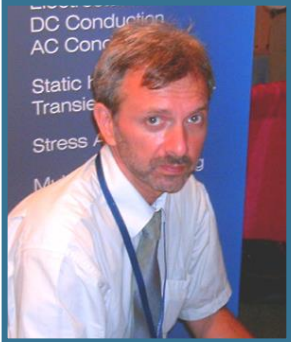




# QuickField 6.4



**Vladimir Podnos,**  
**Director of Marketing and Support,**  
**Tera Analysis Ltd.**

QuickField 6.4 overview. Analysis capabilities.

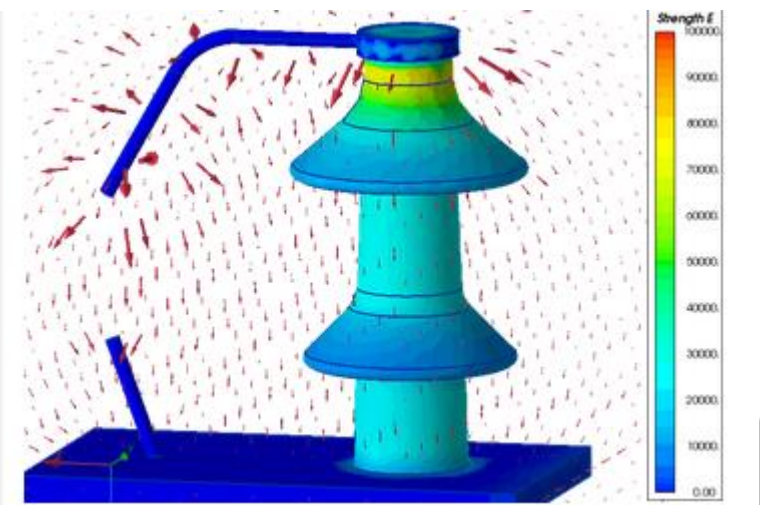
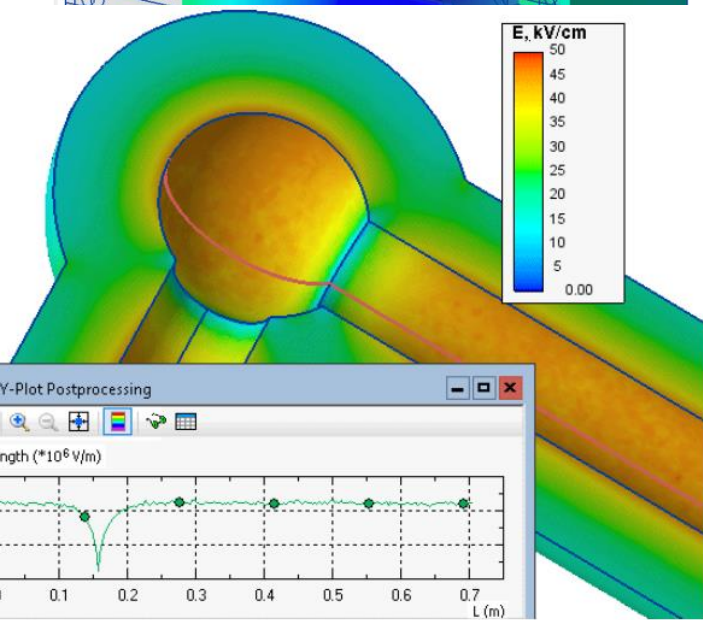
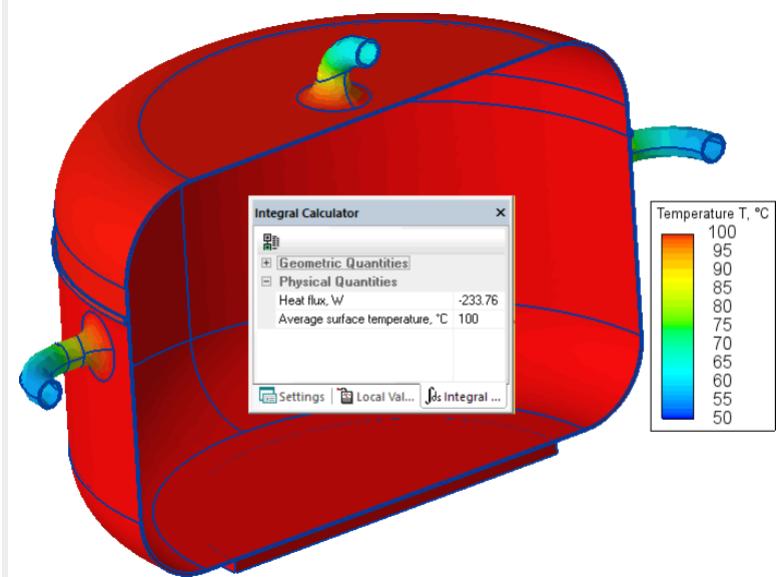
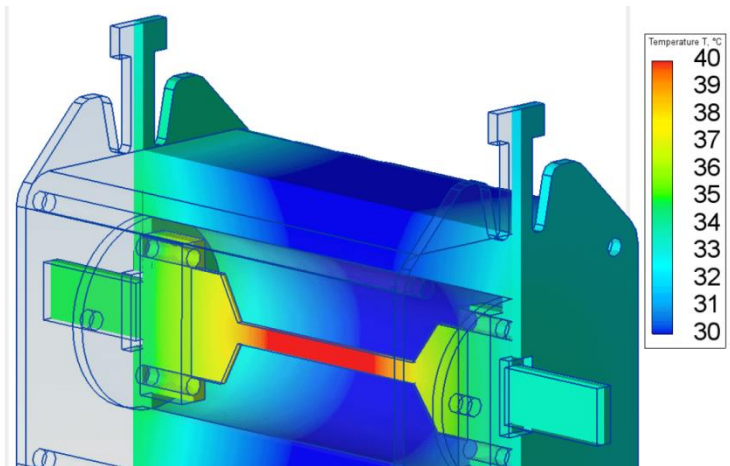


**Alexander Lyubimtsev**  
**Support Engineer**  
**Tera Analysis Ltd.**

QuickField 3D live demonstration



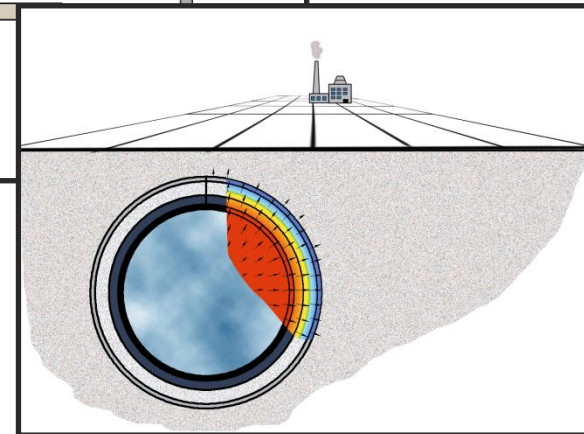
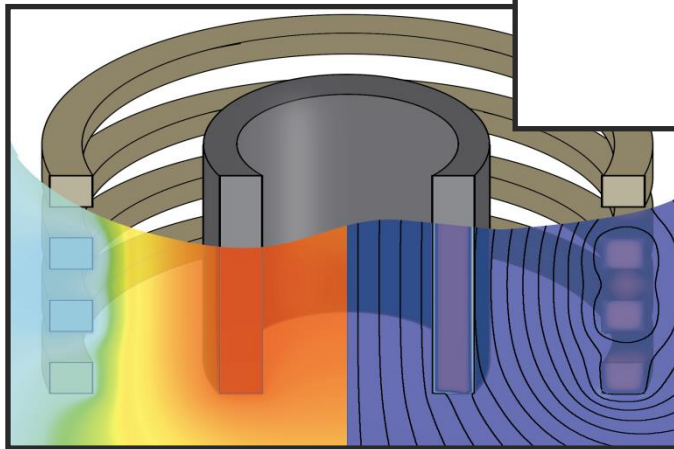
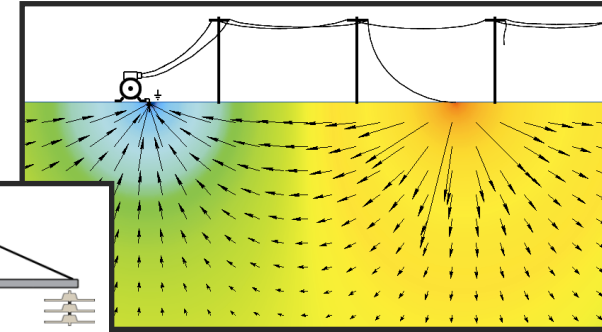
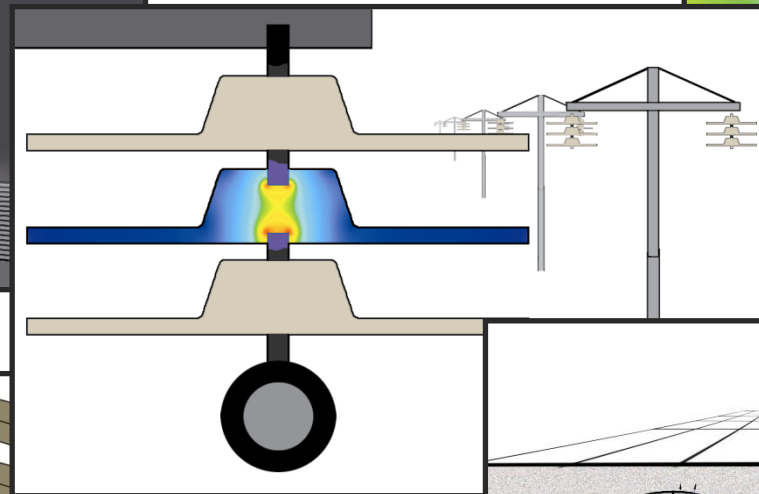
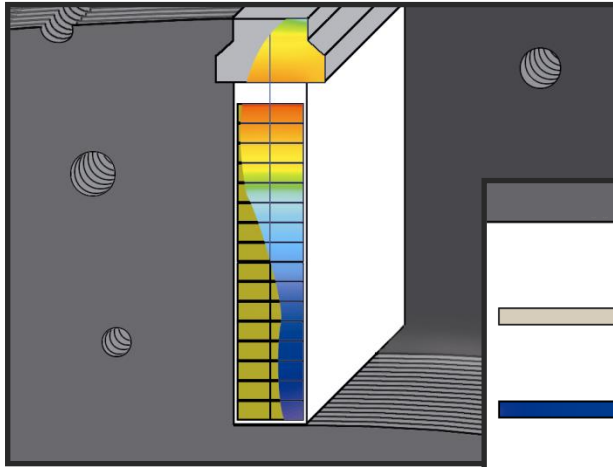
# QuickField 6.4





# QuickField

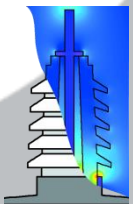
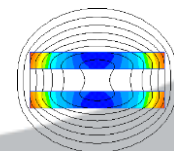
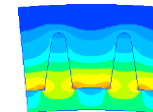
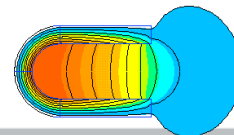
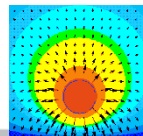
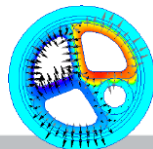
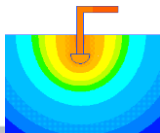
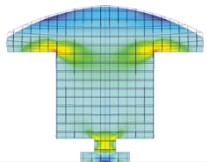
## FEA for Electromagnetics, Heat, Stress and Multiphysics





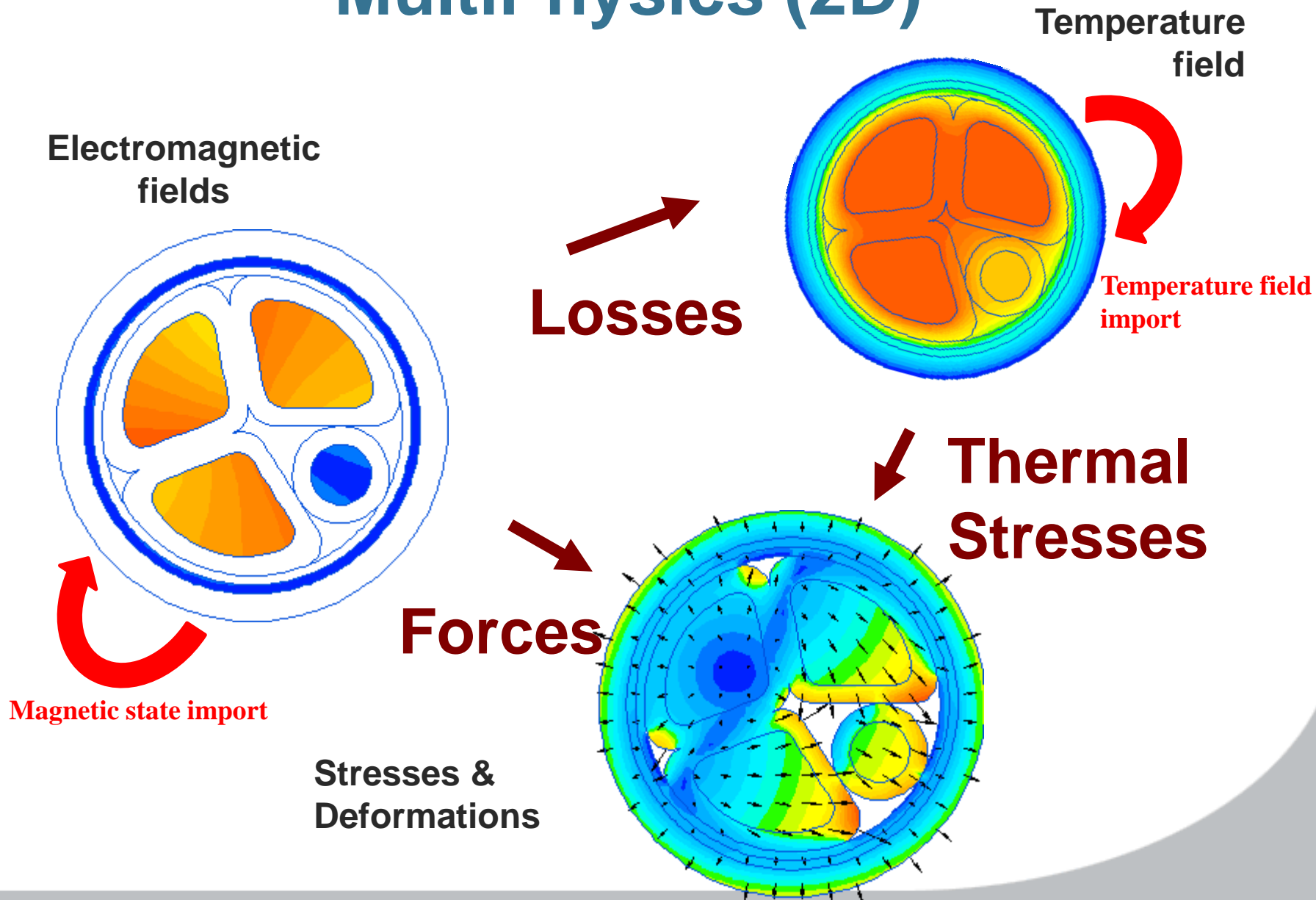
# QuickField Analysis Options

Magnetic analysis suite	
Magnetic Problems	Magnetostatics
	AC Magnetics
	Transient Magnetic
Electric analysis suite	
Electric Problems	Electrostatics (2D,3D) and DC Conduction (2D,3D)
	AC Conduction
	Transient Electric field
Thermostructural analysis suite	
Thermal and mechanical problems	Steady-State Heat transfer (2D,3D)
	Transient Heat transfer
	Stress analysis





# MultiPhysics (2D)





# MultiPhysics (2D)

Source problem

----> *Transferred data* ---->

Destination problem

Source problem:

DC magnetics	Permeability	Permeability	Initial conditions			Force [N]
AC magnetics				Joule heat [W]	Joule heat [W]	Force [N]
Transient magnetics			Initial conditions	Joule heat [W]	Joule heat [W]	Force [N]
Electrostatics						Force [N]
DC conduction				Joule heat [W]	Joule heat [W]	Force [N]
AC conduction				Joule heat [W]	Joule heat [W]	Force [N]
Transient electric						
Static heat transfer		Temperature [T]			Initial conditions	Temperature [T]
Transient heat transfer		Temperature [T]			Initial conditions	Temperature [T]
Stress Analysis						

Destination problem

DC magnetics

AC magnetics

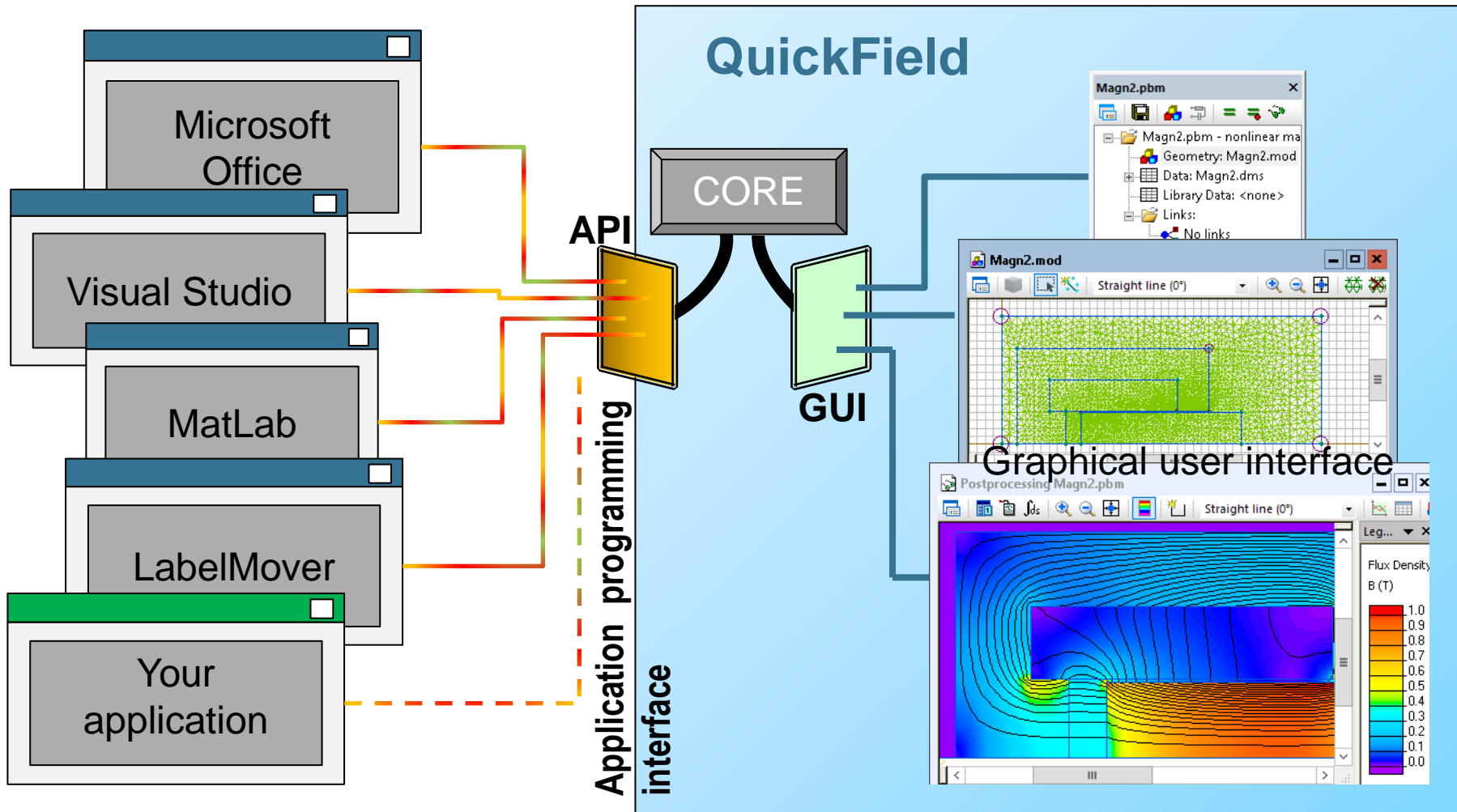
Transient magnetics

Static heat transfer

Transient heat transfer

Stress Analysis

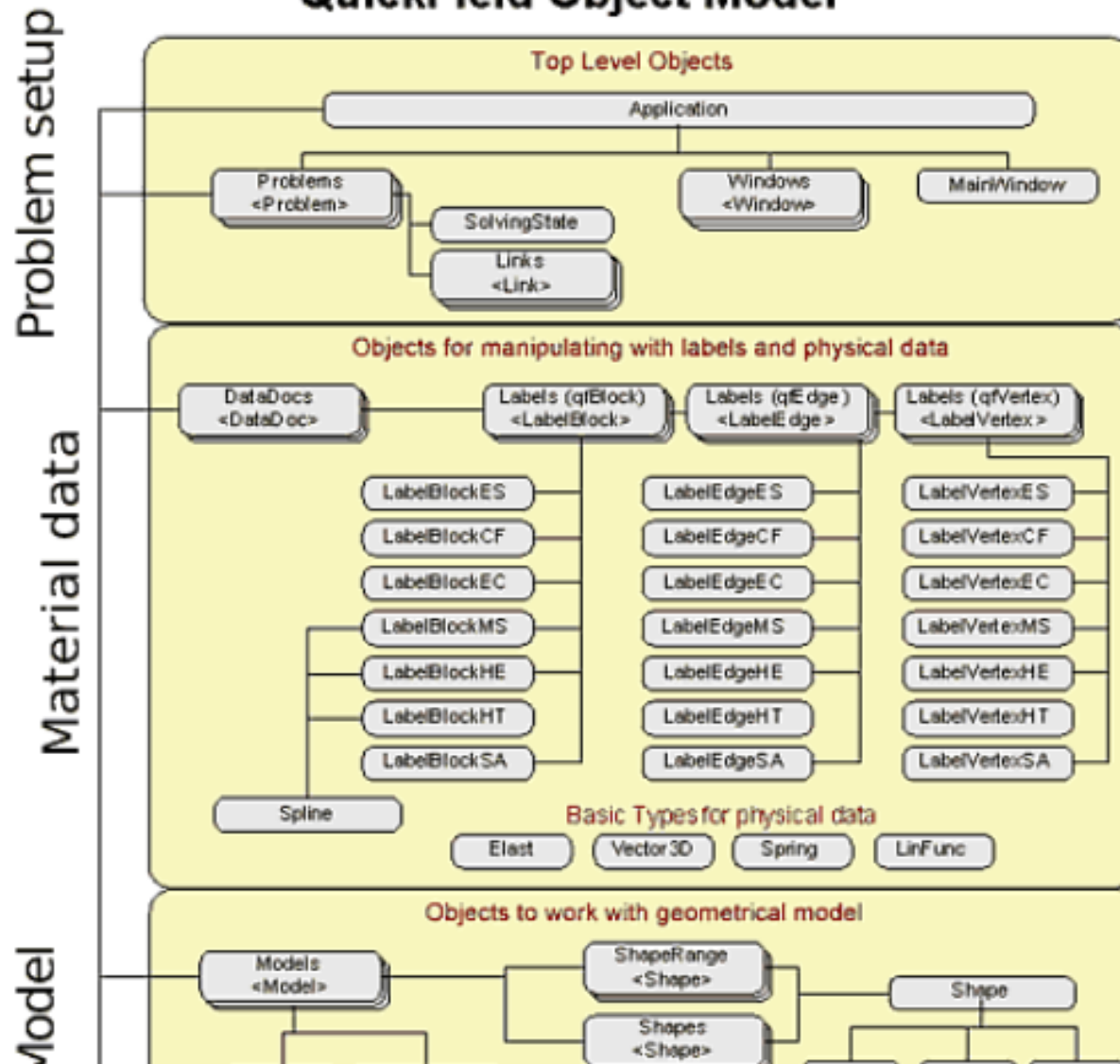
# Open object interface





# QuickField API - ActiveField

## QuickField Object Model

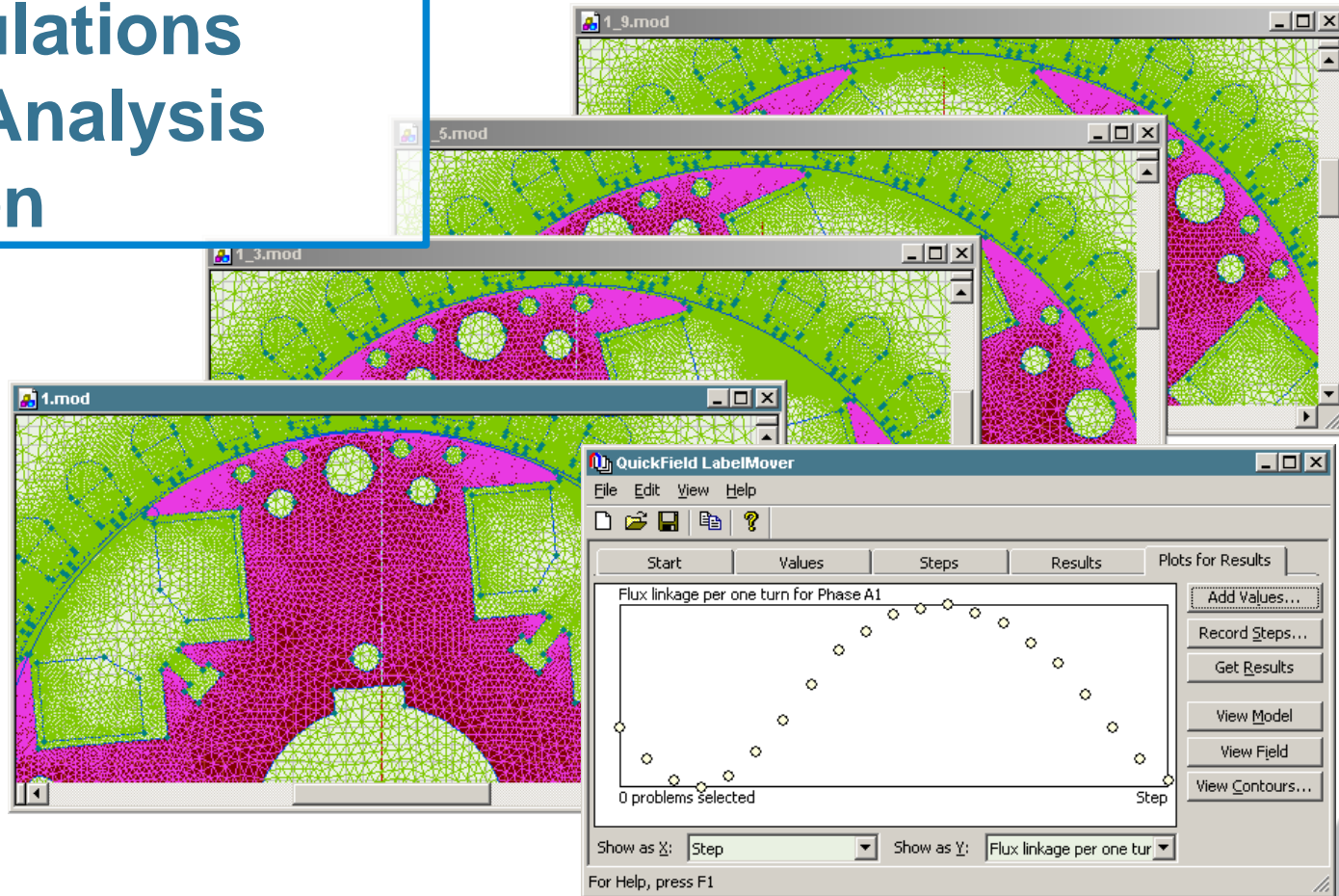






# Parametric analysis with LabelMover

Serial calculations  
Tolerance Analysis  
Optimization





# Free utilities



Language:



A new approach to field modelling

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[User manual](#)

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[Video](#)

[Free tools](#)

[Main](#) >> [Downloads](#) >> [Free utilities to extend](#)

## Free tools

[free utilities](#)

These tools are distributed in source codes, they may be used for their specific tasks, or as examples and templates of (C++, VB, etc.) code. They are not necessarily production quality and have minimal, if any, comments.

Depending on the used technology, tools may be run from within QuickField (like [Add-ins](#) included into QuickField distributive), run independently and then [interact with QuickField](#) on any Windows platform ([vbs](#) files) or even require some third party application to run (Microsoft Office for VBA). This is shown in the **Type** column of the table below.

### Online tools

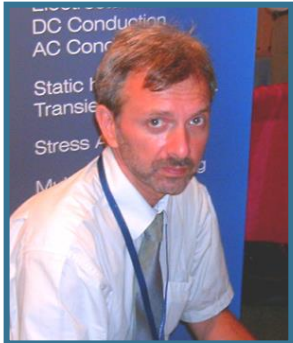
- [BH curve permeability calculator](#)  
This tool converts normal BH-curve to intrinsic and calculates differential and linear magnetic permeability.
- [Complex power and impedance calculator](#)  
This calculator facilitates complex numbers (phasors) arithmetic operations: impedance and power calculation.
- [Core loss coefficients calculator](#)  
Core loss coefficients calculator is used to calculate the core loss coefficients on given dataset.
- [Harmonics analysis](#)  
This script can perform harmonic analysis for input data of any nature. You can copy data from QuickField time-tables or LabelMover results and automatically calculate the magnitude and phase of any harmonic specified by its number.
- [QuickField formula plotter](#)  
This simple tool helps construing QuickField formulas by plotting the corresponding 2D charts.
- [Natural convection coefficient calculator](#)  
This calculator provides the natural convection coefficient for some predefined surface types.
- [Exported field plotter](#)  
QuickField is capable of exporting the field to a text file. Exported Field Plotter visualizes the exported data.

### Download-able tools

Tool name	Type	Source Code Language
<a href="#">Add labels to contour</a> Add blocks or edges to contour by their labels.	HTML Application (HTA)	JavaScript



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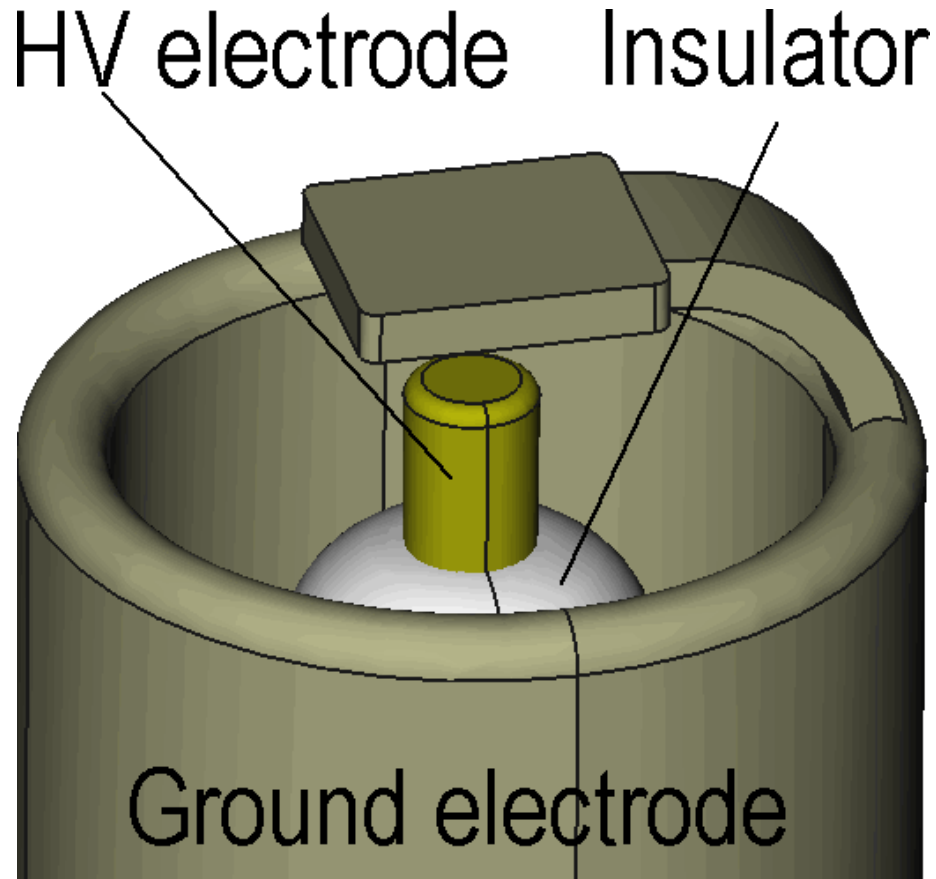


**Alexander Lyubimtsev**  
**Support Engineer**  
**Tera Analysis Ltd.**

QuickField 3D live demonstration



# Spark plug electric field



## Problem specification:

Relative permittivity of air

$$\epsilon_0 = 1,$$

Relative permittivity of insulator

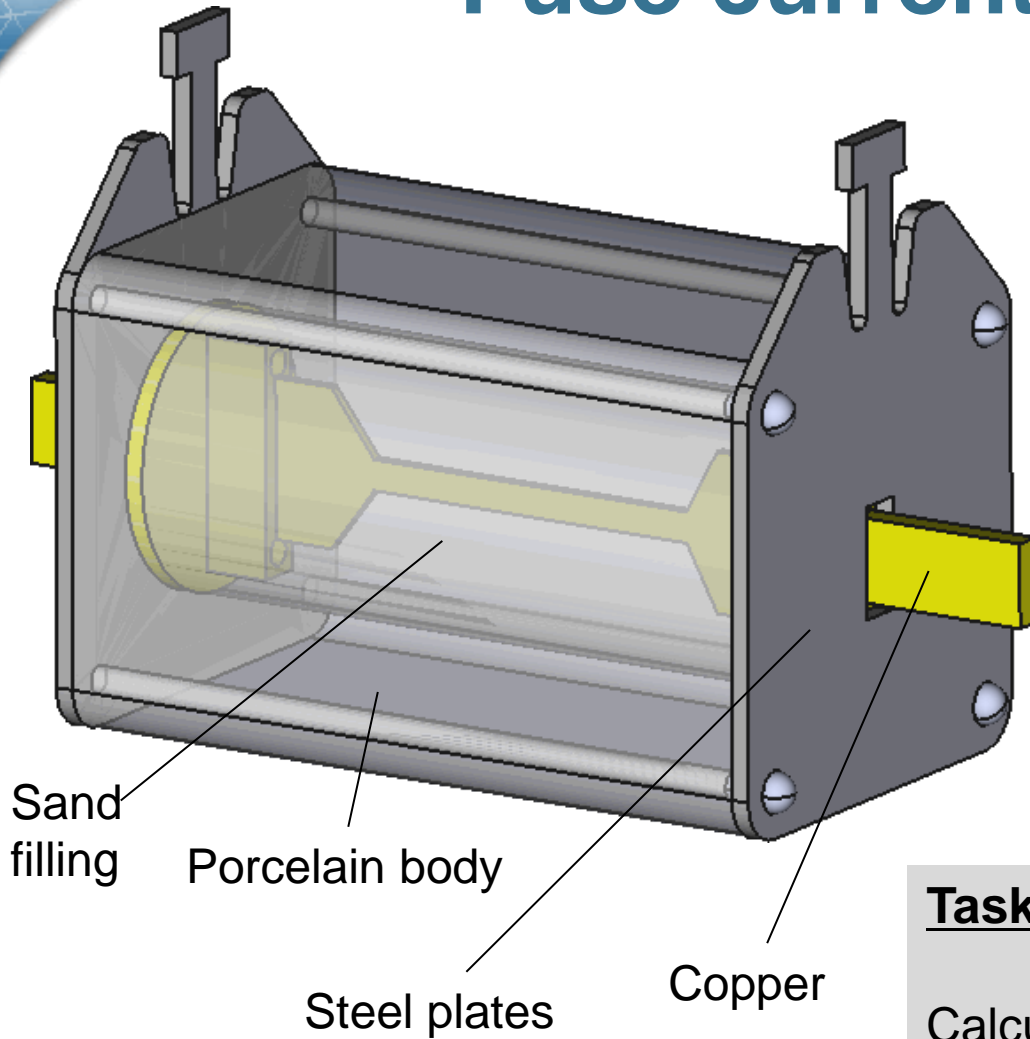
$$\epsilon_r = 5,$$

Electrode DC voltage 15 kV.

## Task:

Calculate the electric field stress distribution in the spark plug air gap

# Fuse current limiter



## Problem specification:

Electrical conductivity of the steel:  
 $\gamma = 10 \text{ MS/m}$

Electrical conductivity of the  
copper:  $\gamma = 56 \text{ MS/m}$

Rated current  $I = 100 \text{ A}$ .

Thermal conductivity of the  
porcelain body =  $2 \text{ W/K-m}$ .

Ambient temperature  $T = +20^\circ \text{ C}$ .

## Task:

Calculate the temperature of the fuse