

## Electromagnetic - Temperature calculation

Description: The use of electromagnetic heating technology, the heavy rail temperature heating. The model is an electromagnetic - temperature coupling model. According to "60kgm rail demensions" to establish a geometric model, the specific dimensions are as follows: contains the air field.

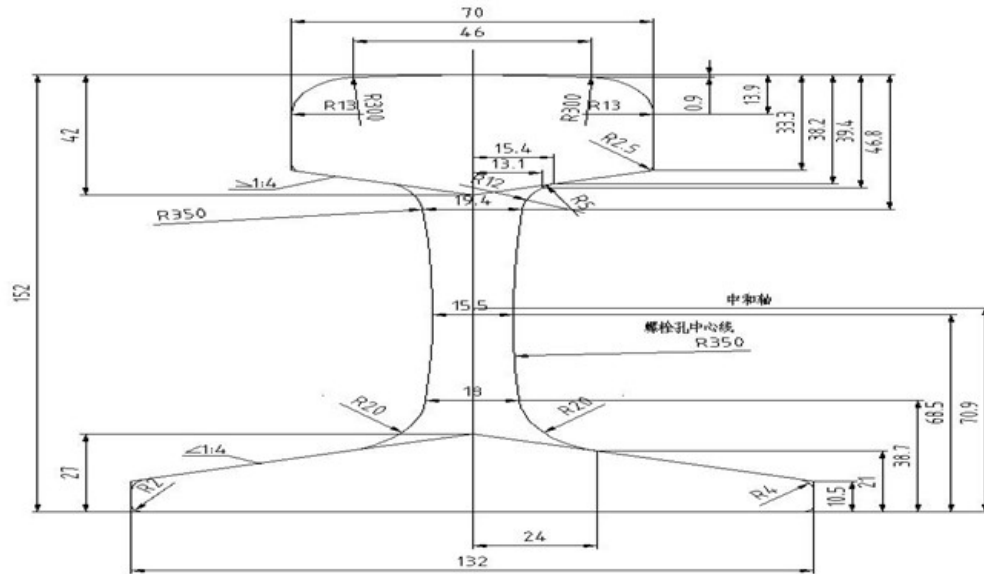


Figure 1: Cross-section of the Rail

In the modeling process to do the appropriate simplification: ignore the bolt hole, ignore the middle of the web between the upper and lower chamfer

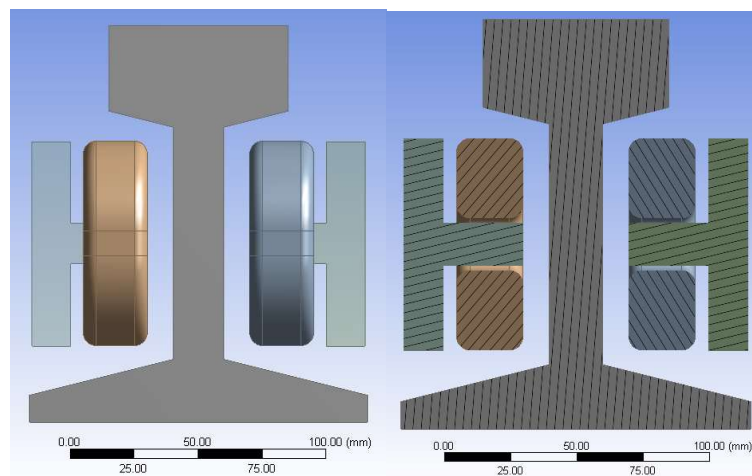
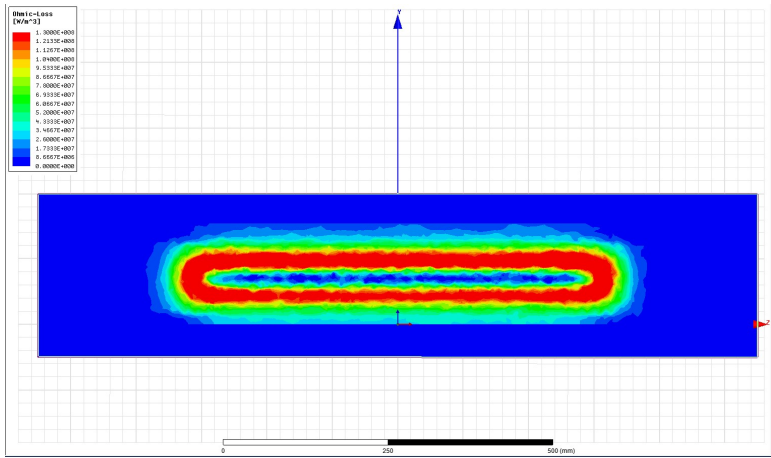
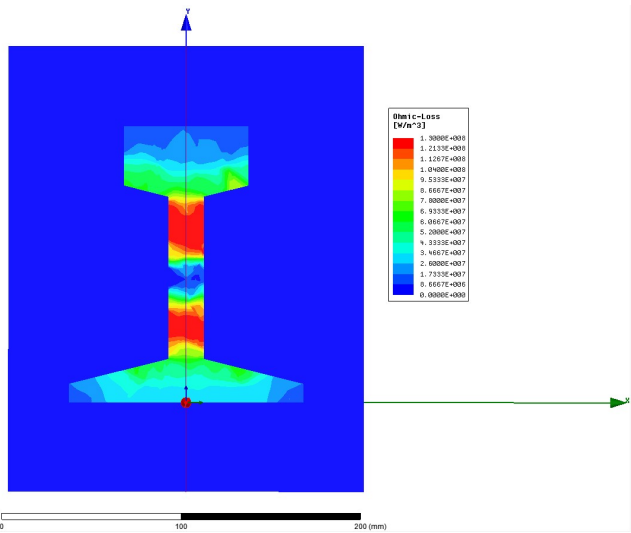
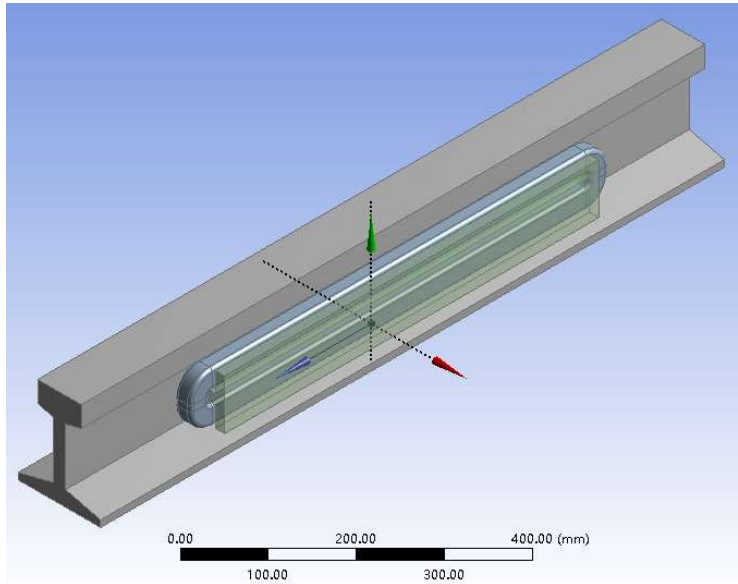


Figure 2: Coil, iron core, rail cross section

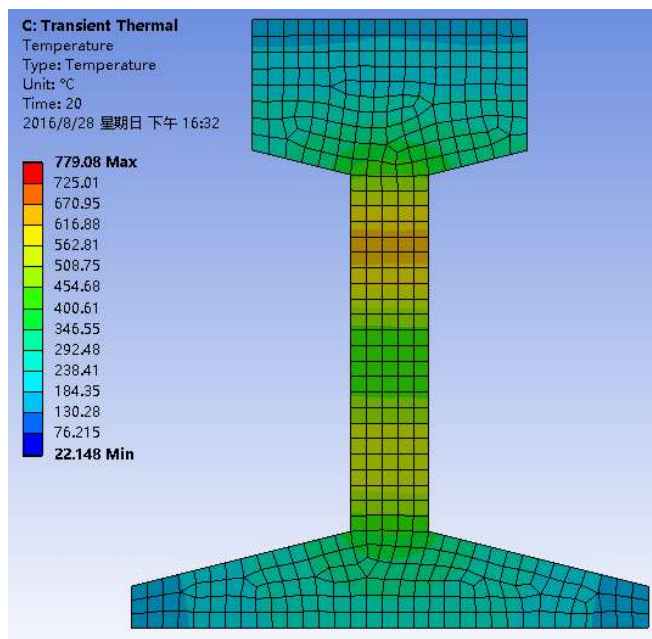


Power distribution

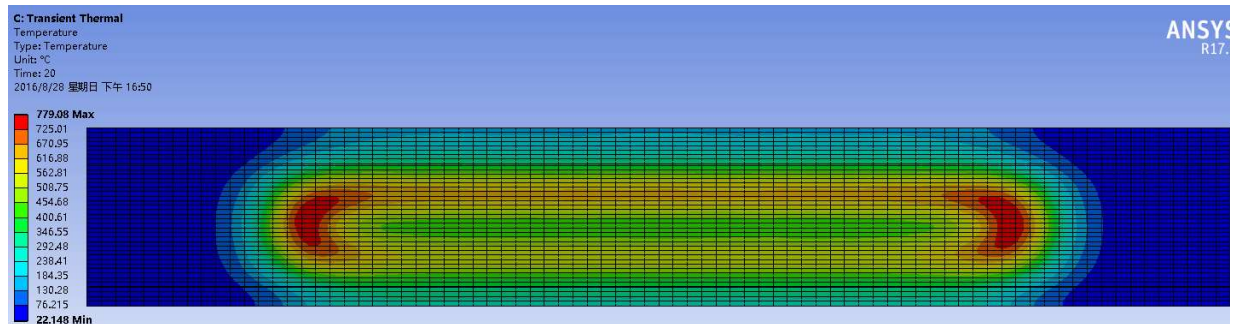
Voltage Calculation:

Current (RMS)	3000 A
Number of turns of coil	4
Ampere turns	12000 A
Frequency	1000 Hz
Active power	239919.5012
Reactive power	1087889.463
Voltage	371.3436341
Capacity	0.000828
Inductance	3.05921E-05

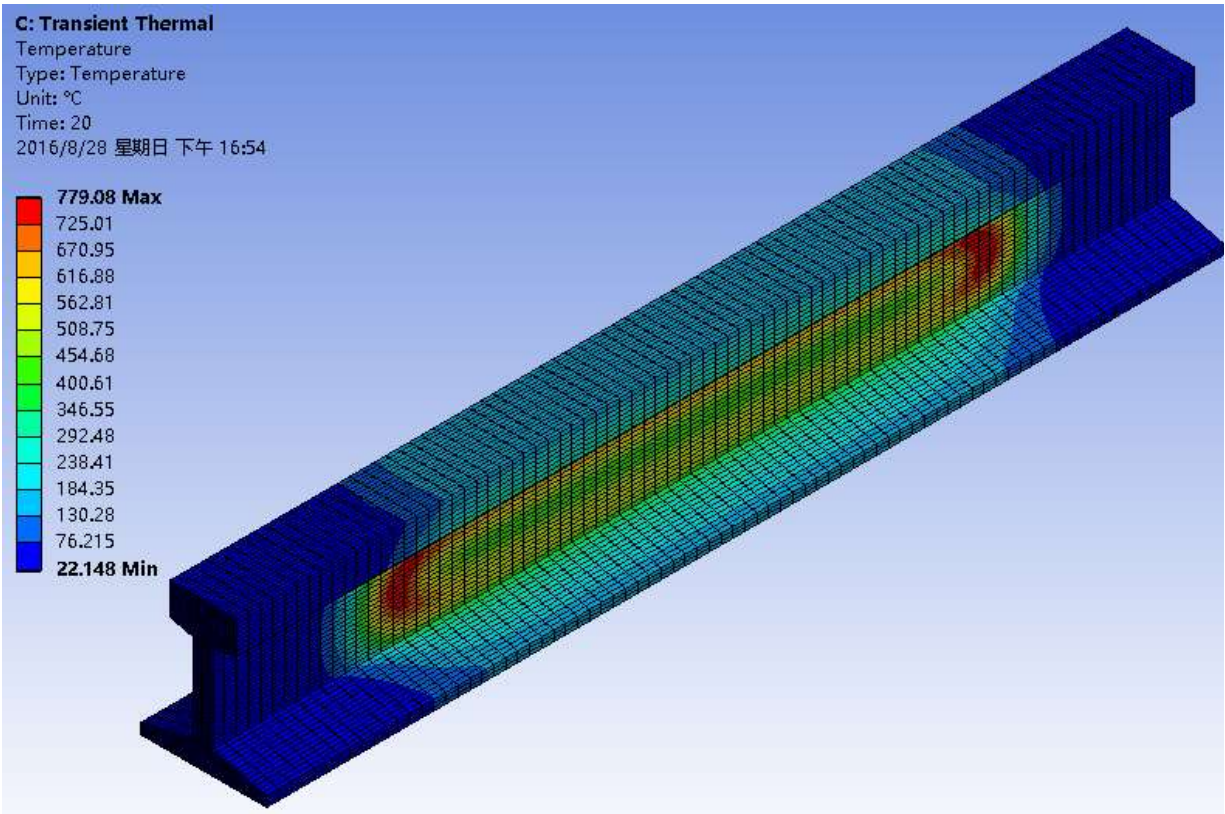
Temperature contour are shown below:



XY cross section view



YZ cross section view



ISO View