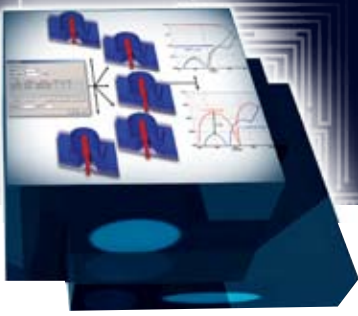


# OPTIMETRICS™

Parametric Analysis and Optimization



Optimetrics™ is an optional software module that adds parametric capabilities, optimization algorithms, sensitivity and statistical analyses to Ansoft's best-in-class electromagnetic-field simulation products—HFSS™, Maxwell® 3D and Q3D Extractor®. Optimetrics automates the design-optimization process for high-performance electronics, such as microwave/RF devices, printed circuit boards, on-chip passives, IC packages and electromechanical components, by quickly identifying optimal values for design parameters that satisfy user-specified constraints and goals.

## OVERVIEW

Optimetrics™ enables users to study the effects of geometry and materials on a design by creating parameters for the dimensions and material constants of the model to be analyzed. Optimetrics then varies these parameters and adjusts the geometry and materials to achieve the desired, user specified, performance goal.

Leveraging previously computed parametric simulation results within its optimizer, Optimetrics enables engineers to understand

device characteristics over a large design space and quickly identify the best performing design that is least sensitive to manufacturing tolerances.

Optimetrics, when used in conjunction with HFSS™, Maxwell® 3D and Q3D Extractor®, delivers an innovative and robust design platform from which users gain a greater understanding of the design space and the ability to make insightful design choices.

## FEATURED CAPABILITIES

### Parametric Analysis

- User-specified range and number of steps for parameters
- Automatic analysis of parameter permutations
- Distributed Analysis (cost option)
  - Automated parser management across multiple hardware platforms and reassembly of data for parametric tables and studies

### Sensitivity Analysis

- Design variations to determine sensitivities
  - Manufacturing tolerances
  - Material properties

### Optimization

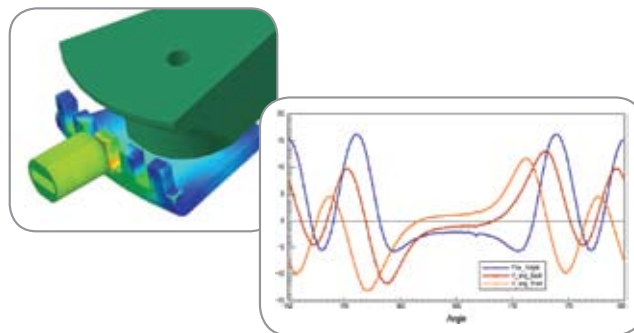
- User-selectable cost functions and goal objective
  - Quasi-Newton method
  - Sequential Nonlinear Programming (SNLP)
  - Integer-only Sequential Nonlinear Programming
- Automatic analysis of parameter variants until optimum goal obtained

### Tuning

- User-controllable slide bar for real-time tuning display and results

### Statistical Analysis

- Design performance distribution versus parameter values



Current sensor optimization results using Maxwell 3D and Optimetrics