Thermal Analysis.

SOLUTION SETS

- The linear static analysis solution set of SAMCEF Gateway produces a SAMCEF Asef access;
- The modal analysis solution set of SAMCEF Gateway produces a SAMCEF Dynam access;
- In the non-linear structures analysis solution set of SAMCEF Gateway, a Newton-Raphson procedure is used to solve the mechanical equilibrium equations with the multi-frontal solver of SAMCEF Mecano. The solver strategy selection is automatically performed. You can use the very robust contact algorithms of SAMCEF Mecano allowing large relative displacements and rotations;
- In the steady state thermal analysis solution set of SAMCEF Gateway, a Newton-Raphson procedure is used to solve thermal equilibrium equations with the multi-frontal solver of SAMCEF Thermal. The solver strategy selection is automatically performed.



SAMCEF Gateway Case

BOUNDARY CONDITIONS

- **Restraints**

  Different restraints can be imposed to fix all the degrees of freedom on a geometry selection (clamps), to fix some degrees of freedom along the normal of a surface (surface slider), to fix any combination of degrees of freedom (advanced restraint) or to generate statically determinate supports on a part (Isostatic restraint).

- **Enforced displacement**

  Translational and rotational displacements can be prescribed by the user.

- **Imposed temperatures**

  Temperatures can be imposed on CAD faces of volumic parts.

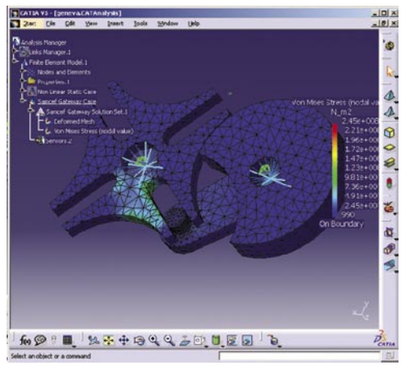
MECHANICAL LOADS

- **Distributed Force or Moment**

  The definition of a distributed force system equivalent to a pure force at a point or of a local moment is allowed.

- **Force Density**

  It is possible to generate a line force field of given uniform intensity on a part edge (Line Force Density), a surface traction field on a part face (Surface Force Density) or a volume body force field on a part (Body Force).



Geneva Mechanism - Von Mises Stress

THERMAL LOADS

- **Imposed point flux**

  The simplest thermal load is a point flux that can be defined on a selection of points.

- **Imposed distributed flux**

  It is possible to apply a distributed flux over a surface.

- **Convection coefficient and fluid temperature**

  Convection coefficient and fluid temperature can be defined on each faces of volumic parts.

MODELING ENVIRONMENT

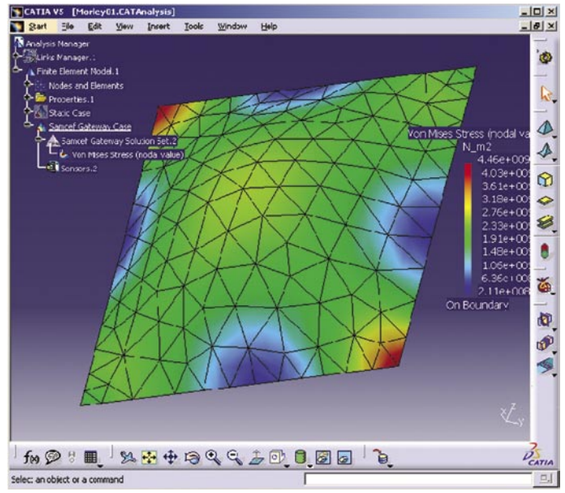
SAMCEF Gateway is perfectly embedded in CATIA V5 for the modeling, the linear, non-linear structural and thermal analysis and the post-processing of structures.

Results are post-processed graphically in the form of isovalues or as animations.

The analysis of complex structures entails the pre-processing of a huge amount of data and the post-processing of stresses or temperature fields for example. SAMCEF Gateway benefits from advanced visualization tools of CATIA V5, allowing very efficient and straightforward pre- and post-processing of the above-mentioned analyses.

DOCUMENTATION

For direct access to information, the Users Guide and Help manual are available via your favorite navigator (HTML).



Technical Characteristics :

SAMCEF Gateway offers linear, static, modal, non-linear, structural and thermal analyses directly accessible from CATIA V5 environment. The users benefit from basic features of SAMCEF Software.

General capabilities
- Solution based on CATIA V5 GPS (Generative Part Structural Analysis)
- Control of mesh refinement

Formulation
- Finite Elements

Analysis types and solvers
- Linear static analysis (SAMCEF Asef)
- Linear modal analysis (SAMCEF Dynam)
- Non-linear structures analysis (SAMCEF Mecano)
- Non-linear steady state thermal analysis (SAMCEF Thermal)

Element Library
- 3D volume, shell and beam
- Linear or quadratic

Restraints
- Clamps
- Advanced restraints
- Surface Slider

Rigid virtual part
- Rigid elements between a point node and a surface or an edge

Loads and boundary conditions
- Enforced displacement (translation or rotation)
- Distributed Force or Moment
- Lineic Force Density
- Surfacic Force Density
- Body force
- Pressure field
- Imposed temperature
- Imposed flux
- Convection coefficient and fluid temperature

Material laws
- Isotropic
- Elastic, elastoplastic
- Conductivity

Available results
- Deformed configurations
- Frequences and mode shapes
- Von Mises stresses
- Plastic strains
- Contact pressure
- Successive configurations
- Temperature field
- Flux field

PLATFORMS

SAMCEF Gateway is available on Windows and Unix.

Minimum prerequisites:

- GPS