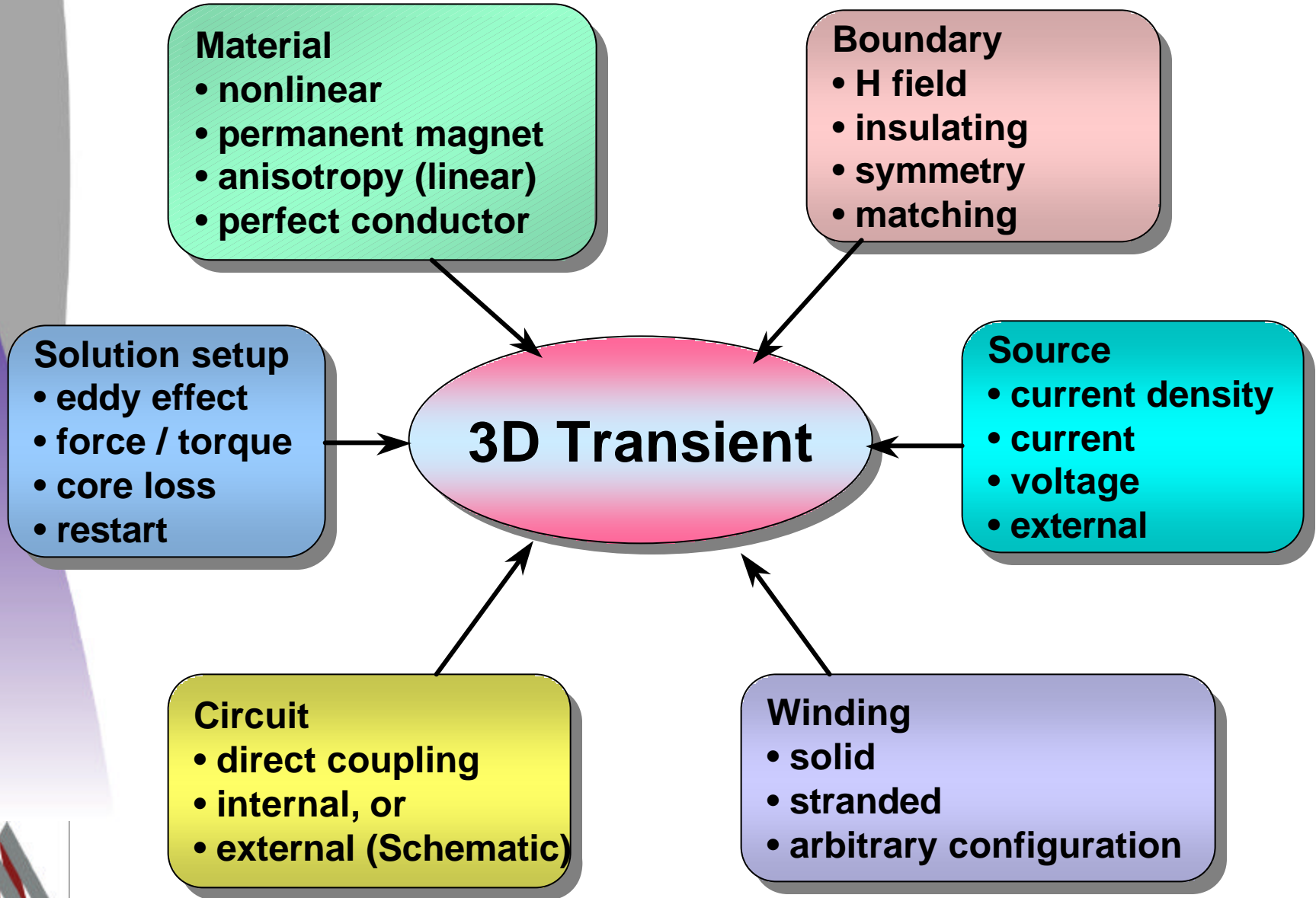


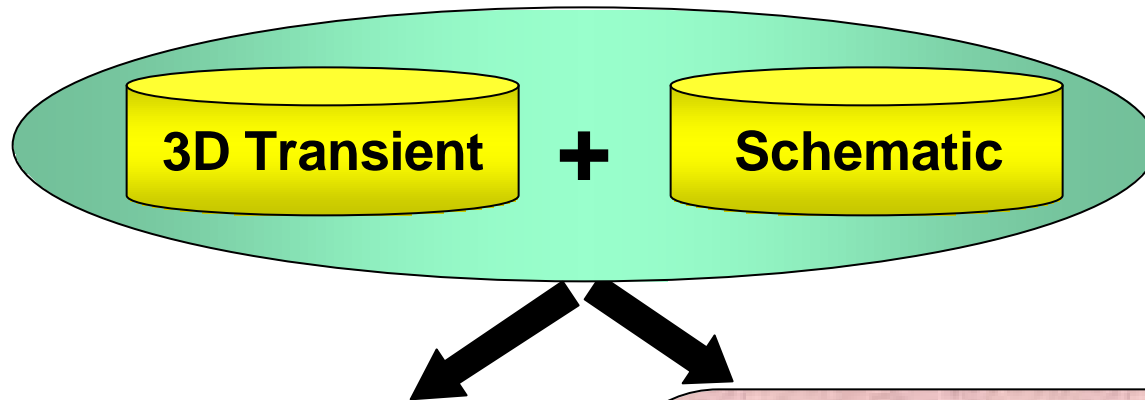
Maxwell 3D Transient

Ansoft Corporation
Pittsburgh, Sept. 2001





What can we get?



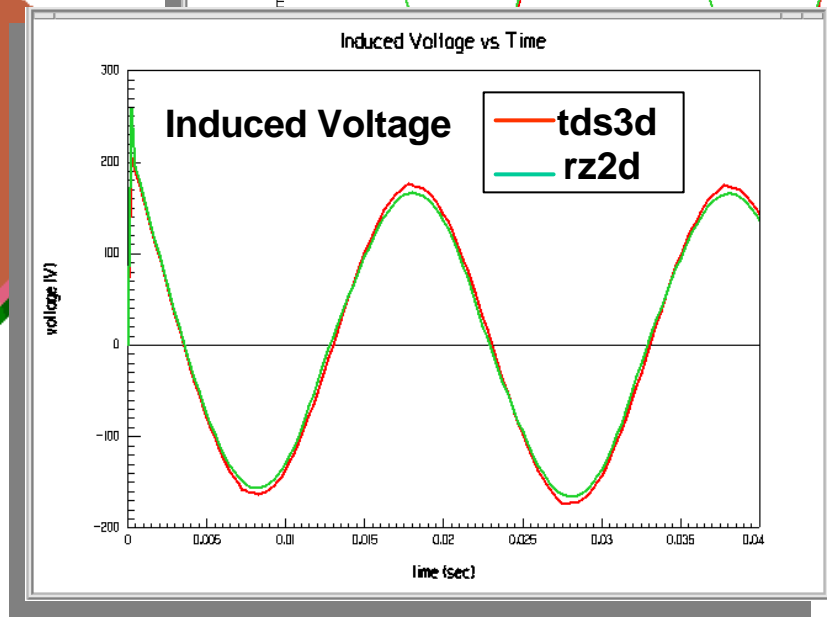
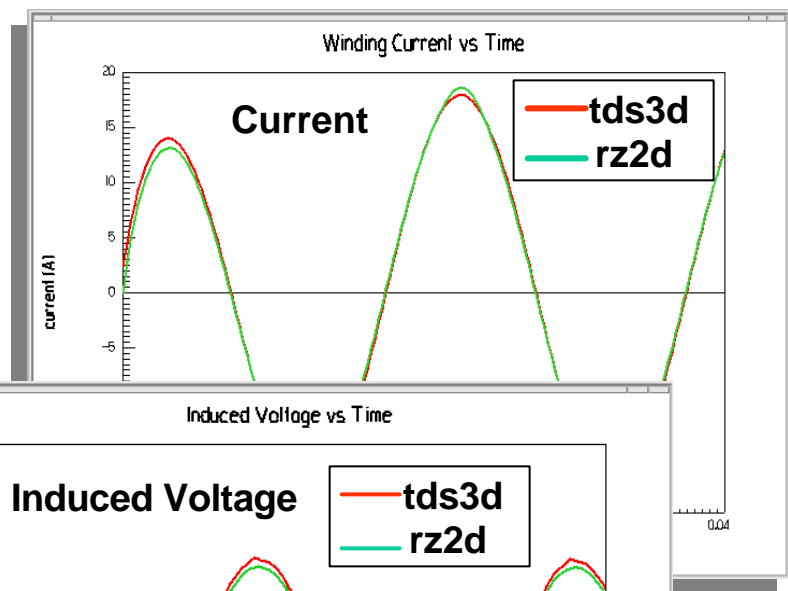
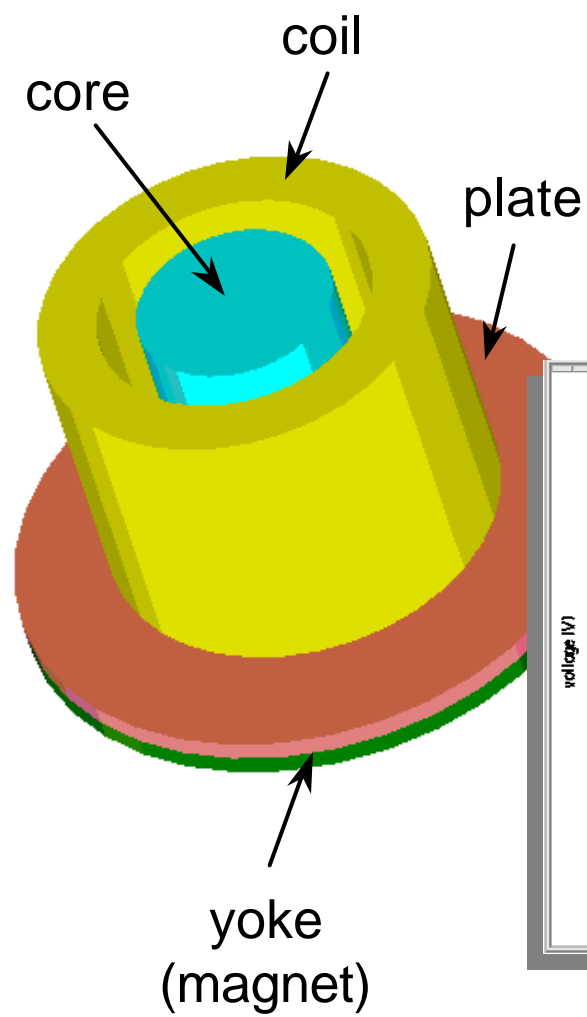
Field Plot

- B vector
- H vector
- J vector
- various energies
- macro support
- at any specified instant

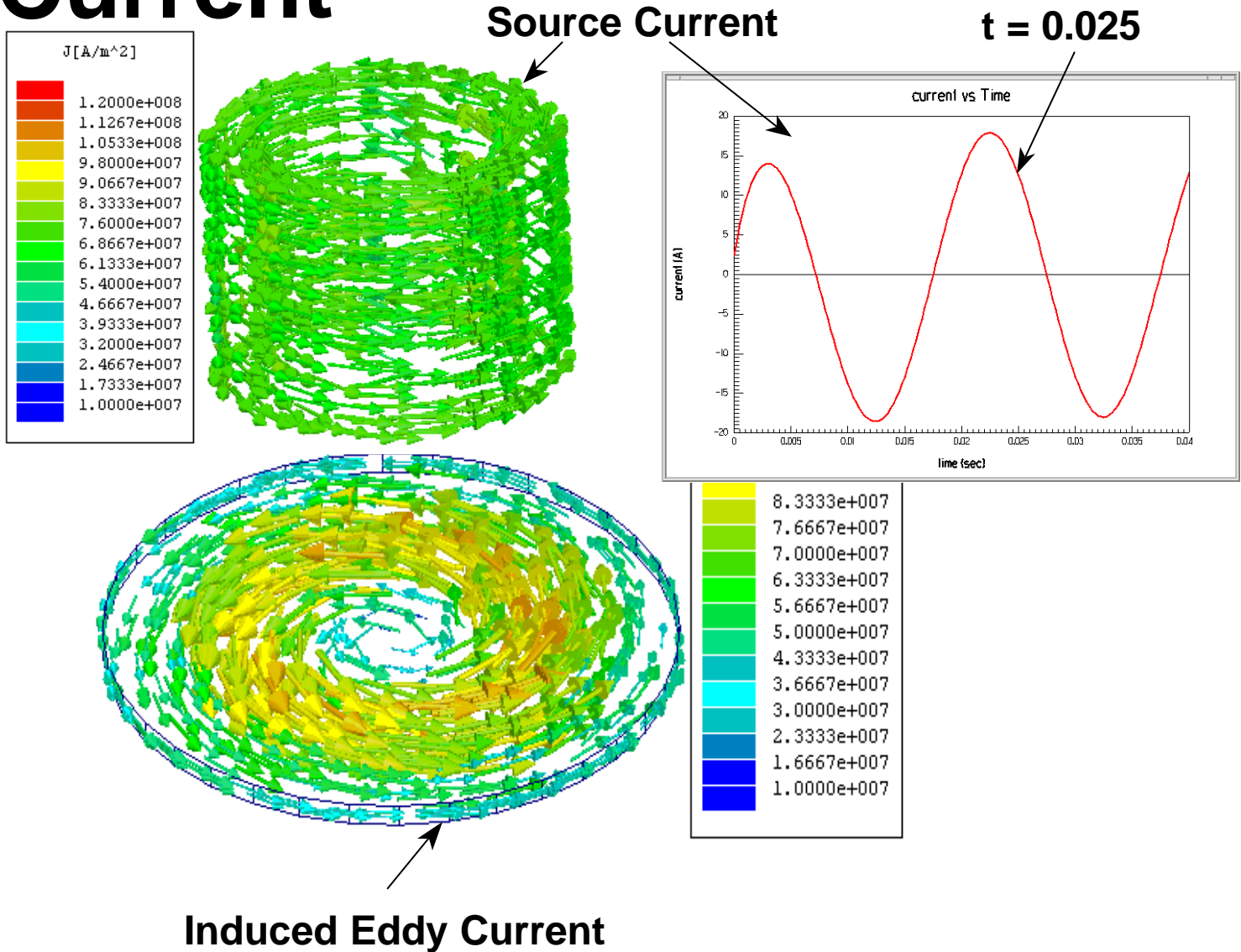
Data Plot

- winding current
- winding induced voltage
- winding flux linkage
- ohmic power loss
- core loss (include hysteresis)
- torque / force (multi groups)
- input source
- branch current
- node voltage

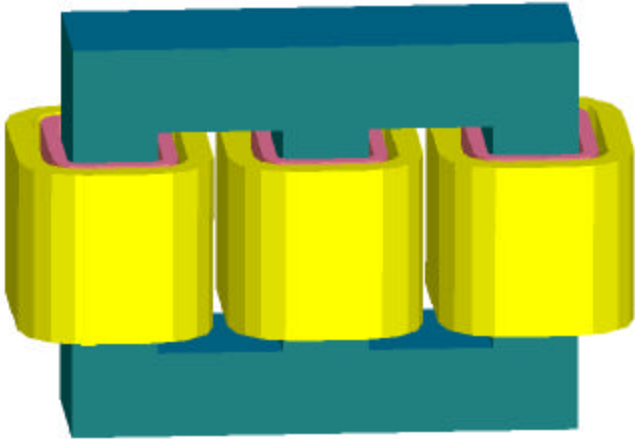
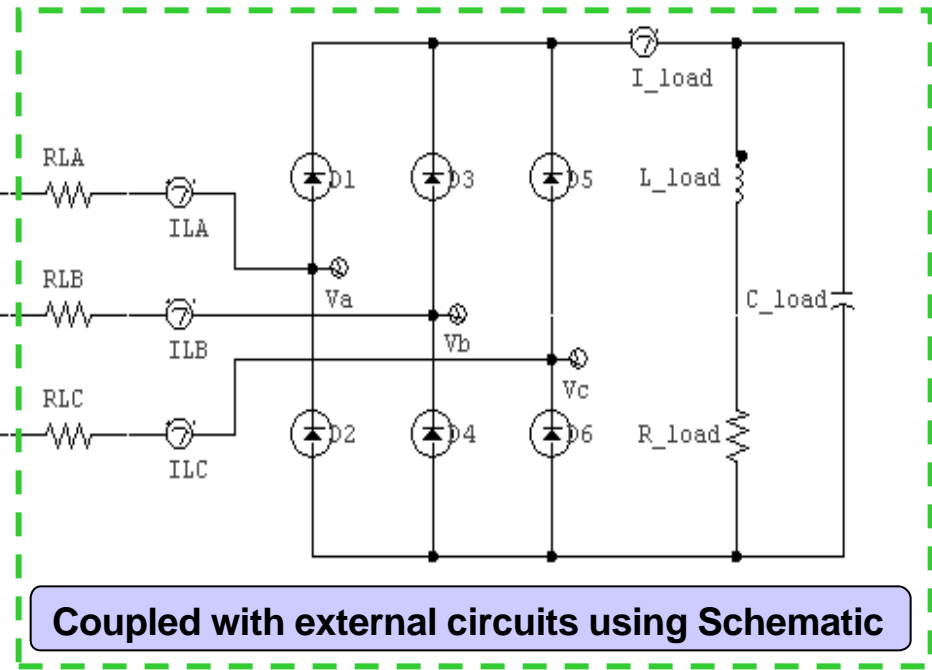
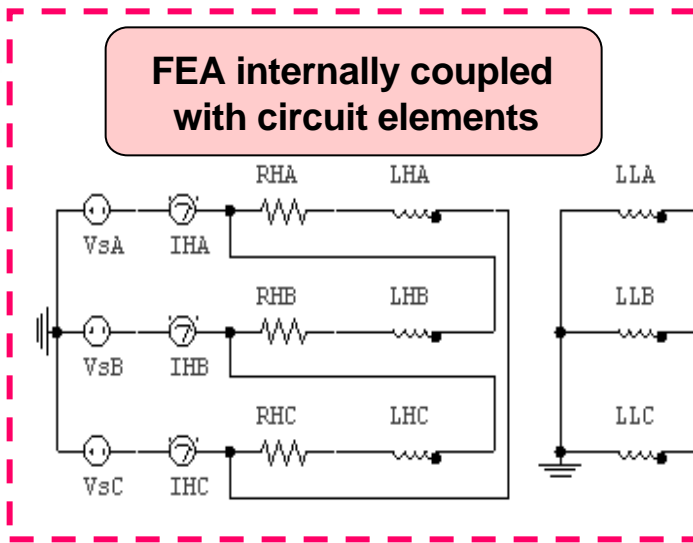
Test Problem Compared with RZ Model



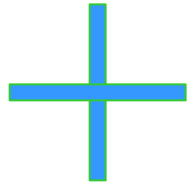
Examine Induced Eddy Current



3D Transient with Schematic

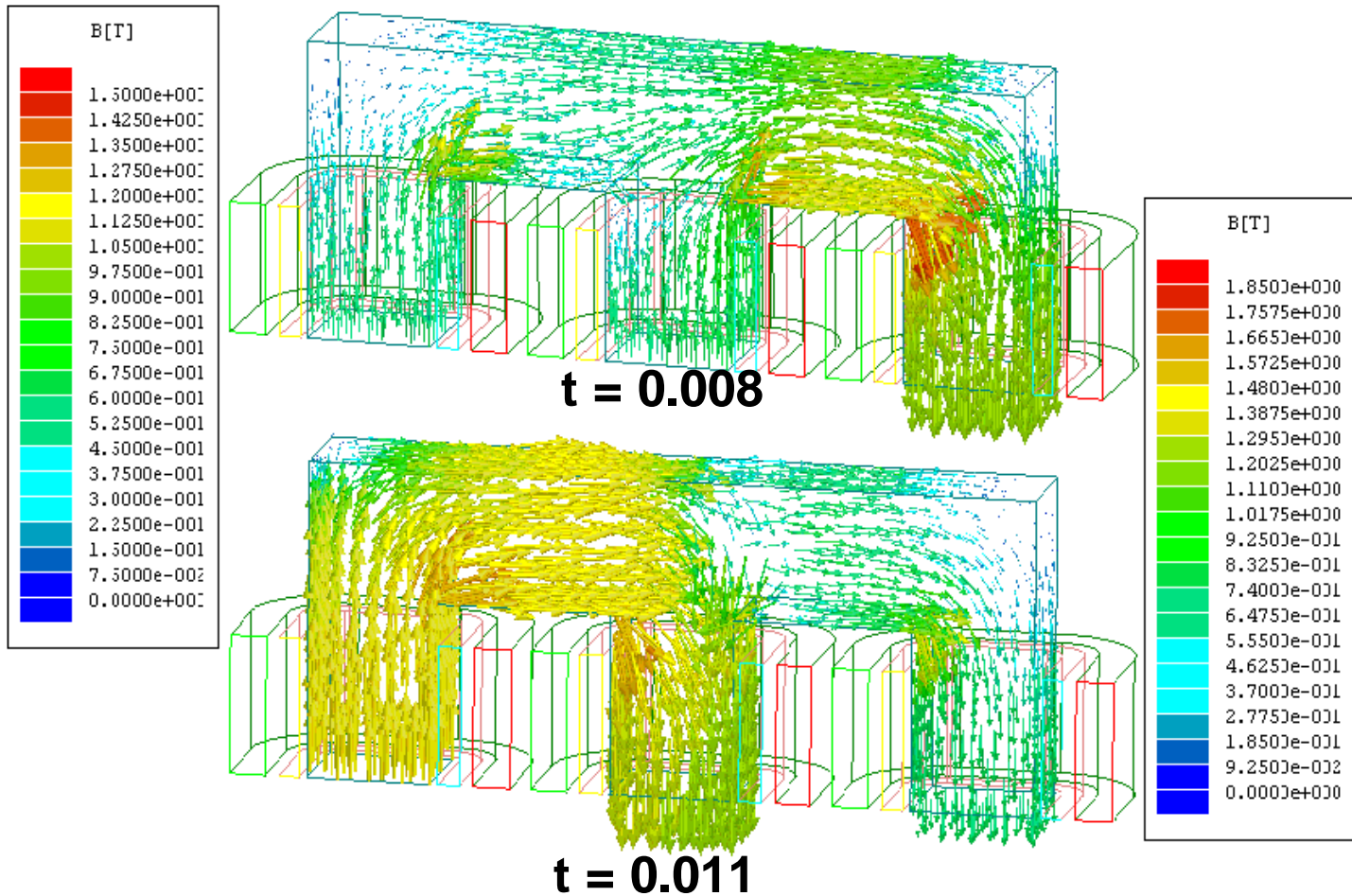


Three phase power transformer

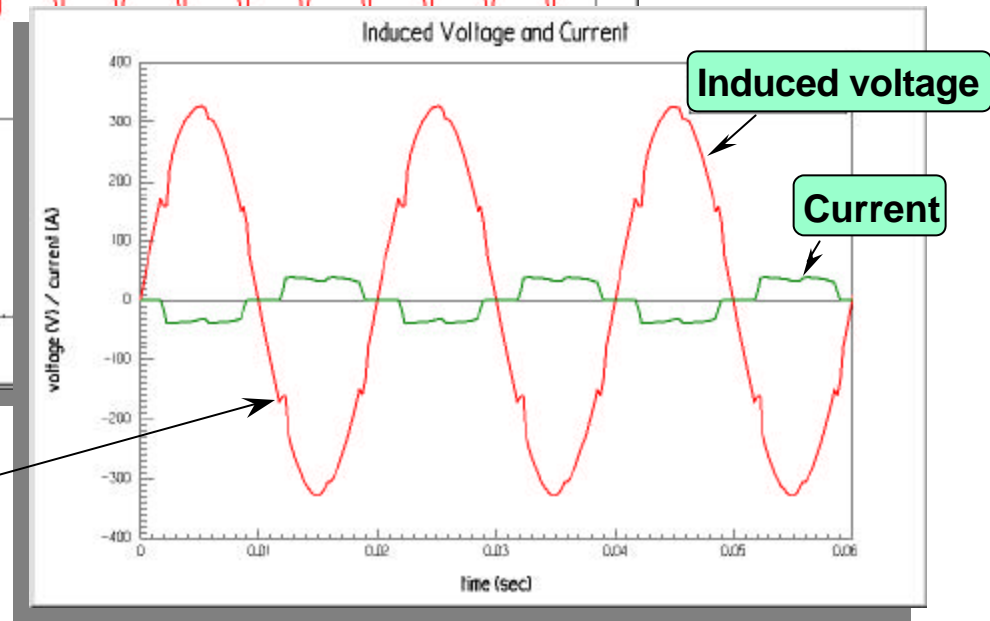
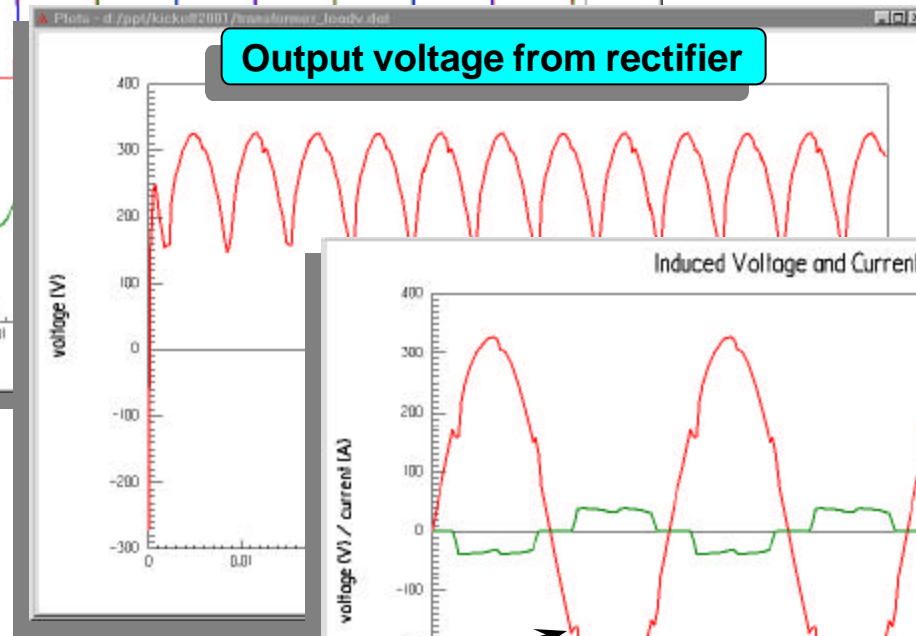
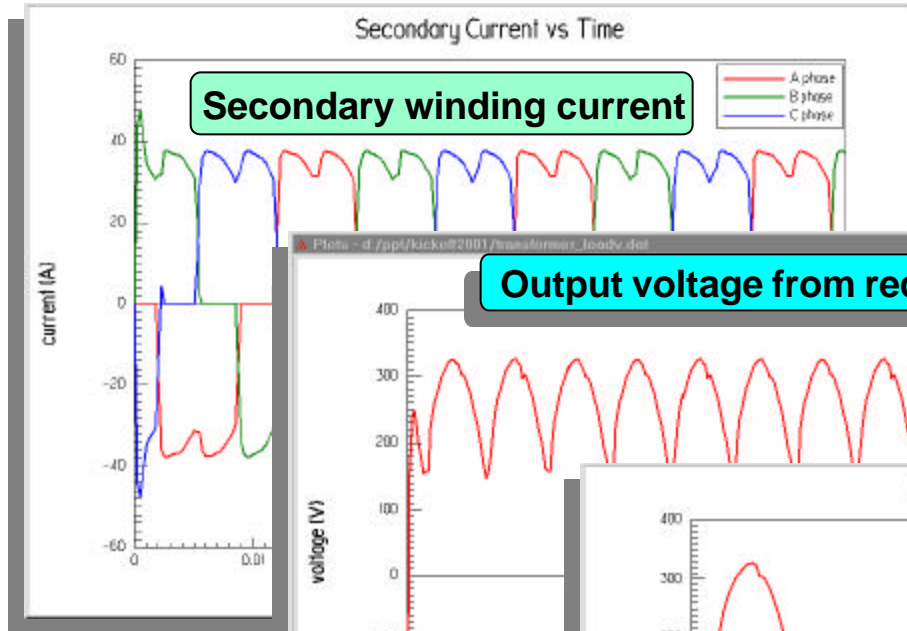


Rectifier Circuit

B Vector Plot



Simulation Results



Notch caused by switching on-off

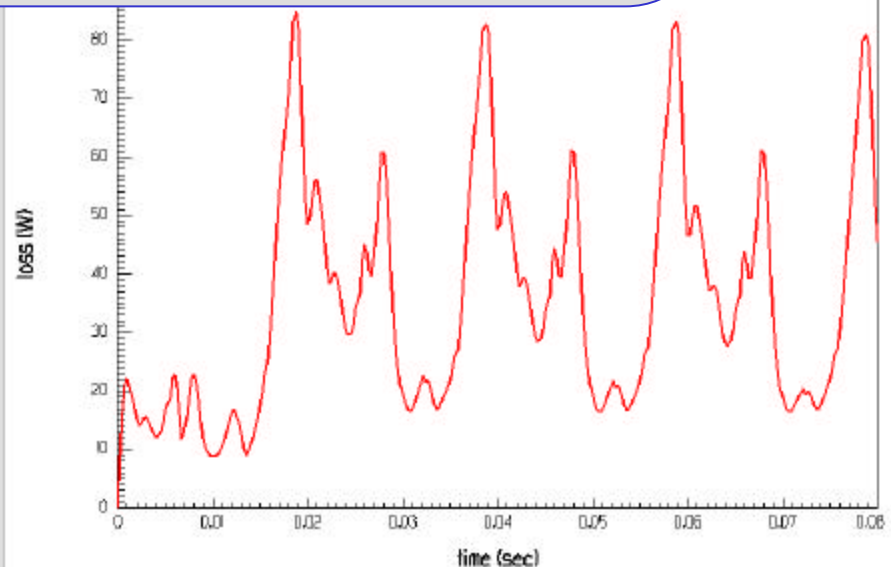
Transient Core Loss

hysteresis loss

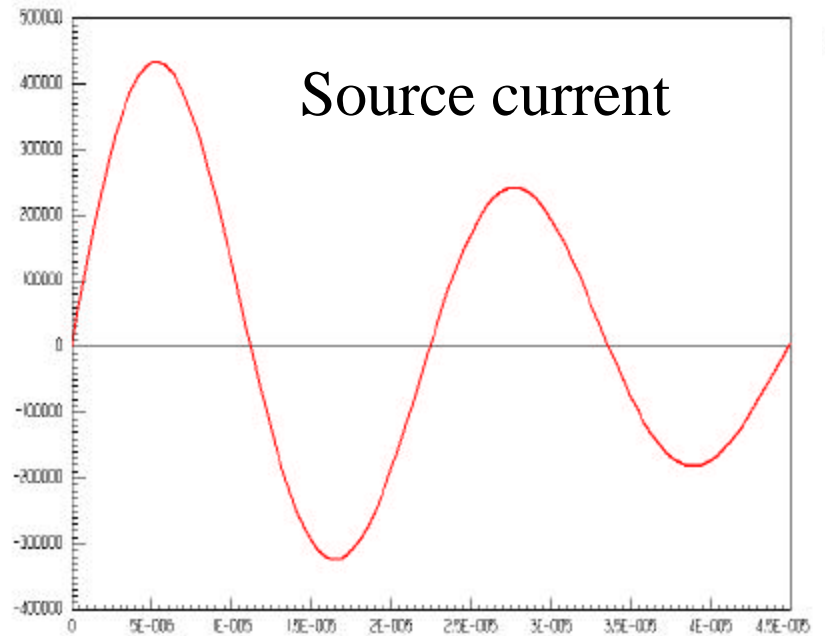
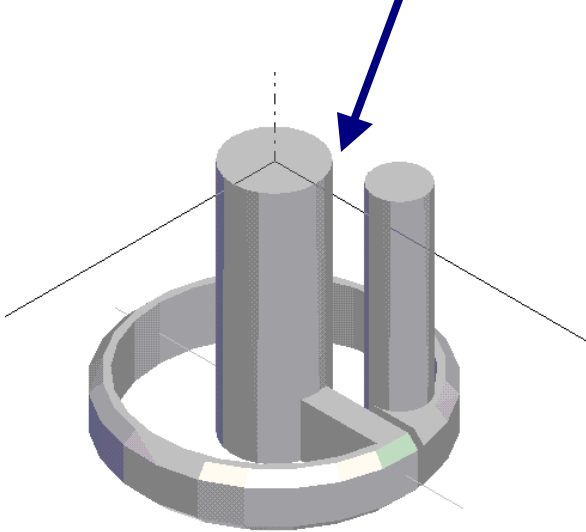
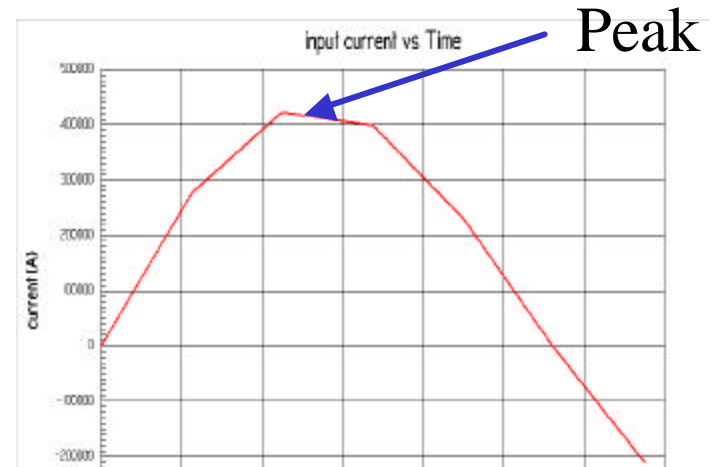
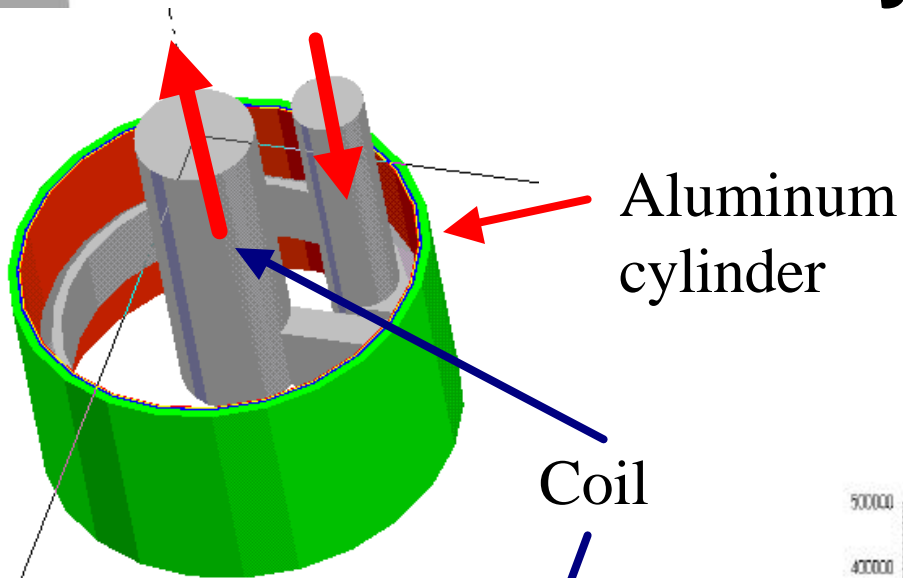
eddy loss

excess loss

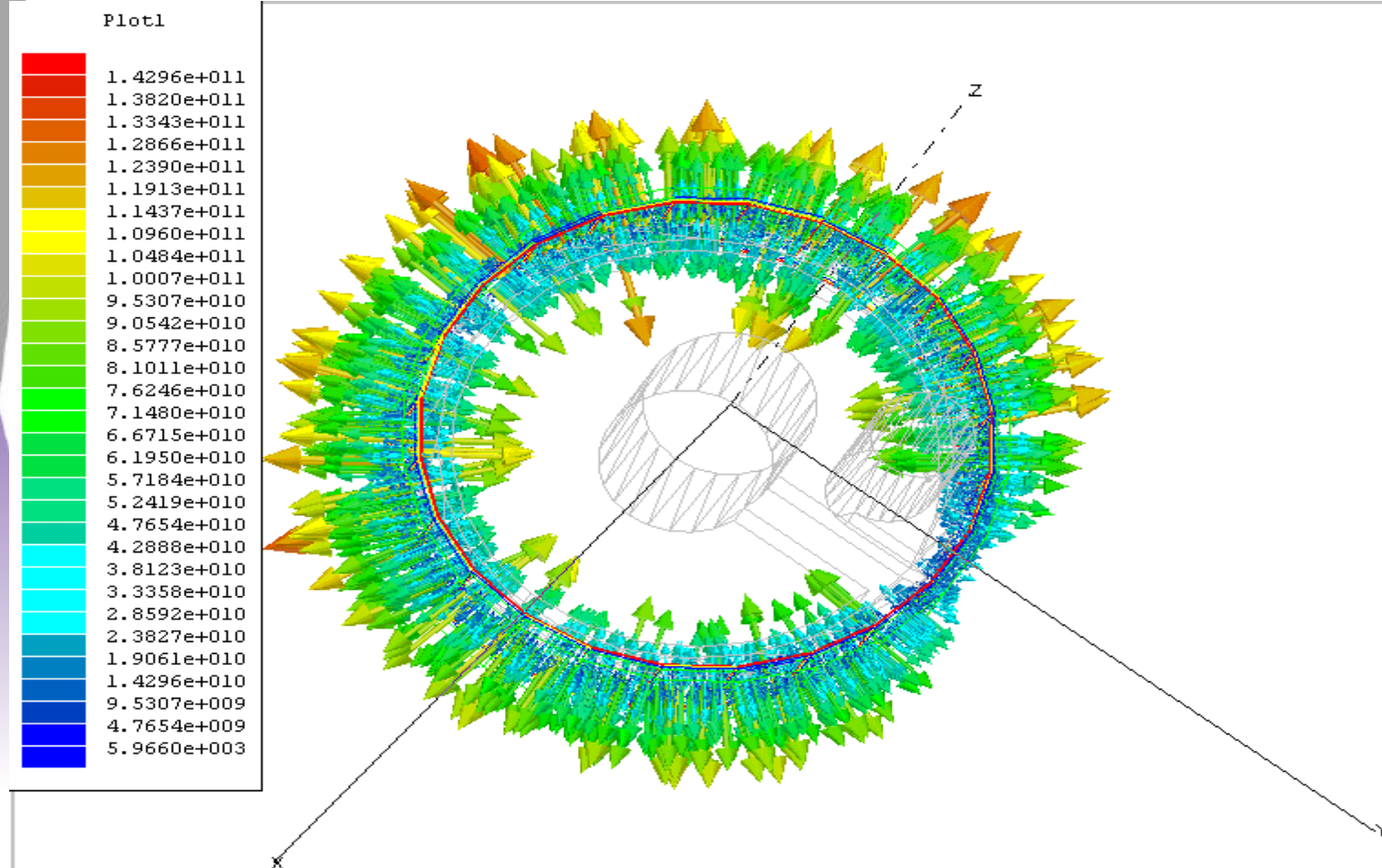
- ◆ Applicable to **Electric Steel** and **Power Ferrite**
- ◆ Consider hysteresis minor loop
- ◆ Based on available manufacturer coefficients



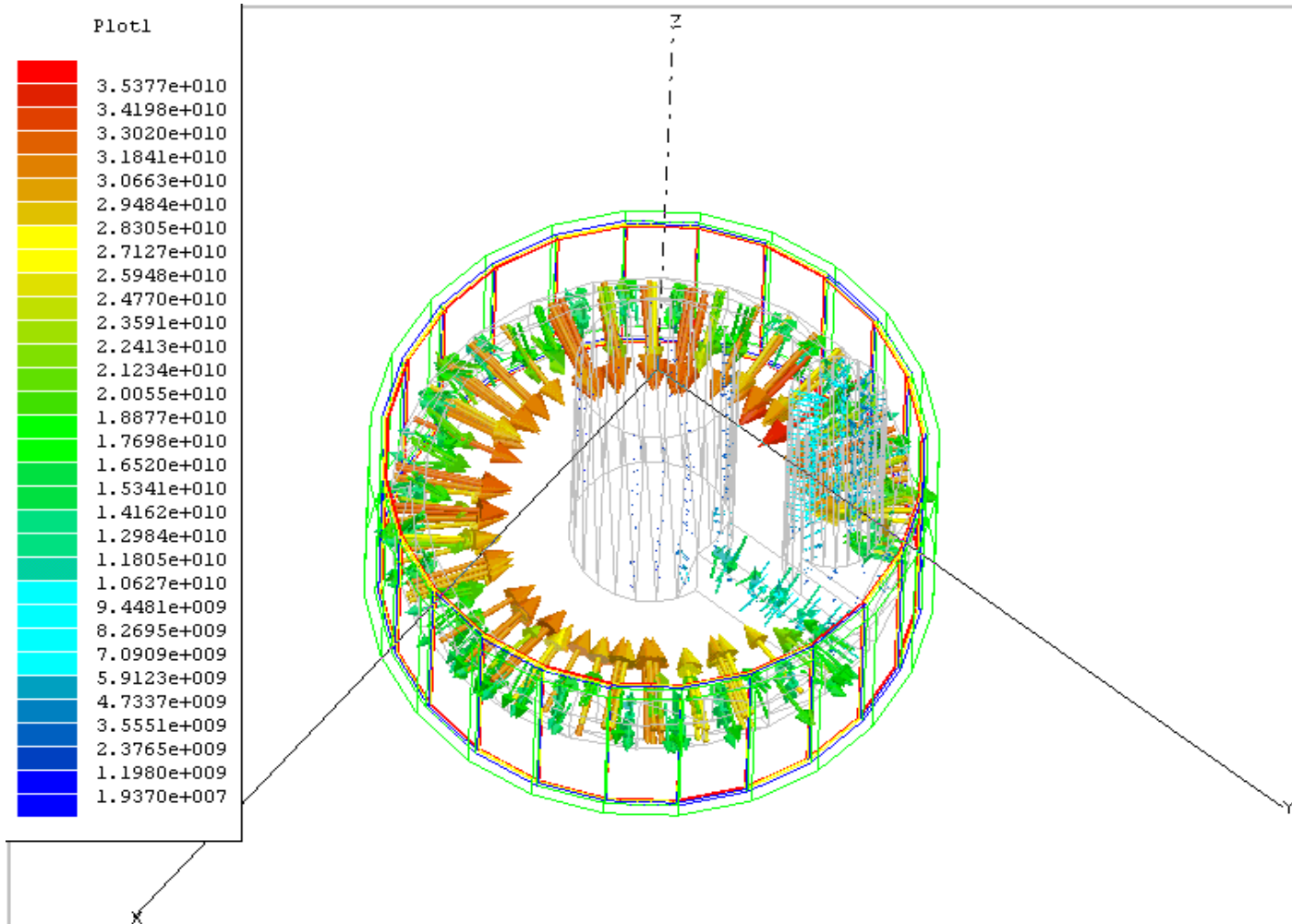
Device Geometry and Source



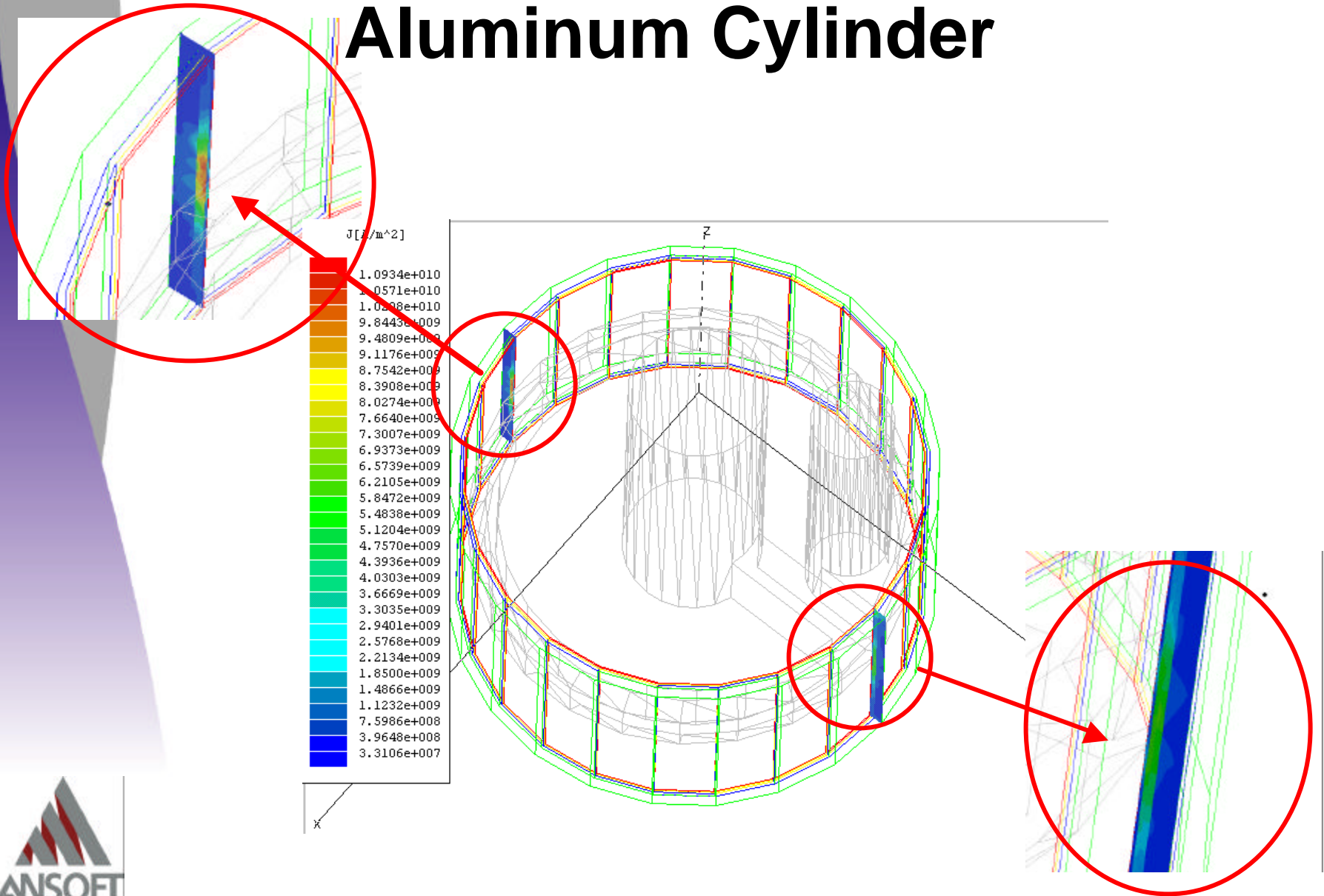
Force distribution on Aluminum Cylinder (N/m³)



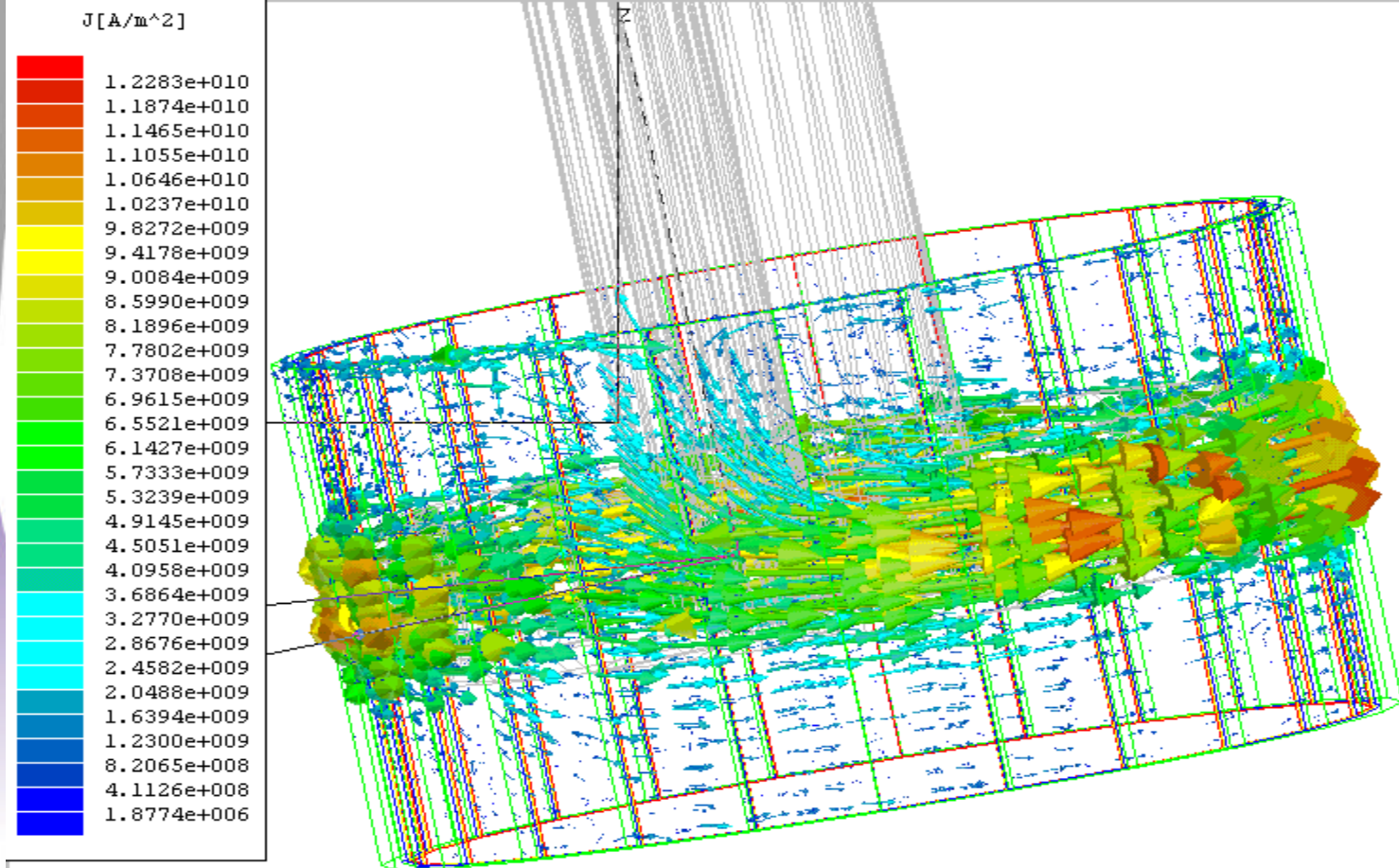
Force distribution on the Coil



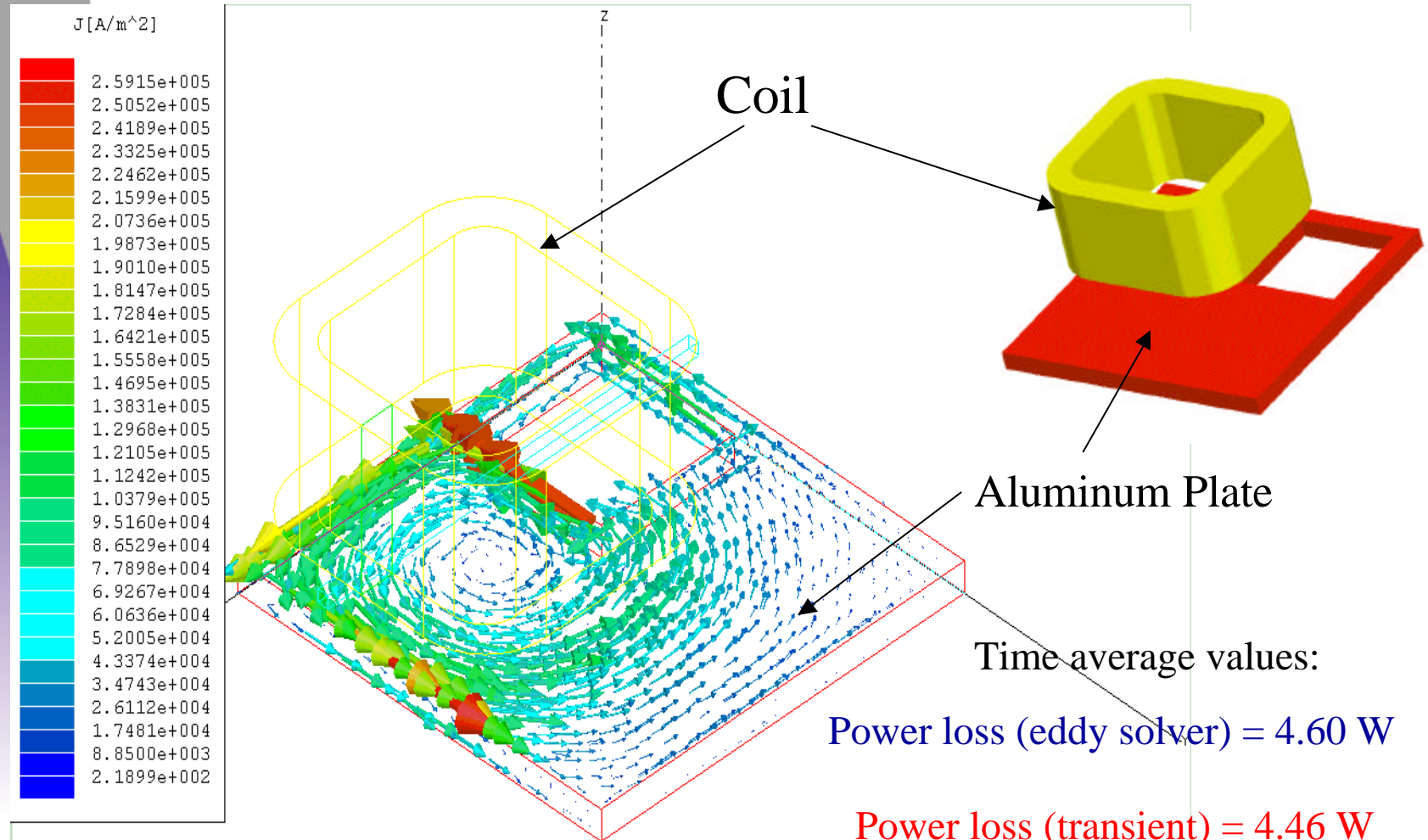
Current distribution in the Aluminum Cylinder



Vector plot of Induced Current in Aluminum Cylinder

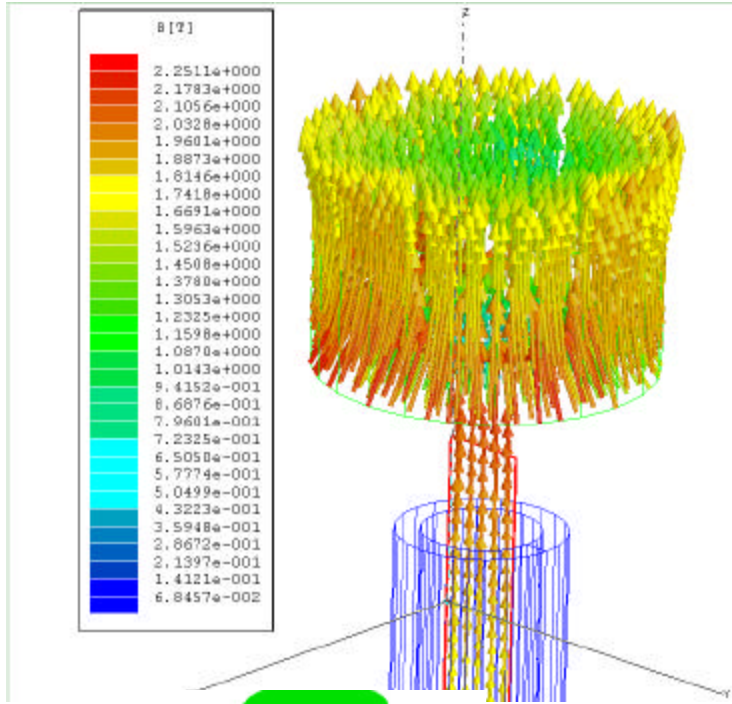


Eddy Currents Induced in an Aluminum Plate



Position sensor analysis

Magnetic flux density plot



Eddy currents in the core

