

HEAT TRANSFER ANALYSIS OF A CUBOID WITHSPECIFIED TEMPERATURE AND HEAT GENERATION BC





PROCEDURE

1 Createvolume

Menu : Geometry \rightarrow Volume \rightarrow Create \rightarrow Block

Commands : VOLUME, BLOCK

Parameters : (To be filled by the user)

	VOLUME, BLOC	СK	
Centre	0:0:0	1	5
Length	10		
Breadth	10		
Height	10		

At the end of the above operations, your screen looks like this.

File Edit View Geometry Mesh Load/BC Pro	erty Analysis Post Windows Help	a ×
Model Main Show Eag Colour/ Settings COMPONENT, SETURRENT, O VOLUME, BLOCK, 0.00, 10, 10 Image: Transmission of the setting of the setti	TRATIZZA VSSC/ISRO	
Çancel QK	<pre>\$> \$> VOLUME, BLOCK WOLUME, BLOCK - Executed ! \$></pre>	

2 Meshing using brick elements

Menu : Mesh → MeshGen → HEXA

Command : MESH,HEXA

Parameters :

Volume	Use mouse to select the volume
Elem size	0.62781
Base Faces	Select the One Face on Volume (Ex:V1(F6)[0])



Side faces	
Туре	8-node
Divisions	

At the end of the above operations, your screen looks like this.

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· < □ [∰	Model Main Geometry Model Data	Show Log Colour Settings	FEAST2023 VSSC / ISRO
¥ 23 本 🖆 au 🗎 🖉 🔿 🛤 🖌		MESH, HEXA	
	Volume Element size Base Faces Side Faces Type Divisions Bias	101 b 0.62781 b V1(F6)(0) b 8-Node y b b b b b b	y z

3 Set the analysis type

Menu : Analysis \rightarrow Analysis Type

Command : ANTYPE, ADD

Analysis	HT Steadystate
Types	

4 Specifyheat transfer boundary conditions

Menu : Load/BC \rightarrow Thermal \rightarrow Temperature

Command : HTTEMP, ADD

:

Parameters

(i) Temperature

Node IDs	Select the left edge nodes by setting the project to left view from the view direction icon in menu bar
Temperature	10
Label	Temp1

At the end of the above operations, your screen should look like this.



(ii) Heat generation

Menu : Load/BC \rightarrow Thermal \rightarrow Heat Generation

Command : HTGEN, ADD

:

Element IDs	Select the right boundary
	elements by setting the project to
	left view from the view direction
	icon in menu bar
Heat Generation rate	100
Label	HG1

At the end of the above operations, your screen should look like this.



5 Specifymaterial properties

Menu : Property \rightarrow Material \rightarrow Thermal \rightarrow Orthotropic

Command : MATERIAL, HTORTHOTROPIC

Parameters :

MATERIAL, H	ITORTHOTROPIC	2
Elements	ALL	Ŀ\$
Thermal Conductivity - X	17.4	
Thermal Conductivity - Y	17.4	
Thermal Conductivity - Z	17.4	
Density	0	
Specific Heat	0	
Label	MAT1	

6 Save the project model

Menu : File \rightarrow Save

1

7 Submit the job into FEAST

Click Run Solver button

After the solution is completed the message "Finished successfully" appears in the message box.

8 Perform post processing

a) Contour

Menu	:	Post →Contour			
Command	:	Post, Contour			
Parameters		Pos	st, Contour		
		ltem	Temperature	•	
		Restrict To			
		Contour Type	Band	-	
		No of contours		9▲	
		Decimal Places		2 🚔	
		Element Outline			
		T Draw Border			
		F Highlight Maximum			
		F Highlight Minimum			
		Colour-Label			

At the end of the above operations, your screen should look like this.



b) Output file can be seen in *.OUT