

# COULOMB

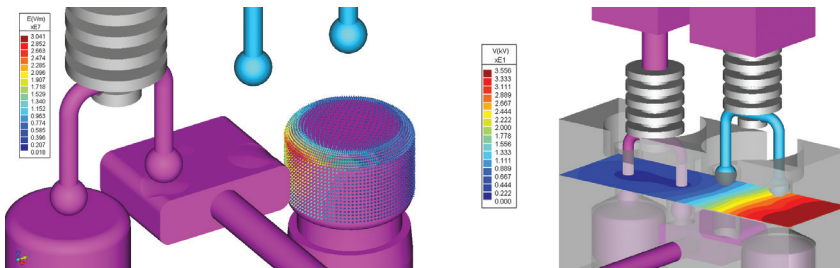
## 3D Electric Design Software

**COULOMB** is **INTEGRATED's** powerful three-dimensional electric design and analysis tool. Our proprietary Boundary Element (BEM) solver technology provides the most accurate numerical field solutions and it's the method of choice for problems involving the modeling of space around the device, "large open regions". The Finite Element Method (FEM) solver is incorporated in the program as well to provide users with the choice of both methods.

Within one package and without extra cost, **COULOMB** combines capabilities to analyze corona ring & partial discharge effects, electric field stress, lightning, transient events, maximum field strength and dielectric breakdown, among others.

Engineers and scientists depend on **COULOMB** for the design and analysis of electric/electronic equipment and components such as:

- transformers
- insulators, bushings, grounding electrodes
- microelectromechanical systems (MEMS)
- high voltage shields
- power transmission lines
- telecommunication cables
- lenses for beam deflection
- capacitive transducers
- parts and assemblies subject to electrical fields



Model of a two channel discharge switch assembly simulation using **COULOMB**. The switch, modeled by leading test specialist Megger, is rated to 40 kV from 0 – 5000 ft MSL, -20C to 50C and up to 90% humidity. Each channel is rated for 2 kJ under normal operation and 6 kJ for emergency operation. Images courtesy of Megger.

## WE GO BEYOND TRADITIONAL MULTIPHYSICS:

- Search Based 3D Electric Design Software **NEW**
- Metaheuristic approach for optimizing simulation based electromagnetic designs. **NEW**
- Precise calculation of electrical parameters using our proprietary **Boundary Element Method (BEM) solvers**.
- **Finite Element Method (FEM) in addition to BEM**. This hybrid approach uses the strength of each method while designing an electromagnetic system.
- Built in API, Parametric and/or Scripting capabilities

The **INTEGRATED API** enables the direct control of program functions by utility scripts or macros created in tools such as EXCEL or Visual Studio. Scripting can control the entire process of model creation and testing.

- Electrostatic/Quasistatic/Transient 3D field solvers for a diverse range of applications.
- Direct import of models from CAD Partners including: Autodesk, PTC, Solid Edge and SolidWorks.

## MORE BENEFITS:

- Easy-to-use and intuitive interface.
- High resolution 3D graphic representations that can show enhanced tracing of points on model.
- Automatic meshing and removal of intersecting geometries.
- World class support team ready to unlock your ideas.

Hybrid Simulation Tools for Electromagnetic and Particle Trajectory Design Analysis

SOFTWARE THAT LIVES UP TO THE POWER OF YOUR IDEAS



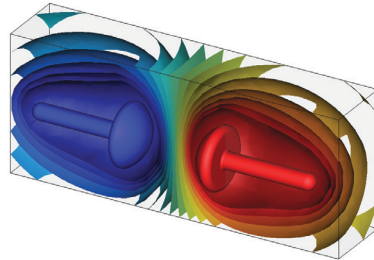
For many systems, it is important for multiple solvers to be combined. INTEGRATED develops comprehensive solutions for scientists modeling prototypes that require multiphysics analysis.

“COULOMB was essential for the success of this work. It is very user-friendly and the customer support has been excellent. In fact, INTEGRATED Engineering Software modified COULOMB especially to simplify for us the readout of the induced surface charges.”

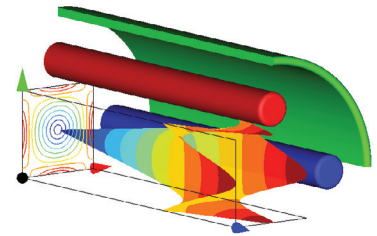
— Siegfried Auer, PhD  
A&M ASSOCIATES, USA

## Visualize, Analyze, Optimize

COULOMB provides outstanding visualization features for detailed analysis of electrical and electronic systems. Automated model creation using built-in **API** and **Parametric Utilities** combined with **Self-Adaptive BEM** and **FEM** solvers enable rapid optimization of designs.



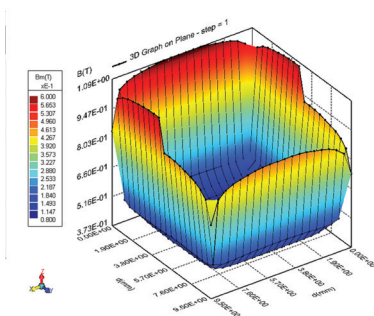
3D Model of Mushroom Electrodes showing Voltage Isosurface Plots



3D Model of Electrostatic Quadrupole showing profile plot of electric field

COULOMB comes complete and ready to use. Purchase of additional modules or options is not needed; COULOMB is a fully functional CAE tool. A partial list of standard features includes:

- Intuitive and structured interface which maximizes productivity for experts and beginners alike
- Static, phasor and transient analysis modes
- Ability to assign constant or non-uniform charge distributions to surfaces
- Electrostatic force and torque calculations on surfaces and volumes
- Conductance and capacitance calculations
- Calculations of electric energy of a system
- A variety of display forms for plotting scalar and vector field quantities including: graphs, contour plots, arrow plots, profile plots, streamline plots and vector loci plots
- High quality 3D graphics and text utility for preparation of reports and presentations.
- Data exportable to formatted files for integration with spreadsheets and other software packages
- Batch processing that allows unattended solution of multiple files
- Powerful parametric feature which allows definition of variable parameters to be stepped through for the analysis of multiple “what-if” scenarios, facilitating design optimization
- A wide array of post processing options for design evaluation and optimization
- Self adaptative meshing or optional user refinement
- CAD healing utilities for automatic correction of drafting errors
- Large library of dielectric and conductive materials to which additional materials can be easily added



3D graph that can show enhanced tracing of points on model

## PUT OUR SOFTWARE TO THE TEST

Send us your model, whatever the level of complexity. We will show you how to get results from your exact design – no packaged demos.

Contact us for an evaluation and start improving productivity today. A live demo is also available.

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