Contents

Efield® 5.3 released

Efield announces that its new product release Efield® 5.3 is now shipping. This Efield® release includes many improvements of existing features but also some new important capabilities

Major improvements of this release include:

- Source modeling using Spherical Wave Expansion (SWE)

- Improved CAD environment based on CADfix 8.0

- Native 64-bit support for Windows and Linux in the CAD environment

- New tool for setting up waveguide ports
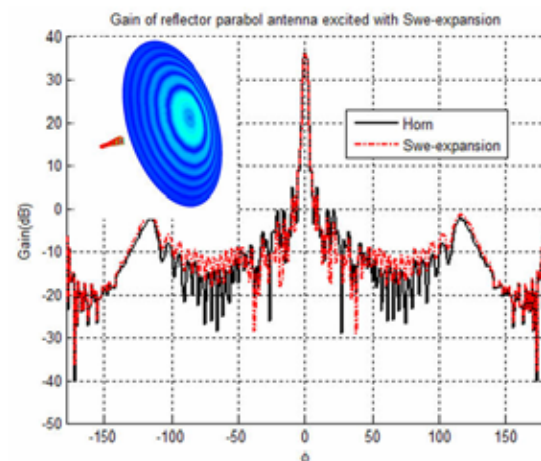
Efield® Spherical mode excitation

Efield® now includes source modeling using the Spherical Wave Expansion technique. For example such excitations are useful in reflector antenna simulations

In Efield® 5.3 a sum of spherical modes (both inwards and outwards traveling) can be used as an impressed excitation. A spherical mode expansion can be computed from both simulated and measured near- or far-fields.

As an example the field from a horn antenna is approximated by a spherical wave expansion consisting of 1150 modes. The spherical wave expansion is then used for a parabolic reflector
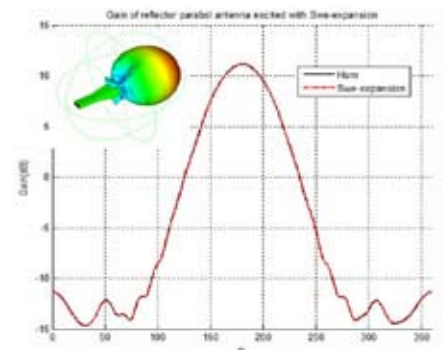
Gain of the horn calculated with MoM and SWE

antenna simulation. A comparison of the gain of the reflector antenna computed using horn excitation as well as spherical wave expansion excitation is shown. The Spherical wave expansion used in Efield® 5.3 is compatible with the formulation used in the reflector antenna code GRASP™ from TICRA.

Gain of the parabolic reflector antenna calculated with MLFMM and MLFMM + SWE

Improved CAD environment

Efield® 5.3 includes major improvements in CAD import, repairing tools and CAD modeling based on CADfix 8.0

Efield® allows the user to import native CAD data from all major CAD systems on the market. Efield® supports all common CAD systems and formats such as

- CATIA, CADDS, Pro/E, IGES, STEP, Parasolid, ACIS,DXF/DWG, STL, VDA-FS, ANSYS, Inventor, SolidWorks, Unigraphics

Almost every issue affecting the quality of the CAD geometry can be addressed with tools available in Efield® which is important for performing a successful simulation. Automatic and interactive processing tools are available in Efield® for repairing and correcting particular model quality problems.
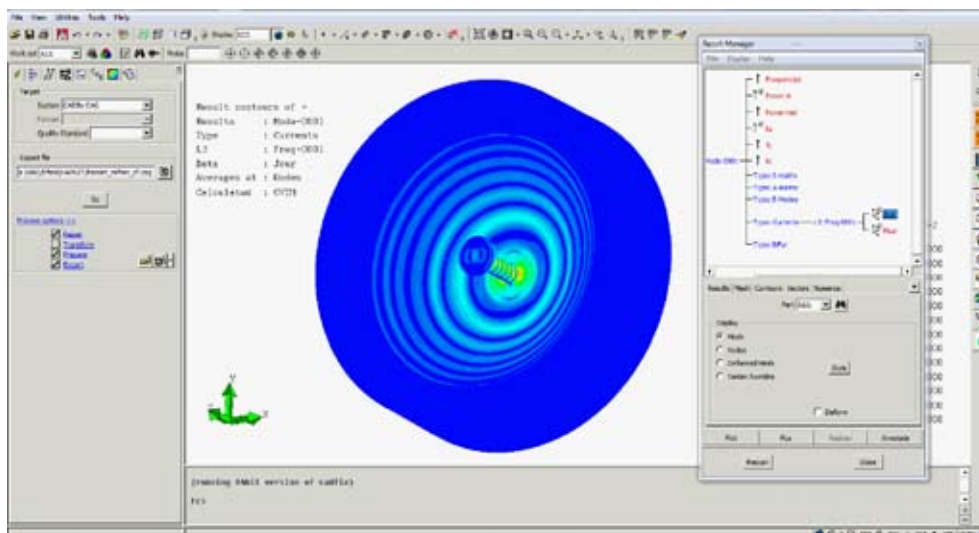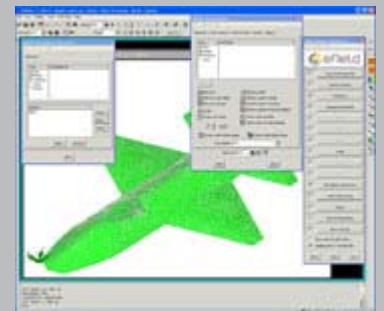
Efield® includes an advanced set of tools for creating new CAD models and for altering existing models. The available tools range from those used for building CAD model from scratch to tools for deleting, replacing, joining or collapsing geometries in existing CAD models.

Efield® 5.3 is based on the improved CADfix version 8.0. A number of major revisions and new functionality are added which will increase the performance. The tools for fixing and repairing are substantially improved in this version. Support for 64-bit Windows and Linux is included which means that Efield® can handle much larger CAD models than before. The Efield® meshing tools can handle a substantially larger mesh size than previous versions and are much faster.

Result visualization

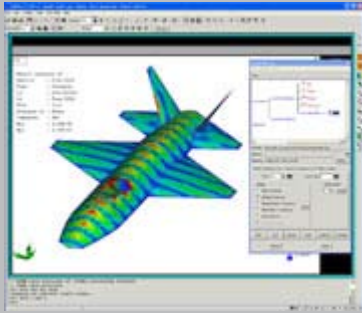Geometry Modeling and Repair
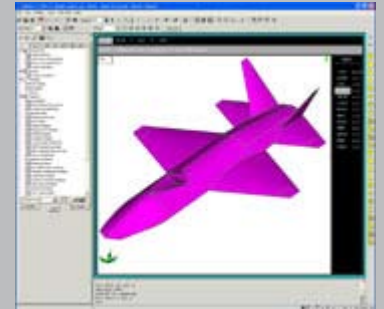
Mesh Generation and Solver GUI

Run Manager

Efield® 5.3 highlights

There are a number of new features and improvements in Efield® 5.3. Here are some highlights

Efield Electromagnetic Solver Suite

Improvements in Efield® frequency-domain solvers:

- Spherical mode excitation and approximation of near- and far-fields using spherical modes.

- Possibility to compute total, scattered or incident near-fields

- Improved port GUI. Simpler to set up coordinate systems and esitmate of number of propagating modes.

- Possibility to use frequency-dispersive materials such as Debye and Lorentz.

Improvements in Efield® time-domain solvers:

- Lumped circuits in multiple cavities now supported

- Improved S-parameter computation for edge sources in FEM

- Near-to-far-field transforms optimized for large-scale problems

Improvements in Efield® pre- and post-processing:

- Native 64-bit support for Windows and Linux

- Improved and faster database access

- Optimized database support for huge models (>1 GB)

- Entity naming limit removed. Now 12 characters for a name giving much larger maximum model sizes

- Extended support for models with large scale differences e. g. ratio of longest to shortest edge is now up to 1e9.

- Ability to import/merge CAD models into an open (live) session

- Support for multi-core machines

- Much better tools for defeaturizing/simplification

- New shrink-wrap STL mesh generator

About Efield®

Efield® provides a unified 3D electromagnetic simulation environment making both time- and frequency-domain methods available through a common user interface. Efield® makes the powerful concept of hybrid methods easy. Hybrid methods makes it possible to use an accurate numerical method in only the part of the simulation domain where it is really needed, and a less costly method in the rest of the domain. Efield® offers an environment for High Performance Computing with carefully parallelized solvers for distributed and shared memory multi-processor architectures. Powerful CAD interfaces streamline the modeling and simulation process, making reuse of existing CAD models easy. In this way we enable 3D electromagnetic simulation capacity for applications you have only dreamt of before.

Take a look at our web site www.efieldsolutions.com. There you can find more information and download a white paper describing our products in detail. Also, please forward this message to those of your colleagues who are interested!

## Efield® a complete simulation environment for 3D electromagnetics applications

Efield® offers software for 3D analysis of a wide range of electromagnetic applications such as:

- **Antenna design:** All kind of antennas including horn, reflector, wire and microstrip antennas as well as broadband antennas and antenna arrays.

- **Antenna integration:** Radiation pattern and coupling of installed antennas on large platforms such as aircraft or ships.

- **Microwave design:** Typical applications includes design of filters, connectors and couplers.

- **EMI/EMC interaction:** Analysis of a wide range of EMC/EMI problems including shielding and coupling.

- **Scattering & radar cross-section:** RCS analysis of structures such as aircraft, ships, air-intakes and antennas.

Efield® has the solution to every stage of the analysis including:

- Integrated environment including user friendly GUI

- CAD import of all major formats

- Fixing and repair of complex CAD models

- Model building

- Efficient and high quality meshing

- Unique solver technology in both time- and frequency-domain including full wave, approximative and hybrid techniques

- Unparalleled execution performance on single PC's or parallel processing on multiprocessor computers

- Flexible and high quality post-processing including graphing of results as well as visualization of surface currents, near- and far-fields.
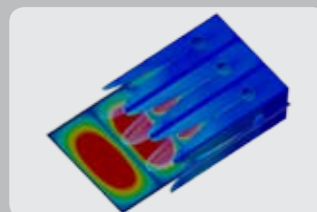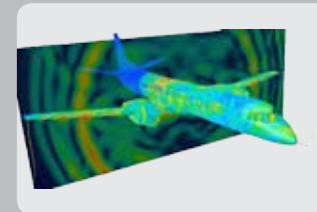
Antenna Design
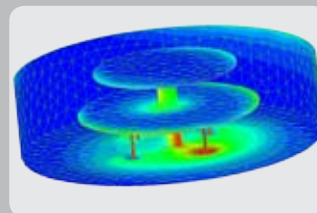
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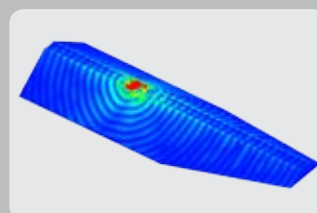
Microwave Design

EMC and EMI

RCS and Scattering