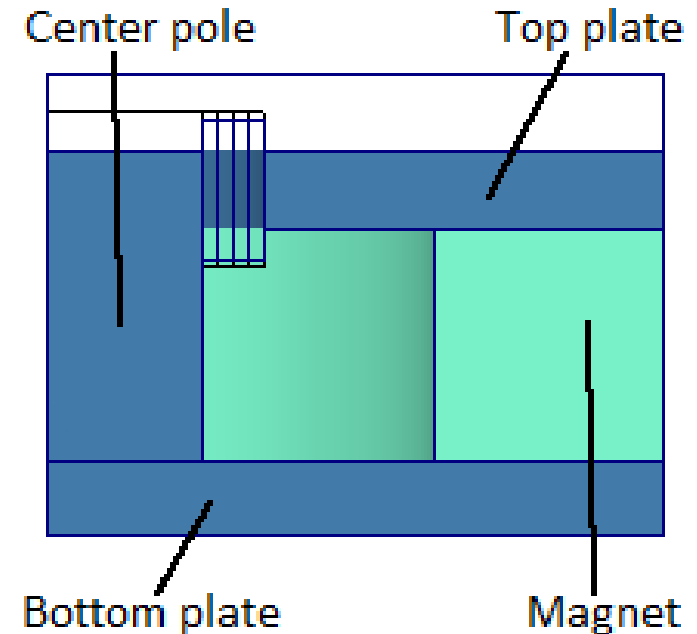


# Analyzing a loudspeaker design

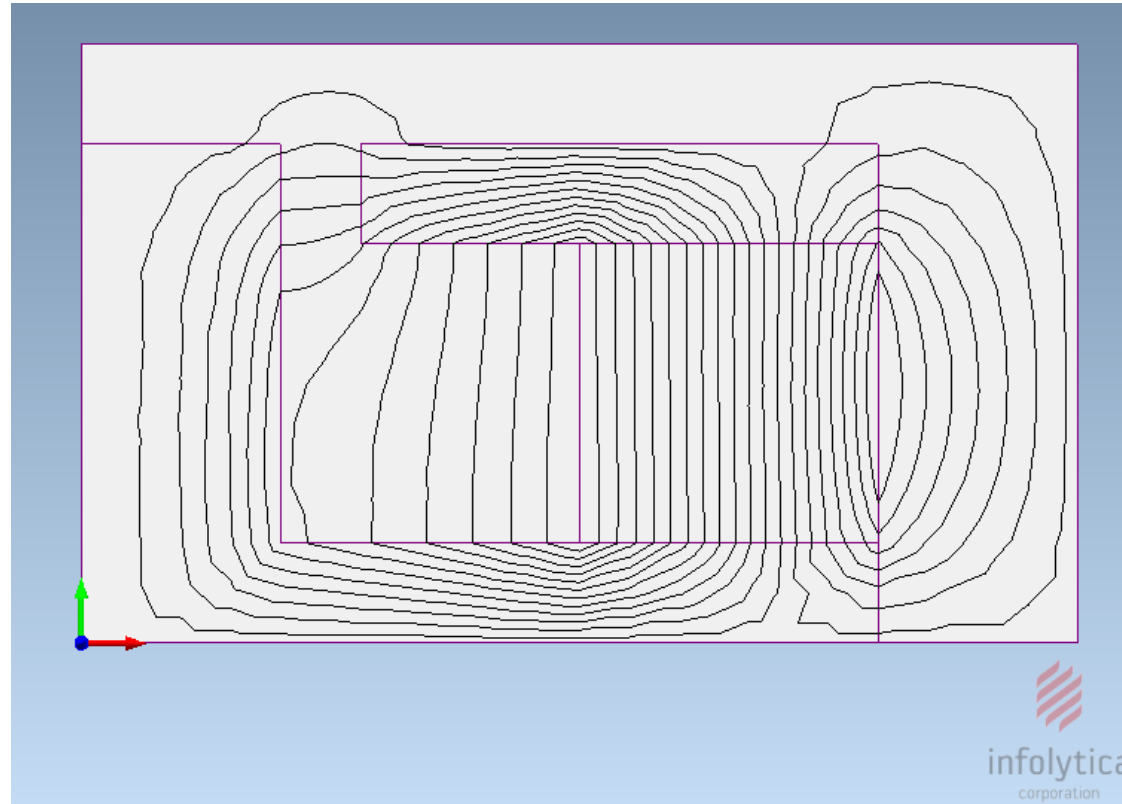
# Accurately modeling the skewed rotor of an Induction Motor

A basic analysis of a loudspeaker design consists of analyzing the magnetostatic properties of a 2D axisymmetric design. In certain cases, 2D analysis is insufficient because of symmetry breaking features, for example, segmented magnets. In this case, a 3D model is needed. The same analyses can be performed in 3D as with the 2D analysis package.

The following diagrams show a typical 2D loudspeaker design in Simcenter MAGNET and the resulting contoured and shaded flux density fields, some 3D views, and the results of parameterization to the geometry of the model.

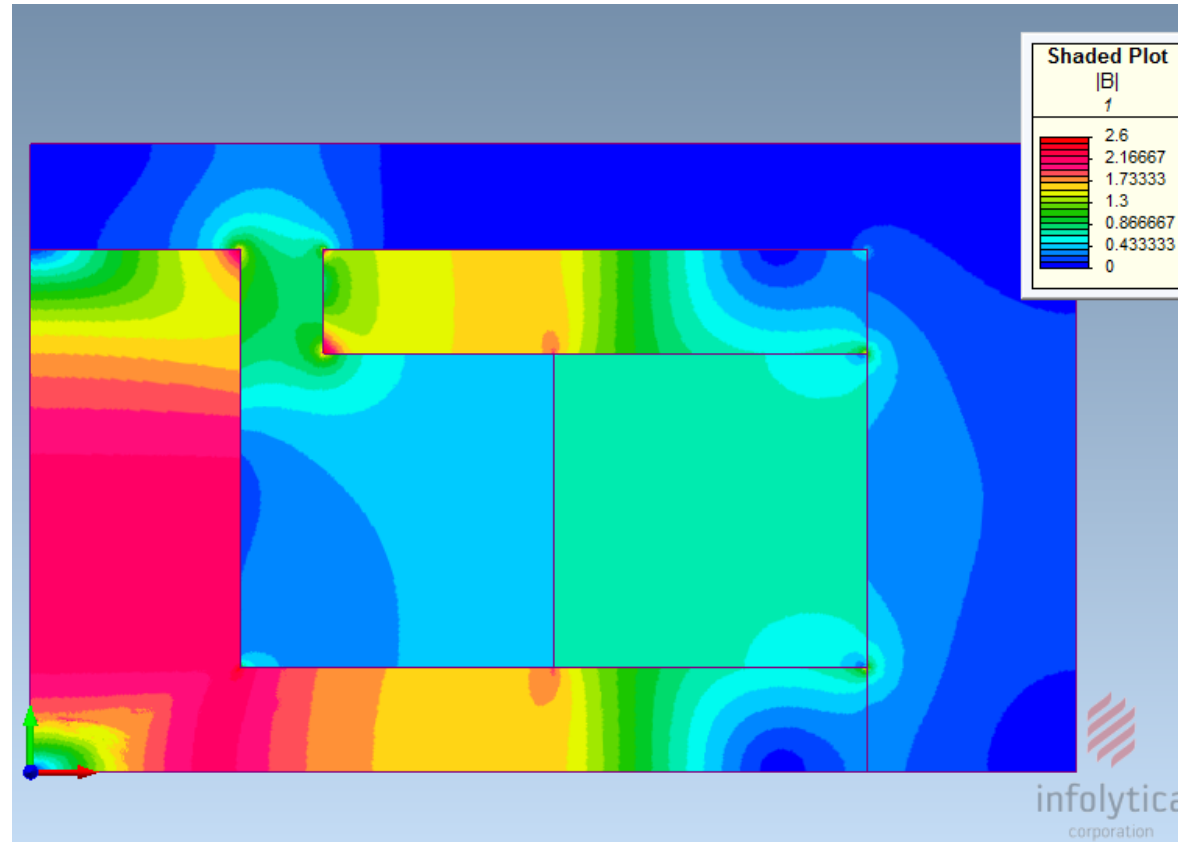


# CONTOUR PLOT OF THE LOUDSPEAKER



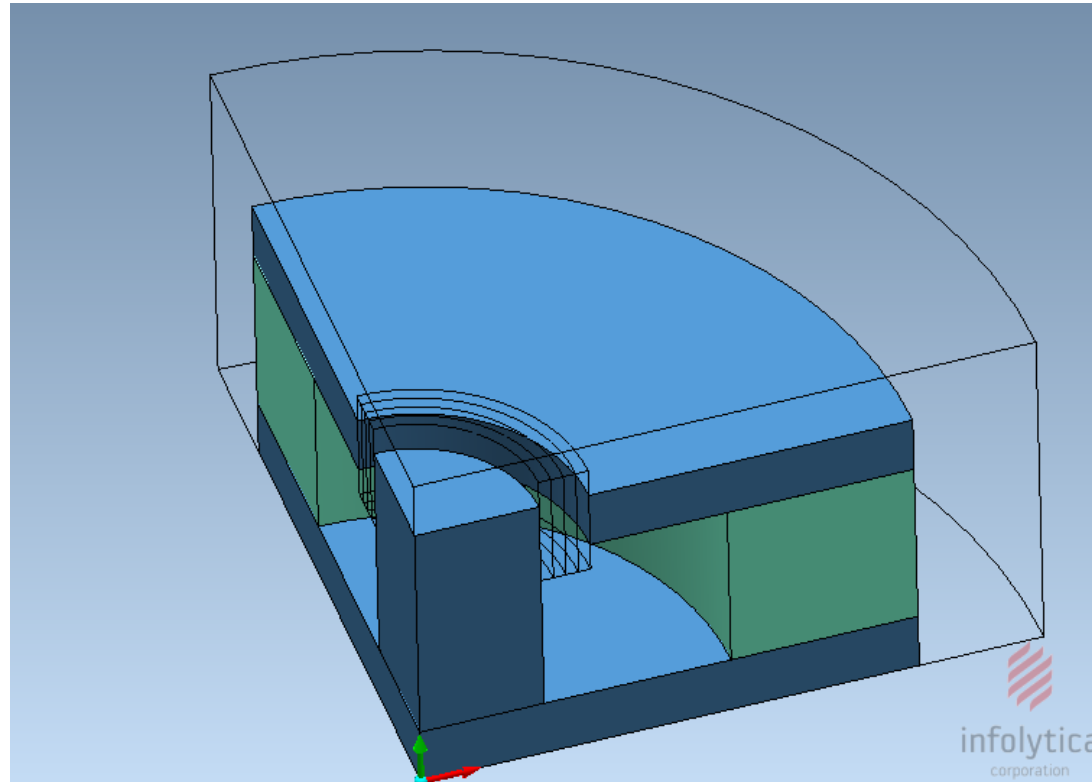
A contour plot of the flux density in the initial design of the loudspeaker.

# SHADED PLOT OF THE FLUX DENSITY



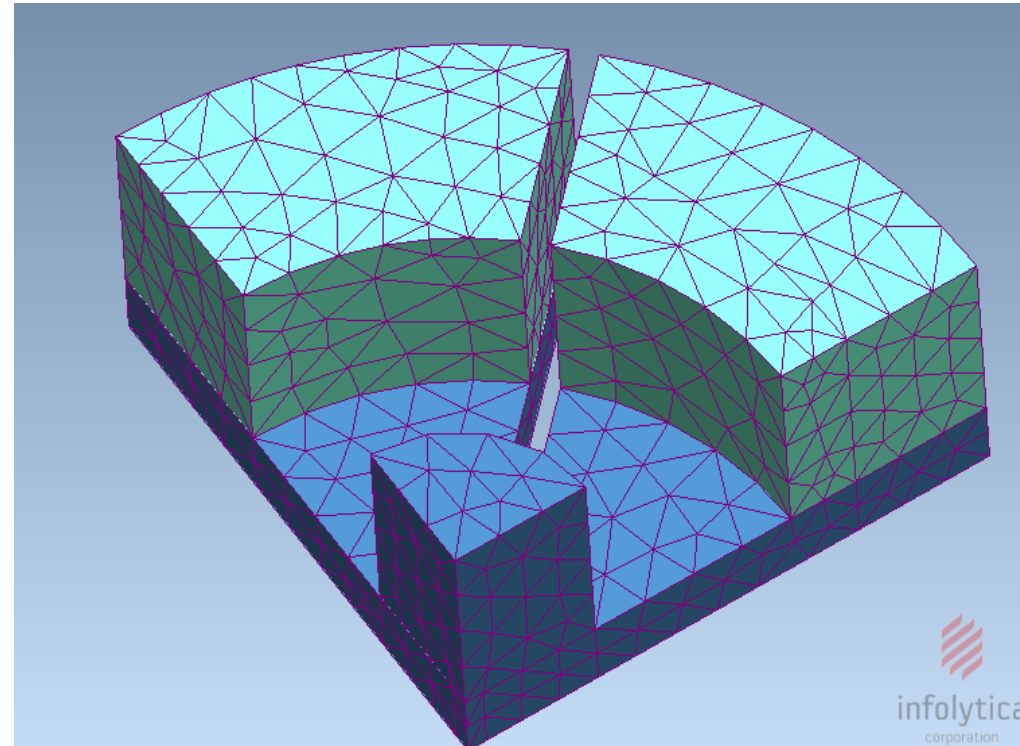
A shaded flux density plot for identification of magnetically saturated regions.

# SEGMENTED MAGNET LOUDSPEAKER



3D representation of the segmented magnet loudspeaker is shown here. For simplicity, only a quarter of the full loudspeaker is represented.

# INITIAL 3D MESH OF THE LOUDSPEAKER



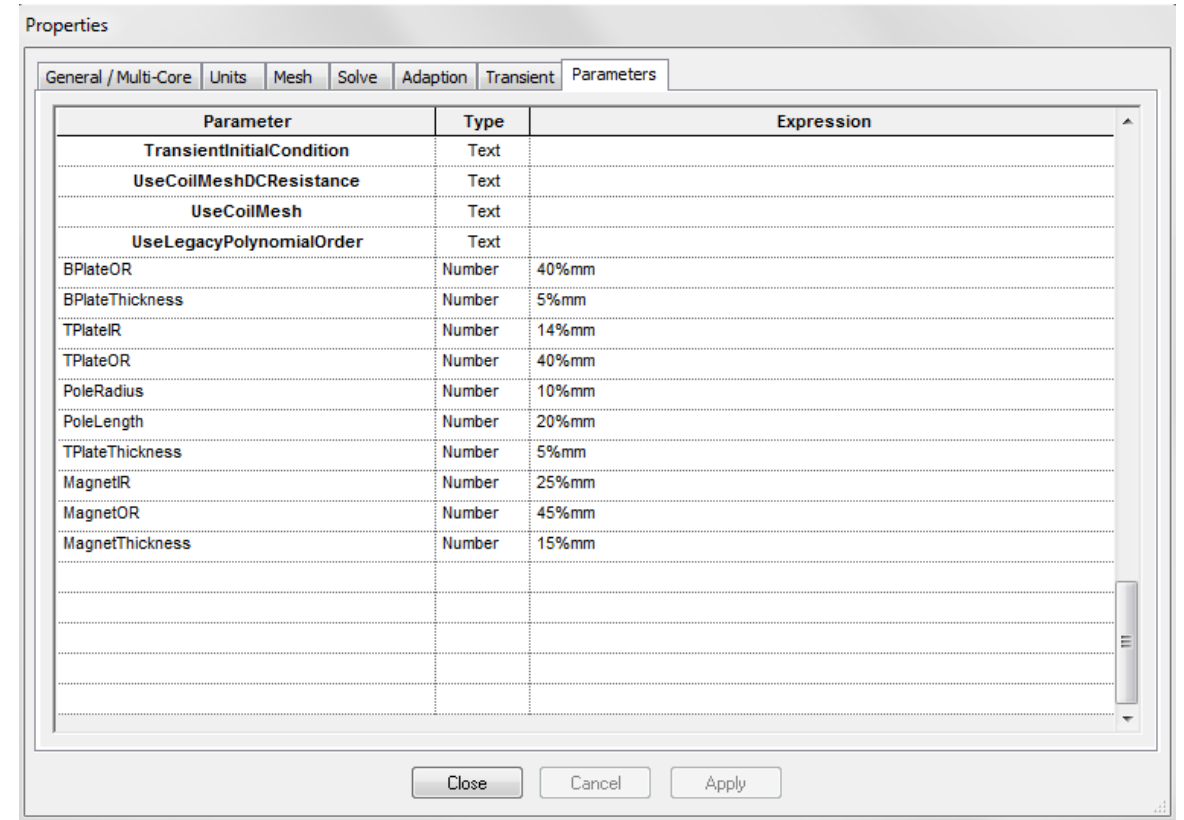
This illustration displays the same 3D model of the loudspeaker however the top plate has been made invisible to show the gap in the magnet, as well as the 3D mesh created by Simcenter MAGNET.



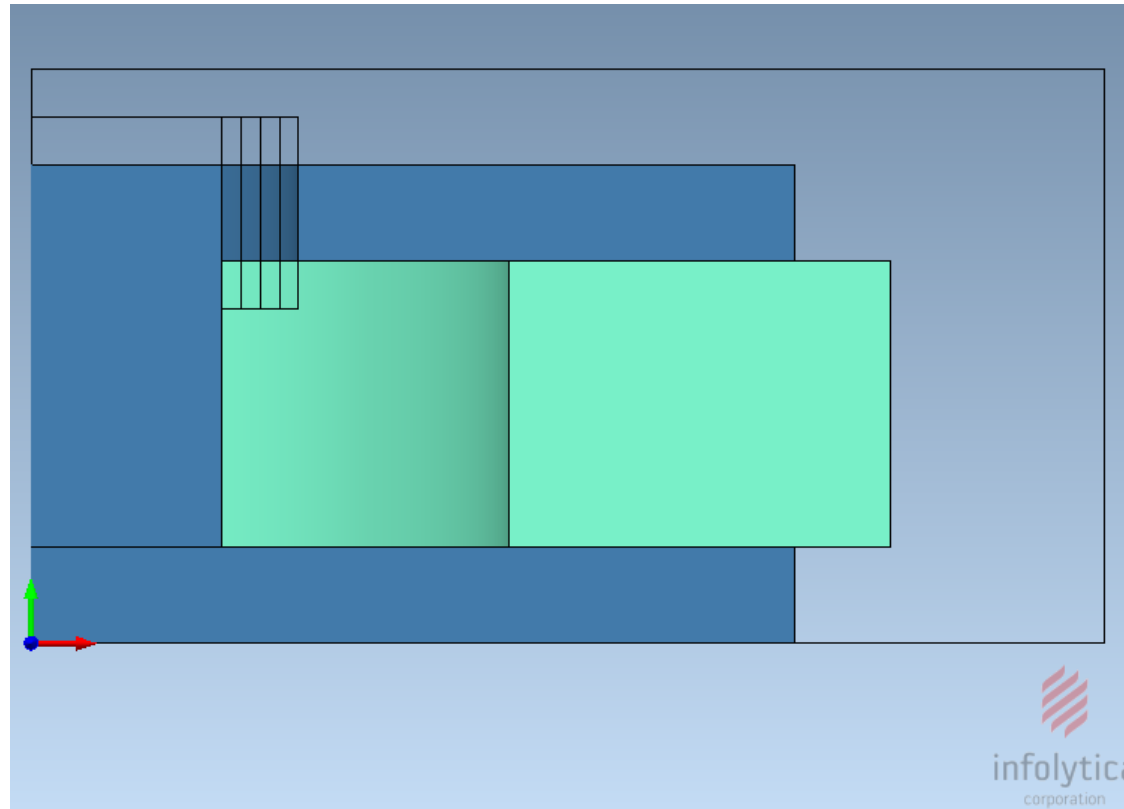
# PARAMETERIZATION OF THE GEOMETRY

In this example, the original speaker dimensions were parameterized to allow the user to modify the speaker dimensions, without completely rebuilding the speaker model.

The Magnet OR (magnet outer radius) parameter is changed.



# GEOMETRICAL MODIFICATIONS TO THE LOUDSPEAKER



Shown here is the resulting change to the geometry, when the magnet outer radius parameter is increased to 45mm.