About SAMTECH

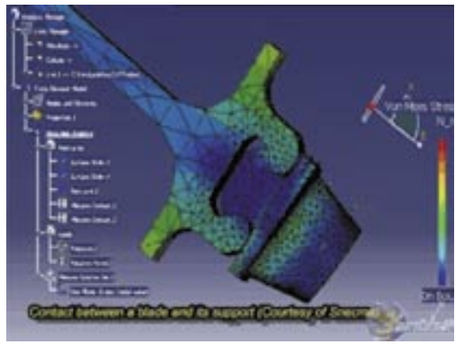
Founded in 1986, SAMTECH is now the European leading provider of scientific analysis/optimization software, professional solutions and associated services. SAMTECH develops and commercializes :

"Generic purpose software tools" :
- the general implicit linear and non-linear Finite Element Analysis package SAMCEF,
- the general explicit and fast dynamics code EUROPLEXUS,
- the CAD/CAE modeling environment FIELD,
- the task management and optimization platform BOSS quattro,
- TEA Mecano and TEA Thermal CAA V5 Based (non linear thermo-mechanical solution embedded in CATIA V5)

"Professional solutions" answering to dedicated industrial needs:
- SAMCEF Rotor (Rotor Dynamics),
- SAMCEF Bolt (Composite assemblies analysis),
- SAMCEF HVS (Analysis of High Voltage Substations)

"Third party and customized solutions" like SAFE from Airbus (Fatigue analysis), where SAMTECH provides its clients with editor professional services for the reengineering, the development, the packaging and the deployment of proprietary professional solutions

"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.



- Need some information about TEA Mecano?
- Need some information about non-linear modeling and mechanical analysis with SAMCEF Mecano ?
- Need some information about SAMTECH expertise ?

Contact our specialists !

SAMTECH Headquarters
Parc Scientifique du Sart-Tilman
Rue des Chasseurs-Ardennais, 8
B-4031 Angleur-Liège, Belgium
Tel. : +32 4 361 69 69
Fax : +32 4 361 69 80
http://www.samcef.com

SAMTECH France
Paris
14, avenue du Québec
Bât. K 2.1, SILIC 618
Villebon-sur-Yvette
F-91945 Courtabœuf Cedex, France
Tel. : +33 1 69 59 22 80
Fax : +33 1 64 46 29 65

Toulouse
11, rue Marius Terce
F-31300 Toulouse, France
Tel. : +33 5 34 55 20 99
Fax : +33 5 34 55 15 00

SAMTECH Germany GmbH
Oskar-Kalbfell-Platz 8
D-72764 Reutlingen, Germany
Tel. : +49 7121 92 20 0
Fax : +49 7121 92 20 90

SAMTECH Italia
Via Guido d'Arezzo, 4
I-20145 Milano, Italy
Tel. : +39 02 48 559 407
Fax : +39 02 46 94 998

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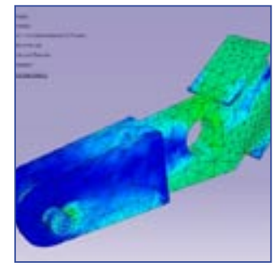
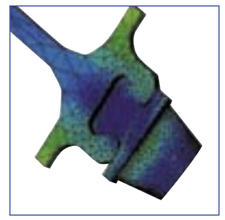
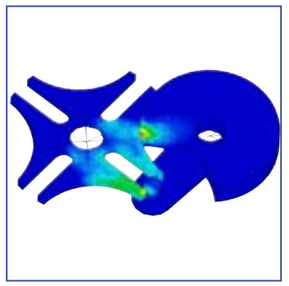
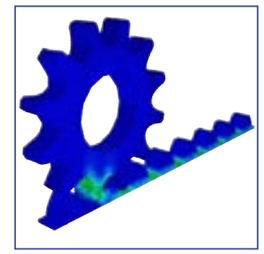
TEA Mecano

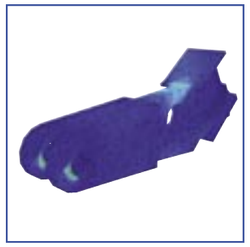
Mechanical Transparent Extended Analysis











SAMTECH brings its specialized expertise to make SAMCEF Mecano available within CATIA V5 environment.

TEA Mecano offers to CATIA V5 users numerous facilities for the modelling and the analysis of non-linear mechanical problems.

DASSAULT SYSTEMES SOFTWARE PARTNER

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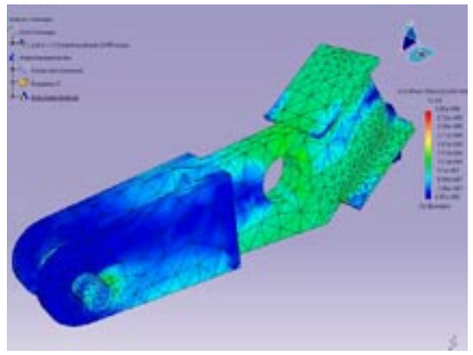
CAA V5 BASED

Taking into account non-linear material behavior, TEA Mecano users can analyze the quasi-static behavior of 3D structures from CATIA V5 environment. They can easily obtain the Von Mises stresses, plastic strains, contact pressure and successive configurations. A variety of boundary conditions (clamp, surface slider, advanced restraint, iso-static restraint, enforced displacement, ...) and mechanical loading (distributed force, moment, force density, ...) is available.

NON-LINEAR MECHANICAL ANALYSIS WITH CONTACT CONDITIONS

TEA Mecano provides you with a comprehensive and very powerful software for non-linear mechanical analysis. It allows the use of 3D linear or quadratic volume and shell elements. The material behavior can be Elastic or Elasto-plastic. Rigid virtual parts can be defined between a point and a surface or an edge.

Flexible-Flexible contact conditions can be defined between 3D geometrical faces. It is also possible to recover GPS contacts definition.



FOR DESIGNERS, MECHANICAL AND STRESS ENGINEERS

SAMTECH enables CATIA V5 users to perform advanced non-linear mechanical simulations analysis, allowing Designers, Mechanical Engineers and Stress Engineers to predict the complete functional performances of their products, directly from within their familiar CATIA V5 environment.

The result is a new product named TEA Mecano.

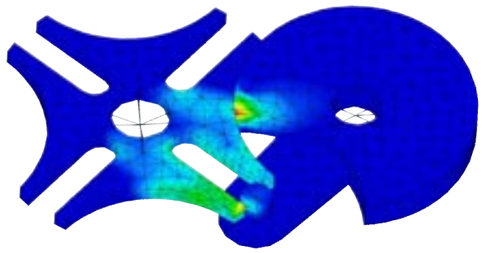
YOUR BENEFITS: AVOID EXPENSIVE RE-DESIGN, REDUCE DESIGN CYCLES

CATIA V5 designers are able to quickly produce non-linear models by adding specific mechanical features to an existing linear model built within their environment.

TEA Mecano speeds up the design work thanks to the use of a single user interface for the geometry definition, the mechanical analysis data definition, the meshing, the launch of the solver and the post-processing.

TEA Mecano provides users with extended non-linear mechanical solving capabilities, in a fully associative environment.

With TEA Mecano, SAMTECH answers customer needs from medium and large industries by proposing the transparent use of extended FE mechanical techniques very early in the design process, to eliminate the expensive iterations during design process.



BETTER COMPATIBILITY WITH DETAILED ENGINEERING

Users benefits from SAMTECH recognized expertise in detailed engineering and software quality, insofar as with TEA Mecano, users can perform sophisticated mechanical simulation within a complete and integrated CAE software for mechanical design.

WHATEVER YOUR INDUSTRIAL SECTOR

With TEA Mecano, SAMTECH's aim is to target design activities of customers from the whole mechanical industry (Aeronautical, Space, Defense, Ship Building, Energy, Car, Trucks, Railway, Sport industry, ...).

ADVANCED FEA/CAE CAPABILITIES

The domains addressed by SAMTECH are the following :

- Non-linear Mechanical Finite Element Analysis
- Non-linear structures and flexible-flexible contact
- Large deformations
- Mixed kinematical joints and non-linear structures

SOLUTION ALGORITHMS

For the quasi-static analysis of TEA Mecano, 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. TEA Mecano uses the very robust contact algorithms of SAMCEF Mecano allowing large relative displacements and rotations.

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.

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).

MODELLING ENVIRONMENT

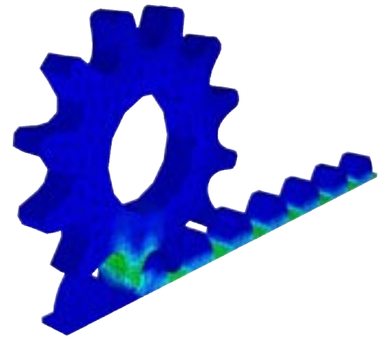
TEA Mecano is perfectly embedded in CATIA V5 for the modeling, the non-linear mechanical analysis and the post-processing of structures.

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

The non-linear mechanical analysis of complex structures entails the pre- and post-processing of a huge amount of data. TEA Mecano benefits of advanced visualization tools of CATIA V5, allowing very efficient and straightforward pre- and post-processing of non-linear mechanical analyses. The results that can be post-processed includes Von Mises stresses, plastic strains, contact pressure and successive configurations

DOCUMENTATION

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



Technical Characteristics :

TEA Mecano offers non-linear mechanical analysis directly accessible from CATIA V5 environment. The users benefit from features of SAMCEF Mecano (non-linear material laws, large deformations, powerful contact algorithms).

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

Formulation
- Finite Elements

Transparent Non-Linear Analysis
- Minimum data definition for static analysis
- Automatic choice of solver strategy
- Very robust contact algorithms
- Automatic storage of intermediate configurations

Element Library
- 3D volume
- Linear or quadratic

Material laws
- Elastic and elasto-plastic material laws

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/rotation)
- Distributed Force or Moment
- Lineic Force Density
- Surfacic Force Density
- Body force
- Pressure field

Contact conditions
- Flexible-flexible contact defined between geometrical faces

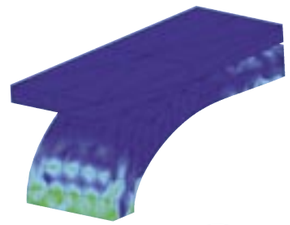
Available results
- Von Mises stresses
- Plastic strains
- Contact pressure
- Successive configurations

PLATFORMS

TEA Mecano is available on Window NT and 2000.

Prerequisites :

- GPS
- CATIA release : CATIA V5R10
- Service Pack 3



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