About SAMTECH

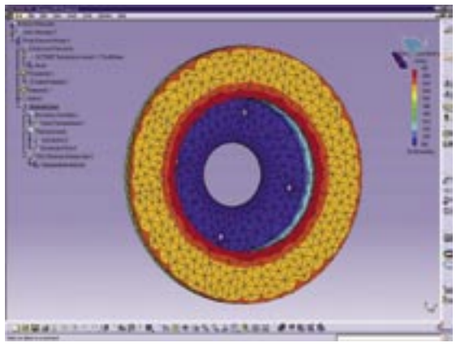
Founded in 1986, SAMTECH is now the European leading provider of scientific analysis/optimization software, professional solutions and associated services. SAMTECH develops and commercializes :

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

Contact our specialists !

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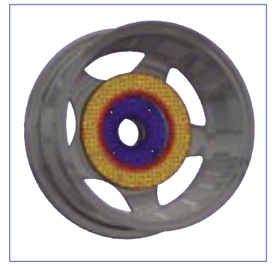
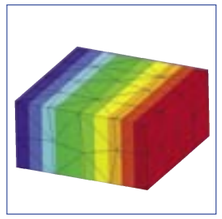
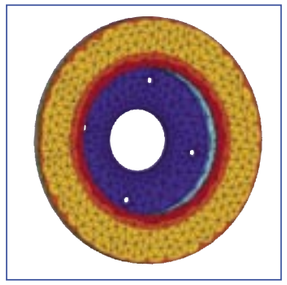
SAMTECH, Integrating CAE towards Professional Solutions

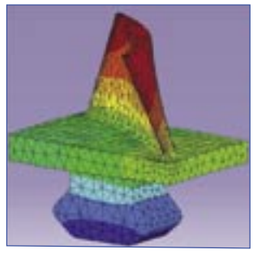
TEA Thermal

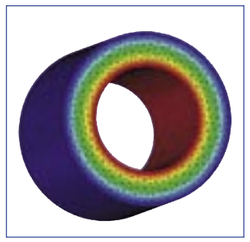
Thermal Transparent Extended Analysis











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

TEA Thermal offers to CATIA V5 users numerous facilities for the modelling and the analysis of steady state heat transfer problems.

DASSAULT SYSTEMES SOFTWARE PARTNER

SAMTECH, Integrating CAE towards Professional Solutions

CAA V5 BASED

Taking into account heat transfer due to conduction and convection, TEA Thermal users can analyze the stationary thermal behavior of 3D structures from CATIA V5 environment. They can easily obtain the temperature distribution. A variety of boundary conditions is available, from imposed temperature to imposed flux or convection coefficient and fluid temperature.

FOR DESIGNERS AND THERMAL ENGINEERS

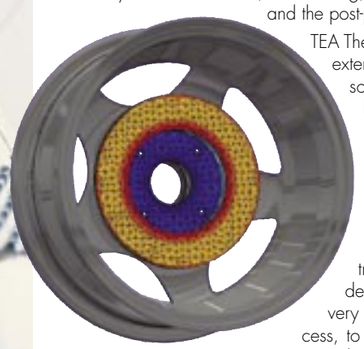
SAMTECH enables CATIA V5 users to perform advanced non-linear thermal simulations analysis, allowing Designers and Thermal Engineers to predict the complete thermal performances of their products, directly from within their familiar CATIA V5 environment.

The result is a new product named TEA Thermal.

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

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

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

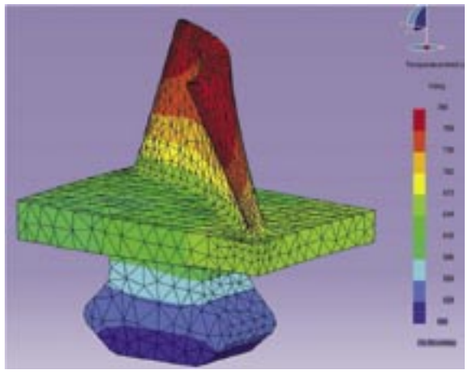


TEA Thermal provides users with extended non-linear thermal solving capabilities, in a fully associative environment.

With TEA Thermal, SAMTECH answers customer needs from medium and large industries by proposing the transparent use of extended FE thermal 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 Thermal, users can perform sophisticated thermal simulation within a complete and integrated CAE software for thermal design.



WHATEVER YOUR INDUSTRIAL SECTOR

With TEA Thermal, 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, ...) which perform thermal analysis combined with mechanical analysis.

ADVANCED FEA/CAE CAPABILITIES

The domains addressed by SAMTECH are the following :

- Non-linear Thermal Finite Element Analysis
- Stationary thermal Analysis
- Convection and fluid temperature
- Thermal flux

CONDUCTION HEAT TRANSFER

TEA Thermal provides you with a comprehensive and very powerful software for thermal steady state analyses. For the conduction analysis with TEA Thermal, 3D linear and quadratic volume are available. The conduction is isotropic.

SOLUTION ALGORITHMS

For steady state analysis, 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.

BOUNDARY CONDITIONS

- **Imposed temperatures**
  Temperatures can be imposed on CAD faces of volumic parts.

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.

MODELLING ENVIRONMENT

TEA Thermal is perfectly embedded in CATIA V5 for the modeling, the thermal analysis and the post-processing of structures.

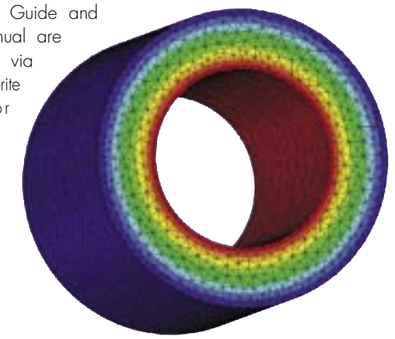
Results are post-processed graphically in the form of isovalues or as animations.

The thermal analysis of complex structures entails the pre-processing of a huge amount of data and the post-processing of temperature fields. TEA Thermal benefits of advanced visualization tools of CATIA V5, allowing very efficient and straightforward pre- and post-processing of thermal analyses. The results that can be post-processed includes:

- Temperature fields
- Heat flux distribution

DOCUMENTATION

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



Technical Characteristics :

TEA Thermal offers non-linear thermal analysis directly accessible from CATIA V5 environment. The users benefit from features of SAMCEF Thermal (convection, conductivity, temperature flux).

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

Formulation
- Finite Elements

Transparent Non-Linear Analysis
- Steady state heat transfer
- Automatic choice of solver strategy

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

Material laws
- Conductivity

Boundary conditions
- Imposed temperature
- Imposed flux
- Convection coefficient and fluid temperature

Available results
- Temperature field
- Flux field

PLATFORMS

TEA Thermal is available on Window NT and 2000.

Prerequisites :

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