Problem info

Problem type: Transient Heat Transfer (integration time: 10800 s.)
Geometry model class: Plane-Parallel
Problem database file names:

- Problem: *THeat1Ld.pbm*
- Geometry: *Theat1.mod*
- Material Data: *Theat1ld.dht*
- Material Data 2 (library): *none*
- Electric circuit: *none*

Results taken from other problems:

- *Temperature Field: Theat1_i.pbm*

Geometry model

Table 1. Geometry model statistics

	With Label	Total
Blocks	4	6
Edges	3	24
Vertices	0	22

Number of nodes: 1006.

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)

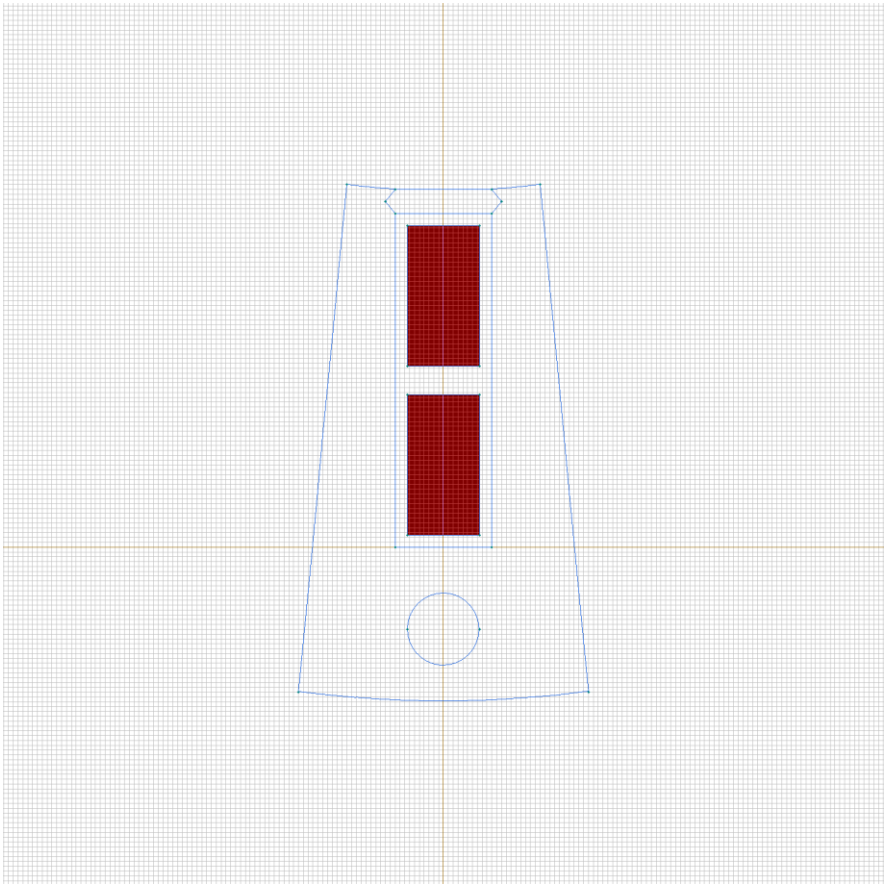
Blocks:	Edges:	Vertices:
• Bar • Insulation • Wedge • Iron •	• Cooling duct • Inner surface • Outer surface •	

Detailed information about each label is listed below.

Labelled objects: block "Bar"

There are (2) objects with this label

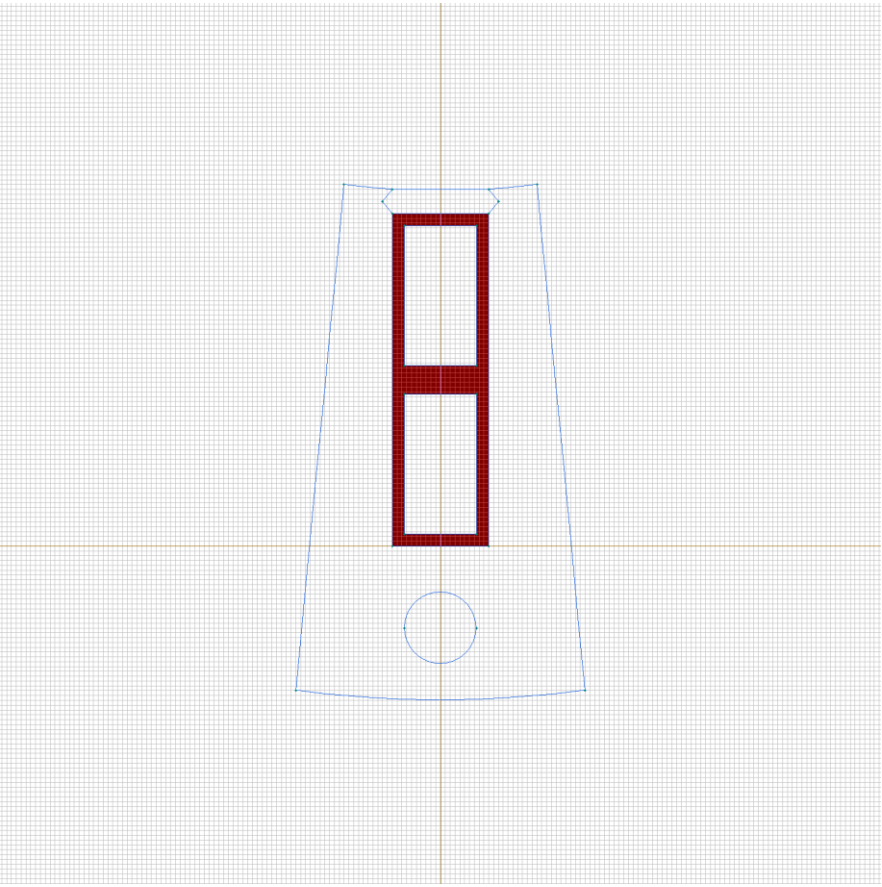
Thermal conductivity: lambda_x=380 [W/(K*m)], lambda_y=380 [W/(K*m)]
Volume heat: Q=360000 [W/m3]
Specific heat: C=380 [J/(kg*K)]
Mass density: rho=8950 [kg/m3]



Labelled objects: block "Insulation"

There are (1) objects with this label

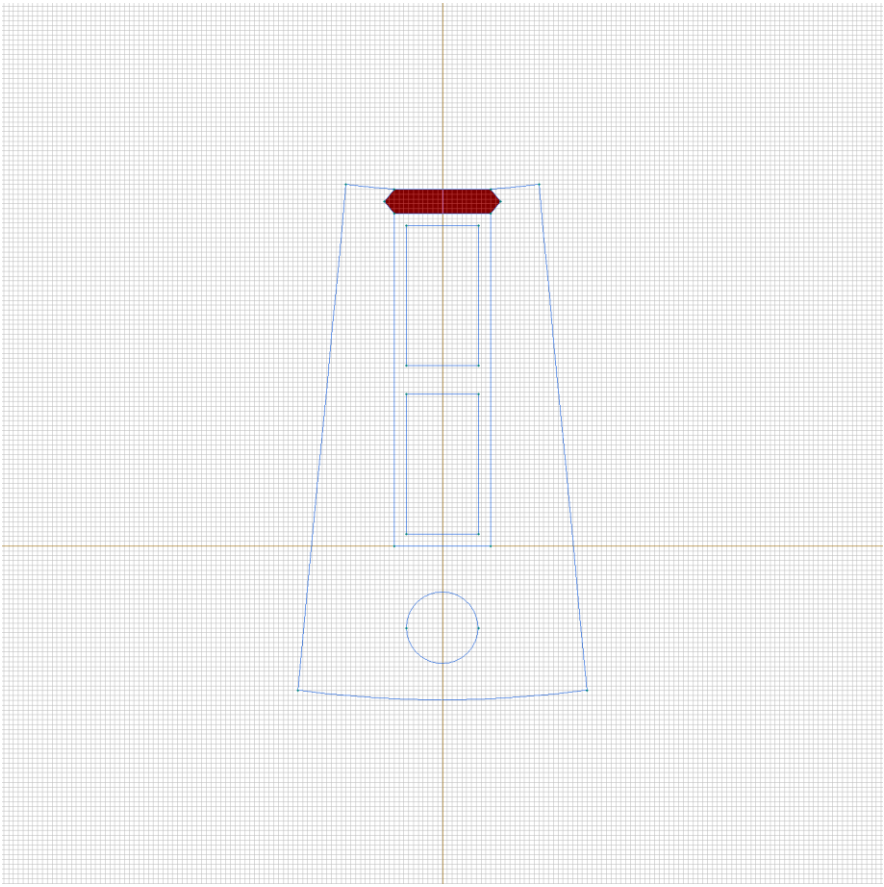
Thermal conductivity: lambda_x=0.15 [W/(K*m)], lambda_y=0.15 [W/(K*m)]
Specific heat: C=1800 [J/(kg*K)]
Mass density: rho=1300 [kg/m3]



Labelled objects: block "Wedge"

There are (1) objects with this label

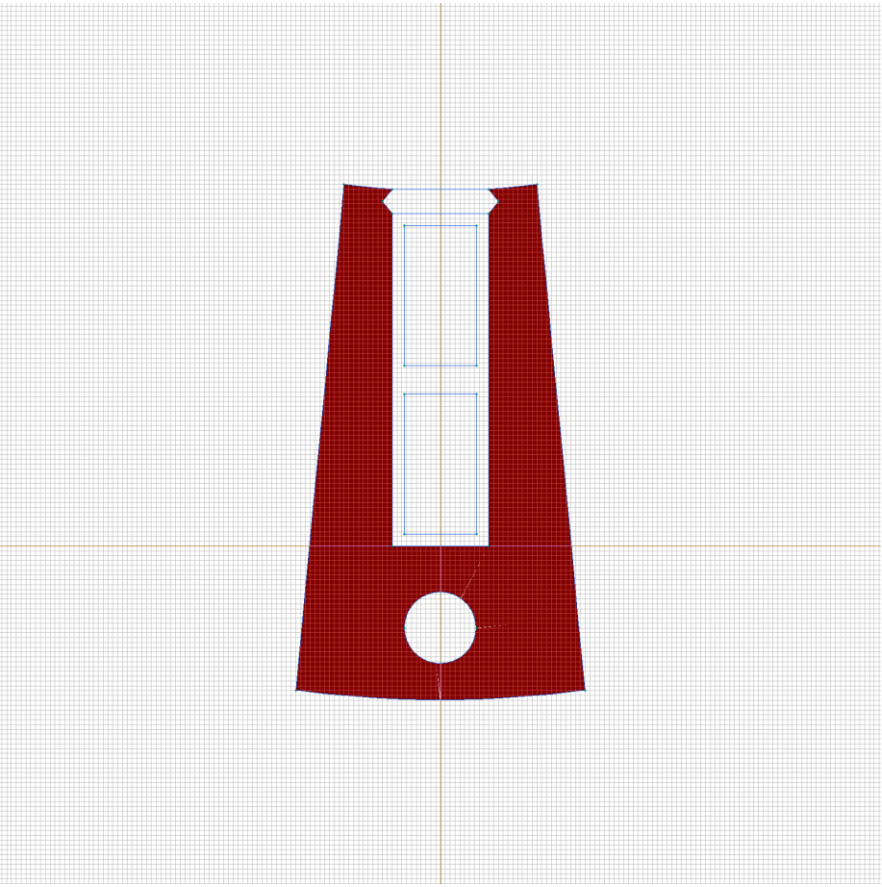
Thermal conductivity: lambda_x=0.25 [W/(K*m)], lambda_y=0.25 [W/(K*m)]
Specific heat: C=1500 [J/(kg*K)]
Mass density: rho=1400 [kg/m3]



Labelled objects: block "Iron"

There are (1) objects with this label

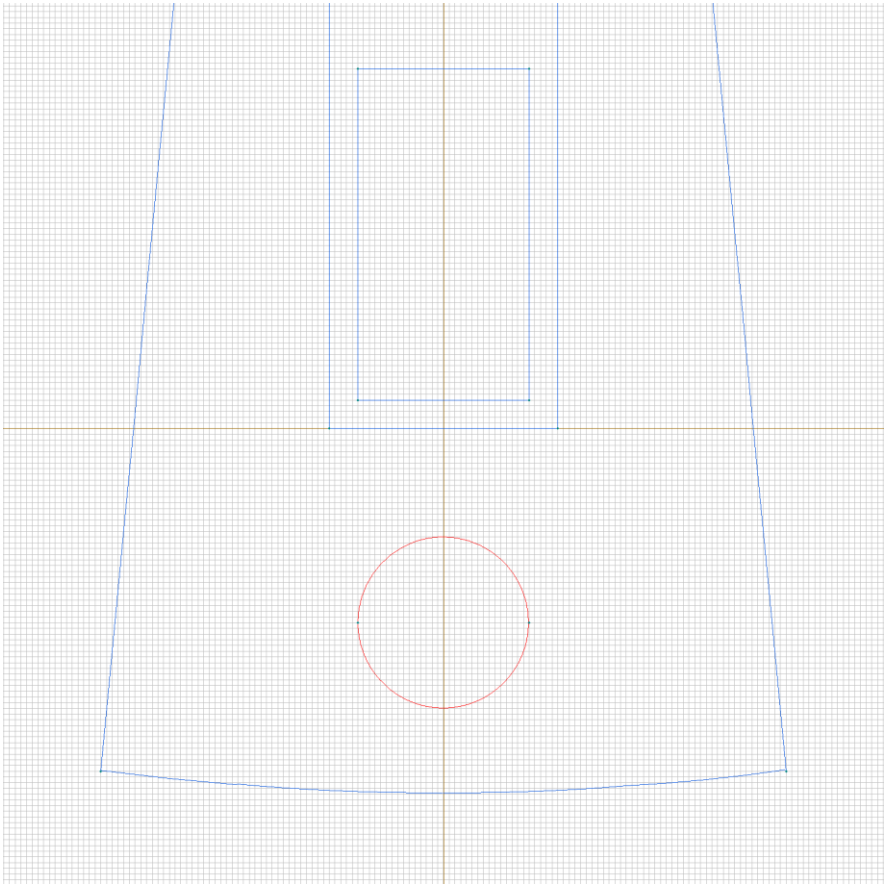
Thermal conductivity: lambda_x=25 [W/(K*m)], lambda_y=25 [W/(K*m)]
Specific heat: C=465 [J/(kg*K)]
Mass density: rho=7833 [kg/m3]



Labelled objects: edge "Cooling duct"

There are (2) objects with this label

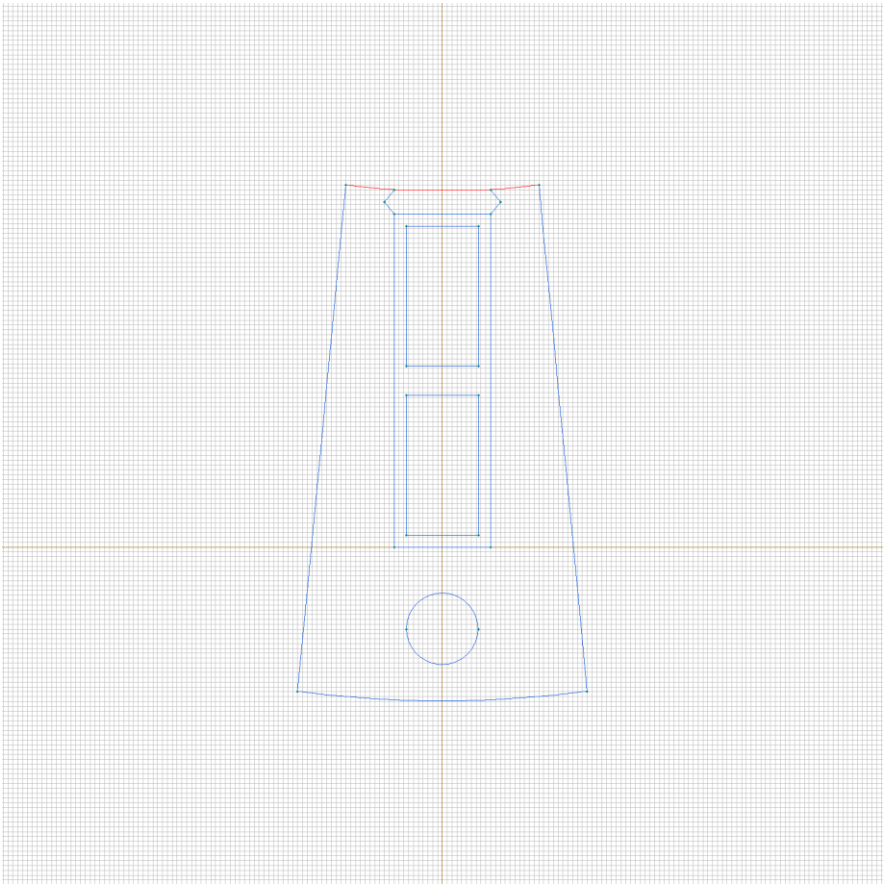
Convection: alpha=150 [W/(K*m2)], temperature T0=273+40,K [K]



Labelled objects: edge "Inner surface"

There are (3) objects with this label

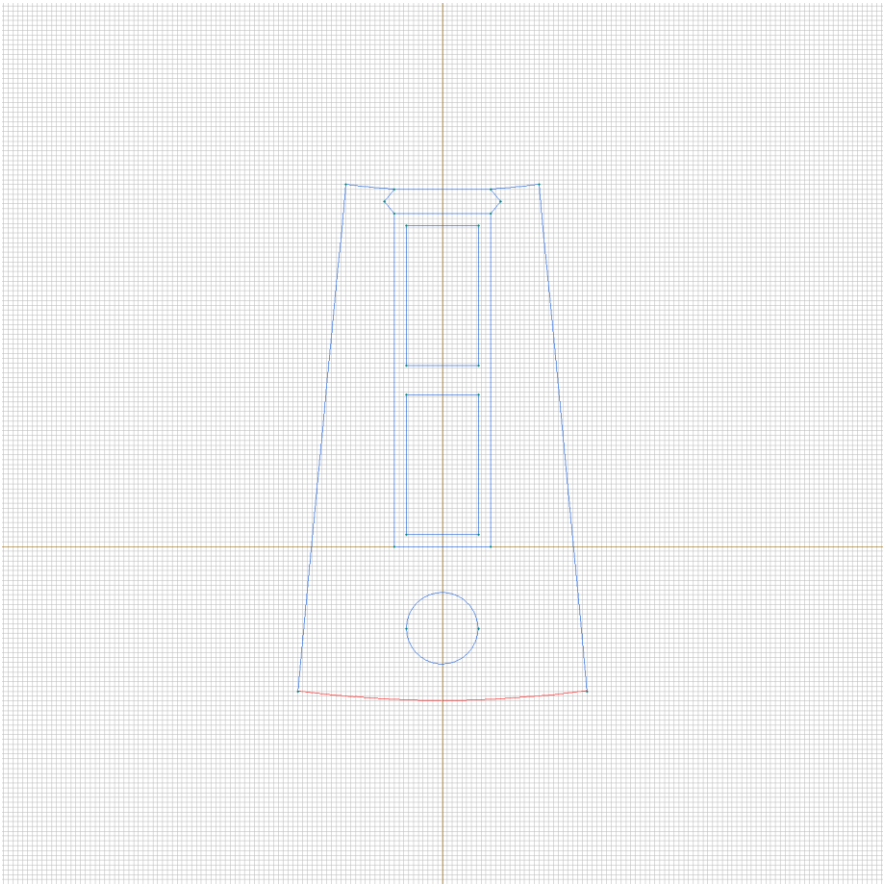
Convection: alpha=250 [W/(K*m2)], temperature T0=273+40,K [K]



Labelled objects: edge "Outer surface"

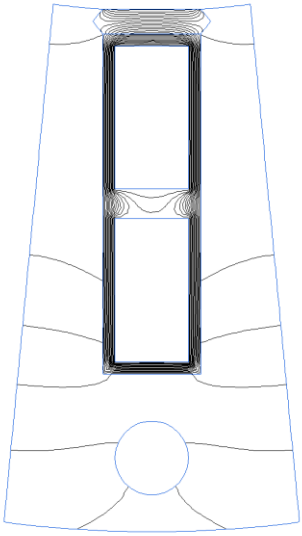
There are (1) objects with this label

Convection: alpha=70 [W/(K*m2)], temperature T0=273+20,K [K]



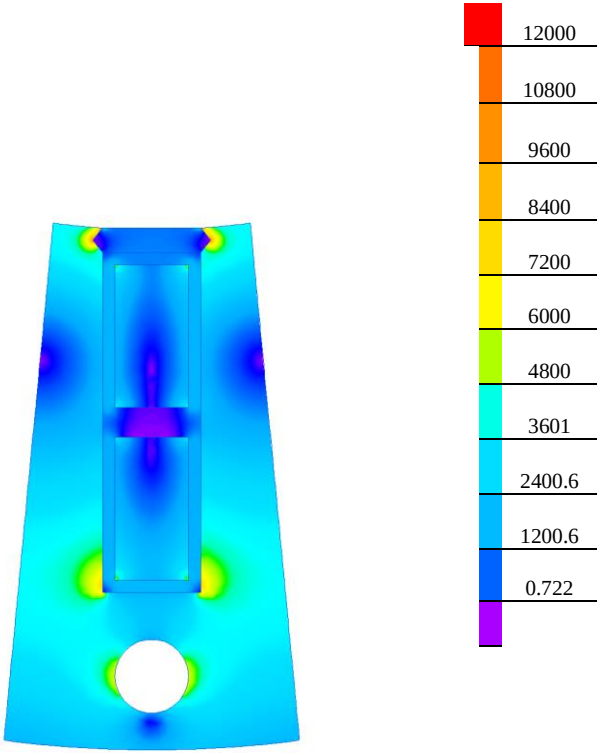
Results

Field lines



Results

Color map of Heat flux |F| [W/m2]



Nonlinear dependencies

No non-linear dependencies are used in this problem data