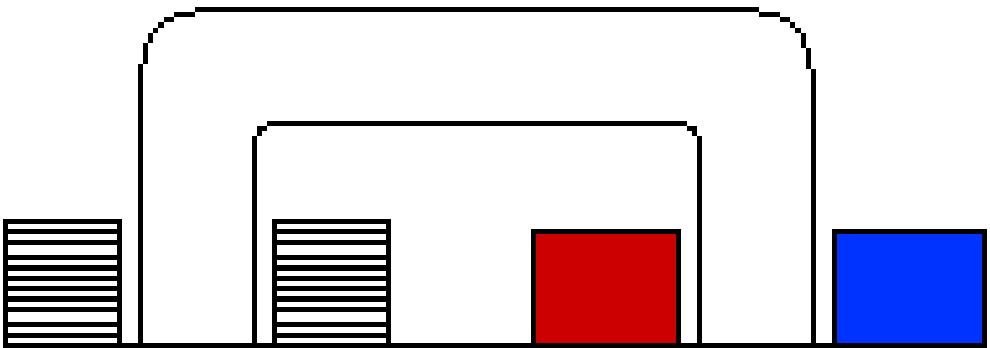


QuickField simulation report

Welding transformer

Volt-ampere characteristic of the welding transformer calculation



This automatically generated document consists of several sections, which specify the problem setup and finite element analysis simulation results. Navigation links in the top of each page lead to corresponding sections of this report.

Problem description and QuickField simulation files:

<https://quickfield.com/advanced/circuit2.htm>

Problem info

Problem type: AC Magnetics , frequency: 60 Hz,

Geometry model class: Plane-Parallel

Problem database file names:

- Problem: *Circuit2.pbm*
- Geometry: *Circuit2.mod*
- Material Data: *Circuit2.dhe*
- Material Data 2 (library): *none*
- Electric circuit: *Circuit2.qcr*

Results taken from other problems:

- *none*

Geometry model

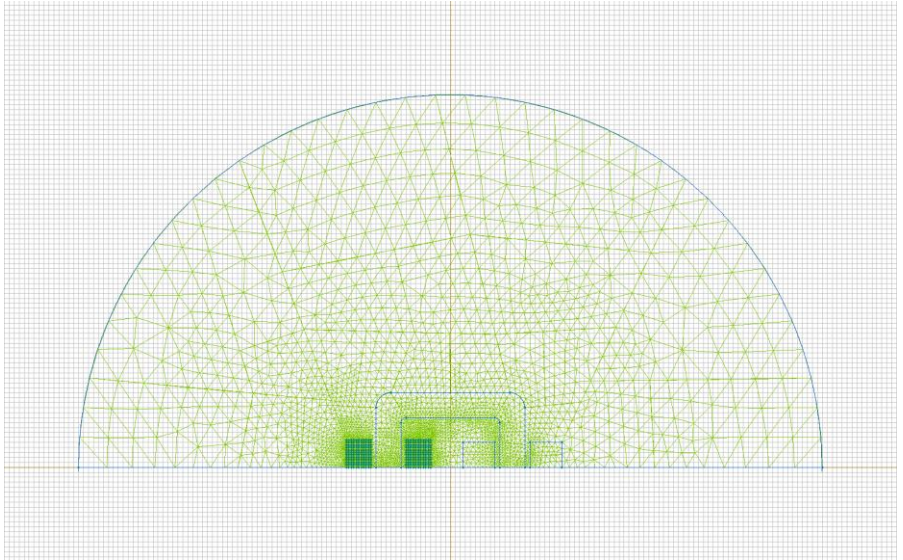


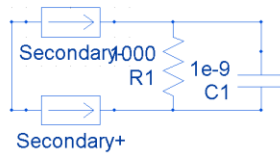
Table 1. Geometry model statistics

	With Label	Total
Blocks	6	225
Edges	2	510
Vertices	0	286

Number of nodes: 4524.

Electric circuit

Coupled electric circuit



Circuit elements:

QuickField block 'Secondary-'

QuickField block 'Secondary+'

Resistor R1=1000 [Ohm]

Capacitor C1=0.000000001 [F]

Labelled objects

There are following labelled objects in the geometry model (Material Data file could contain more labels, but only those labels that assigned to geometric objects are listed)

Blocks:

- [Secondary+](#)
- [Air](#)
- [Secondary-](#)
- [Primary-](#)
- [Primary+](#)
- [core](#)
-

Edges:

- [symmetry](#)
- [Outer](#)
-

Vertices:

Detailed information about each label is listed below.

Labelled objects: block "Secondary+"

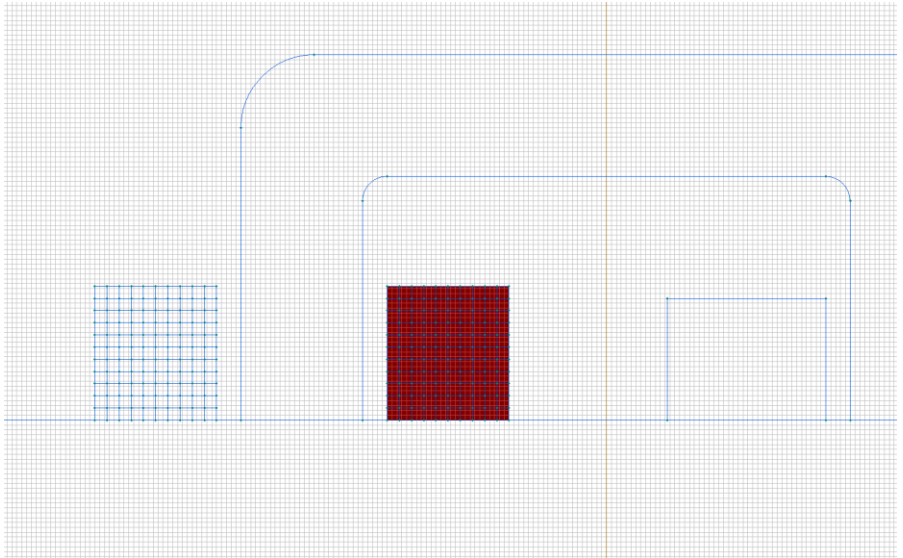
There are (110) objects with this label

Relative magnetic permeability: $\mu_x=1$, $\mu_y=1$

Electric conductivity: $\sigma=50000000$ [S/m]

Total current: $I=0$ [A], phase 0 [deg]

Conductor's connection: in series



Labelled objects: block "Air"

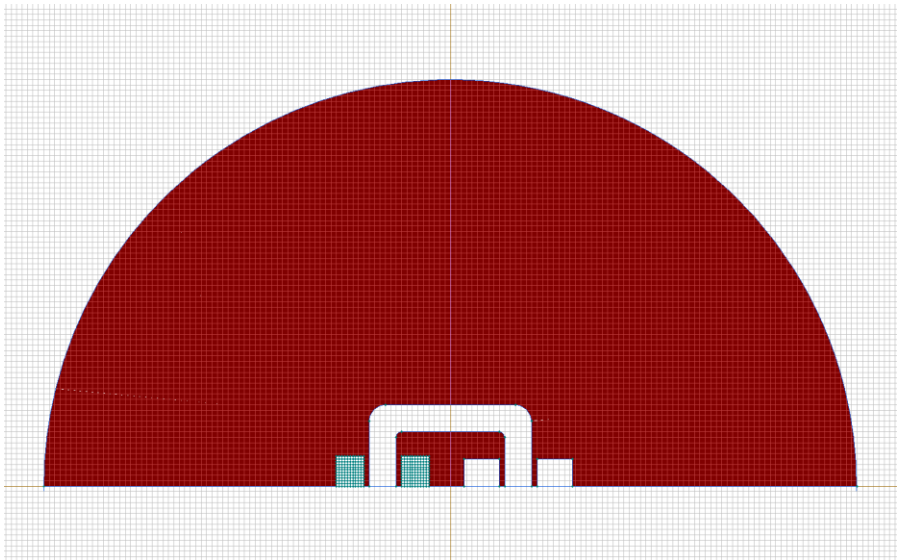
There are (2) objects with this label

Relative magnetic permeability: $\mu_x=1$, $\mu_y=1$

Electric conductivity: $\sigma=0$ [S/m]

Current density: $j=0$ [A/m²], phase 0 [deg]

Conductor's connection: in parallel



Labelled objects: block "Secondary-"

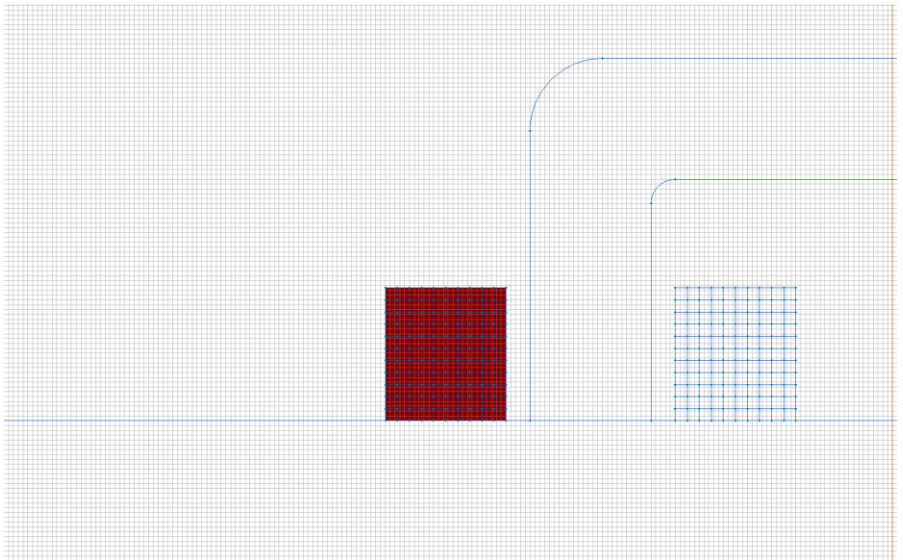
There are (110) objects with this label

Relative magnetic permeability: $\mu_x=1$, $\mu_y=1$

Electric conductivity: $\sigma=500000000$ [S/m]

Total current: $I=0$ [A], phase 0 [deg]

Conductor's connection: in series



Labelled objects: block "Primary-"

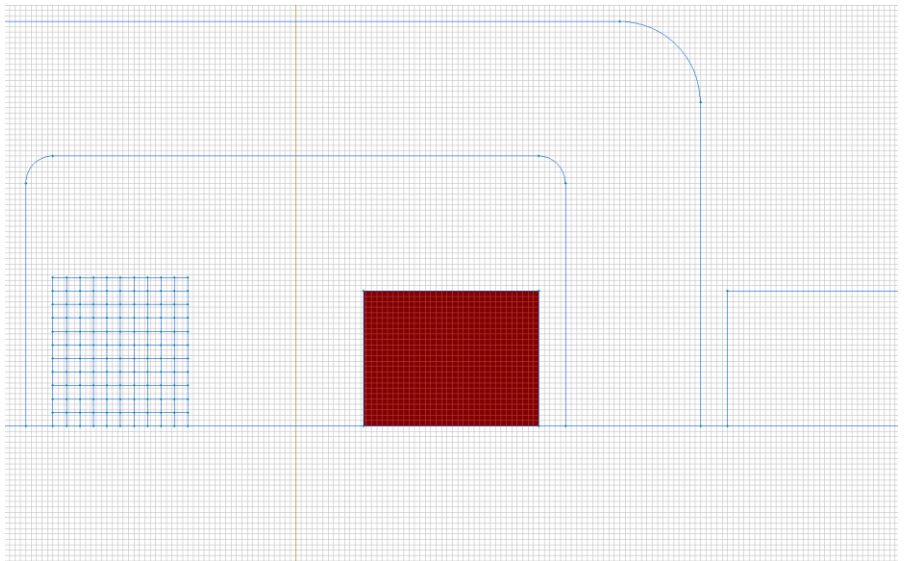
There are (1) objects with this label

Relative magnetic permeability: $\mu_x=1$, $\mu_y=1$

Electric conductivity: $\sigma=0$ [S/m]

Total current: $I=-70$ [A], phase 0 [deg]

Conductor's connection: in series



Labelled objects: block "Primary+"

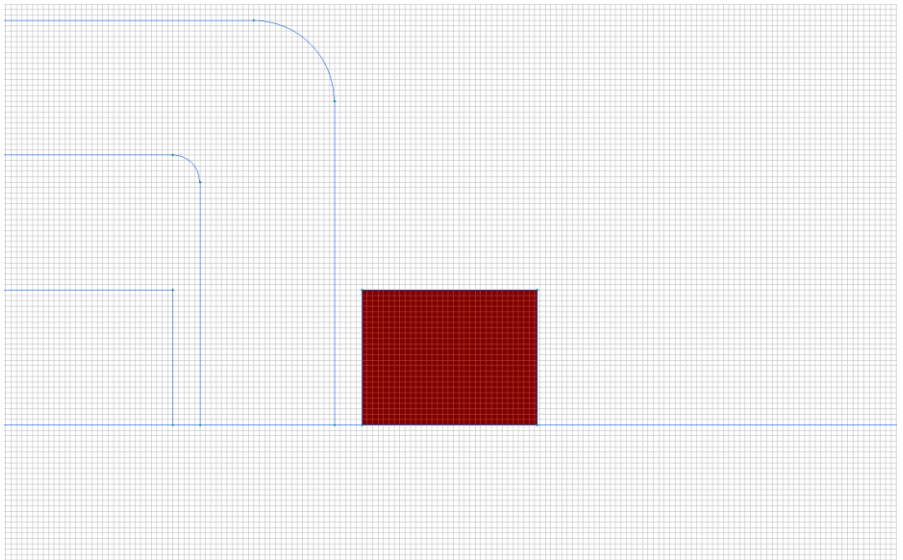
There are (1) objects with this label

Relative magnetic permeability: $\mu_x=1$, $\mu_y=1$

Electric conductivity: $\sigma=0$ [S/m]

Total current: $I=70$ [A], phase 0 [deg]

Conductor's connection: in series



Labelled objects: block "core"

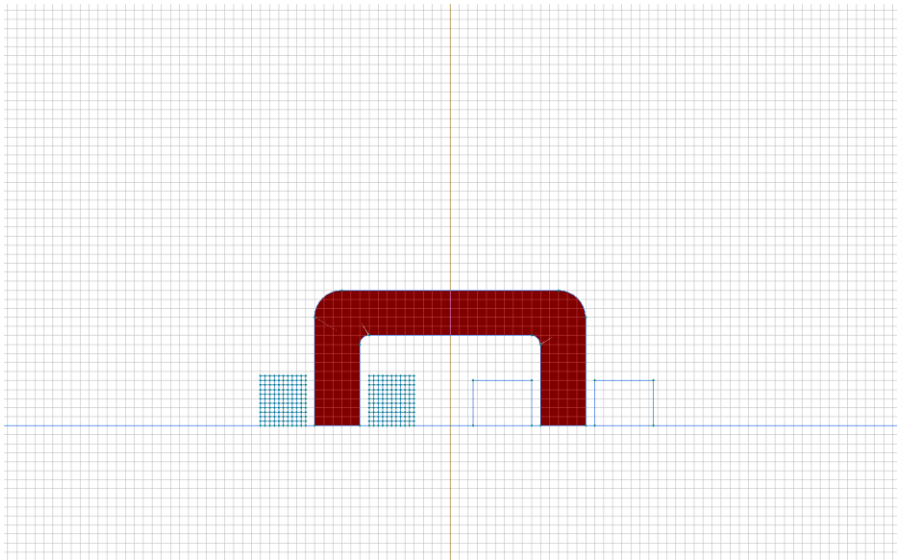
There are (1) objects with this label

Relative magnetic permeability: $\mu_x=400$, $\mu_y=400$

Electric conductivity: $\sigma=0$ [S/m]

Current density: $j=0$ [A/m²], phase 0 [deg]

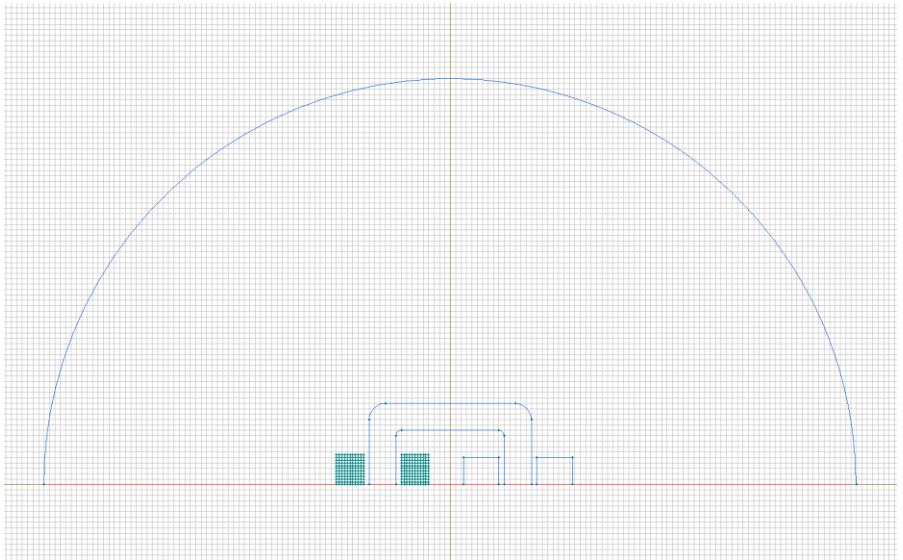
Conductor's connection: in parallel



Labelled objects: edge "symmetry"

There are (231) objects with this label

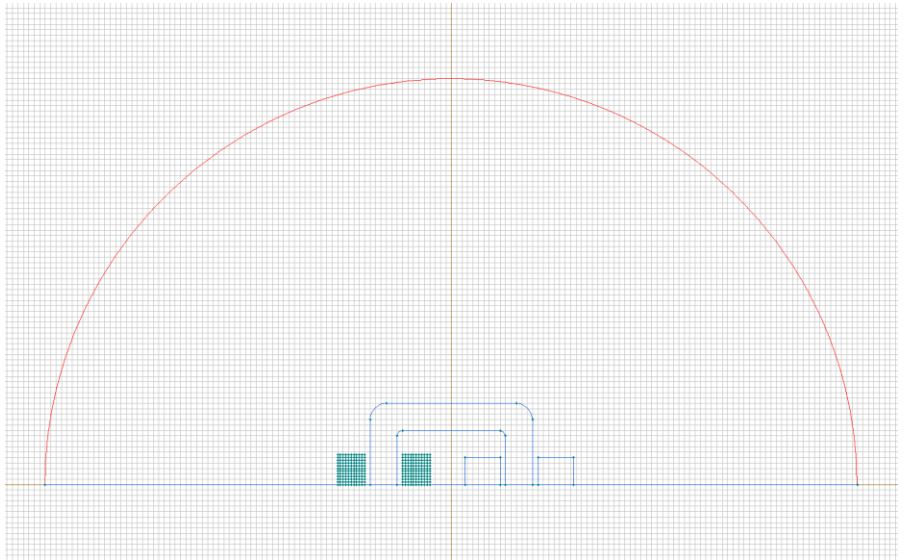
Tangential field: $H_t=0$ [A/m], phase 0 [deg]



Labelled objects: edge "Outer"

There are (1) objects with this label

Magnetic potential: $A=0$ [Wb/m], phase 0 [deg]



[Problem info](#)

[Geometry model](#)

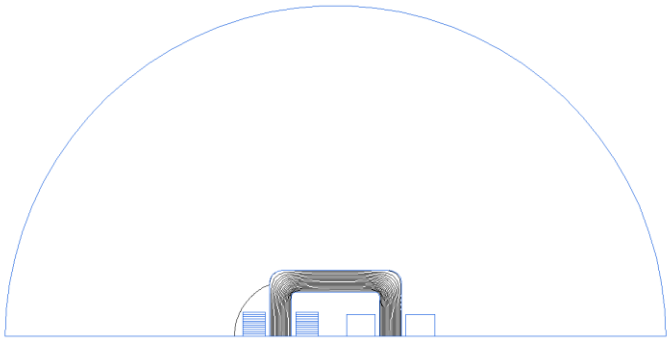
[Labelled Objects](#)

[Results](#)

[Nonlinear dependencies](#)

Results

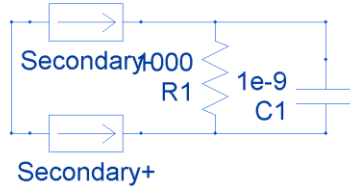
Field lines



Results

Electric circuit currents

...



Circuit elements:

Secondary-. I=0.15256 [A], phase=75.55 [deg]

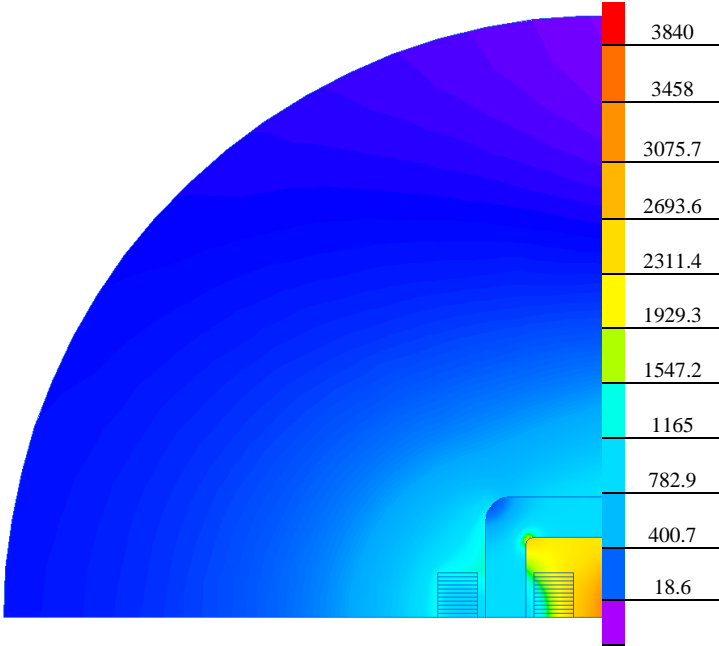
Secondary+. I=0.15256 [A], phase=-104.45 [deg]

R1. I=0.15256 [A], phase=-104.47 [deg]

C1. I=0.00005752 [A], phase=-14.47 [deg]

Results

Color map of Strength $|H|$ [A/m]



Nonlinear dependencies

No non-linear dependencies are used in this problem data