Technical Specification

1 April 2013

Frontend Module

- For functionality and CAD/EDA import filter, see technical specifications of the CST STUDIO SUITE(tm)

Mechanics Solver

- Isotropic material properties
- Temperature dependent Young's modulus
- Displacement boundary condition
- Traction boundary condition
- Thermal deformation
- Large deformations (nonlinear problem)
- Import of force densities from EM-solvers
- Various Stress plots: Von Mises, Hydrostatic and Tensor components
- Strain plot including the visualization of the volumetric strain
- Displacement plot including a deformed mesh plot
- Export of deformed structure to CST MICROWAVE STUDIO®
- Nonlinear solver computes the Green-Lagrange and Almansi strain as well as the 2nd Piola-Kirchhoff and Cauchy stress tensors

Thermal Stationary Solver Module

- Automatic mesh generation
- Isotropic and anisotropic material properties
- Bioheat material properties
- Nonlinear material properties (thermal conductivity)
- Boundary conditions: isothermal with fixed or floating temperature, adiabatic (no thermal fluxes), open
- Sources: fixed and floating temperatures, heat sources, eddy current and stationary current loss fields, volume/surface power loss distributions in dielectric or lossy metal materials imported from CST MICROWAVE STUDIO or CST EM STUDIO, crashed particle loss distribution from CST PARTICLE STUDIO®

- Tangential heat flux (insulating) / normal heat flux (with fixed or floating temperature) / open boundary-conditions

- Heat transfer by convection and radiation through surfaces

- Convection for human voxel models

- Heat transfer by conduction in volumes

- Network distributed computing for optimizations, parameter sweeps and remote calculations (option)

Thermal Transient Solver Module

- Automatic mesh generation

- Isotropic and anisotropic material properties

- Bioheat material Properties

- Nonlinear material properties (thermal conductivity)

- Boundary conditions: isothermal with fixed or floating temperature, adiabatic (no thermal fluxes), open

- Sources: fixed and floating temperatures, heat sources, eddy current and stationary current loss fields, volume/surface power loss distributions in dielectric or lossy metal materials imported from CST MICROWAVE STUDIO®, crashed particle loss distribution from CST PARTICLE STUDIO®

- Tangential heat flux (insulating) / normal heat flux (with fixed or floating temperature) / open boundary-conditions

- Heat transfer by conduction in volumes

- Convection for human voxel models

- Heat transfer by convection through surfaces

- Network distributed computing remote calculations (option)

Post Processing

- 2D and 3D field vizualisation

- Integration and vizualisation of fields along arbitrary paths

- Advanced reporting facilities

- Multiple 1D result view support

- Online visualization of intermediate results during simulation

- Import and visualization of external xy-data

- Copy / paste of xy-datasets

- Fast access to parametric data via interactive tuning sliders

- Hierarchical result templates for automated extraction and visualization of arbitrary results from various simulation runs. These data can also be used for the definition of optimization goals

Automation

- Fully parametric 3D modelling

- VBA compatible macro language

- Automatic macro recording

- OLE automation server

- Template based postprocessing

- Automatic, multi-dimensional parameter sweeps

- Automatic structure optimization for arbitrary goals using built-in optimizer

Documentation

- CST STUDIO SUITE™ - Getting Started

- CST MPHYSICS STUDIO® - Workflow and Solver Overview

- Online Help System, including step-by-step tutorials

Minimum Hardware Requirements

- Intel® Xeon® based PC, 4GB RAM, DVD-Drive, at least 20 GB of free hard disc space.

- Fully OpenGL compliant graphic card

- Windows XP Professional, Windows Vista, Windows 7

- All solvers support RedHat Enterprise Linux (RHEL) 4.x und 5.x.

- Hardware recommendation depends on your application. If in doubt, please contact your local sales office for further information.

General

- CST MPHYSICS STUDIO® is a configurable tool with a choice of options. Please contact your local sales office for further information.