

CST EM STUDIO(tm)

Technical Specification

7 February 2007

Frontend Module

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

Electrostatics Field Solver Module

- Choice of Cartesian or tetrahedral meshing
- Automatic mesh generation and adaptive mesh refinement
- Source types: fixed and floating potentials, charges on PEC solids and piecewise constant charge distributions
- Boundary conditions: electric, magnetic, open
- Automated capacitance calculation
- Force and torque calculation

Magnetostatics Field Solver Module

- Choice of Cartesian or tetrahedral meshing
- Automatic mesh generation and adaptive mesh refinement
- Source types: coils, permanent magnets, DC current distribution, current paths, external homogeneous field
- Boundary conditions: electric, magnetic, open
- Nonlinear materials
- Automated inductance calculation
- Force and torque calculation

Stationary Current Field Solver Module (DC)

- Automatic mesh generation and adaptive mesh refinement
- Source types: current ports, current paths, potentials
- Automated conductance calculation

Low Frequency Field Solver Module

- Fullwave solver

- Magnetoquasistatics solver
- Electroquasistatics solver (optional extension of the low frequency field solver module)
- Choice of Cartesian or tetrahedral meshing
- Automatic mesh generation and adaptive mesh refinement
- Source types: voltage sources, current paths, coils, potentials
- Boundary conditions: electric, magnetic
- Force and torque calculation
- Loss- and energy density monitors

Thermal Solver Module (Stationary)

- Source types: fixed and floating temperatures, heat sources, loss- and current-fields from an electromagnetic simulation performed by CST EM STUDIO™ or CST MICROWAVE STUDIO®
- Radiation model
- Convection model
- Automatic mesh generation
- Boundary conditions: isothermal with fixed or floating temperature, adiabatic (no thermal fluxes)

Post Processing

- 2D and 3D field visualisation
- Integration and visualisation of fields along arbitrary paths
- Flux integration
- Force and torque calculation
- Capacitance- / inductance / conductance calculation
- Export of electromagnetic field data
- Advanced reporting facilities
- Geometry and mesh export to MAFIA 4

All solver modules

- Fully parameterised (initially or subsequently)
- VBA compatible macro language
- Automatic macro recording
- OLE automation server
- Automatic, multi-dimensional parameter sweeps
- Powerful optimiser (Powell and Quasi-Newton type, advanced multilevel interpolation schemes)

Optional Features - Not included in Standard Configuration

Documentation

- Handbook "CST STUDIO SUITE(tm) First Steps"
- Handbook "CST EM STUDIO(tm) - Getting Started"
- Handbook "CST EM STUDIO(tm) - Tutorials"
- Handbook "CST STUDIO SUITE(tm) Advanced Topics"
- Online Help System

Minimum Hardware Requirements

- Pentium PC, 1GB RAM, DVD- Drive, at least 8GB of free hard disc space.
- Fully OpenGL compliant graphic card
- Windows XP Professional
- Some solvers support Linux OS

General

- CST EM STUDIO™ is a configurable tool with a choice of 5 solver modules. The standard configuration is one full process with the low frequency solver and one additional frontend. Floating and node-locked licenses are available. Please contact your local sales office for further information.