

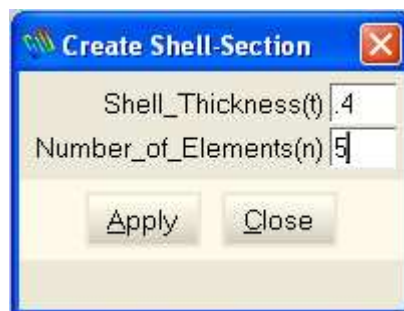
## GiD – SAFIR\_Thermal\_tsh User Interface

### 1. Create a GiD Project of type *SAFIR\_Thermal\_tsh*

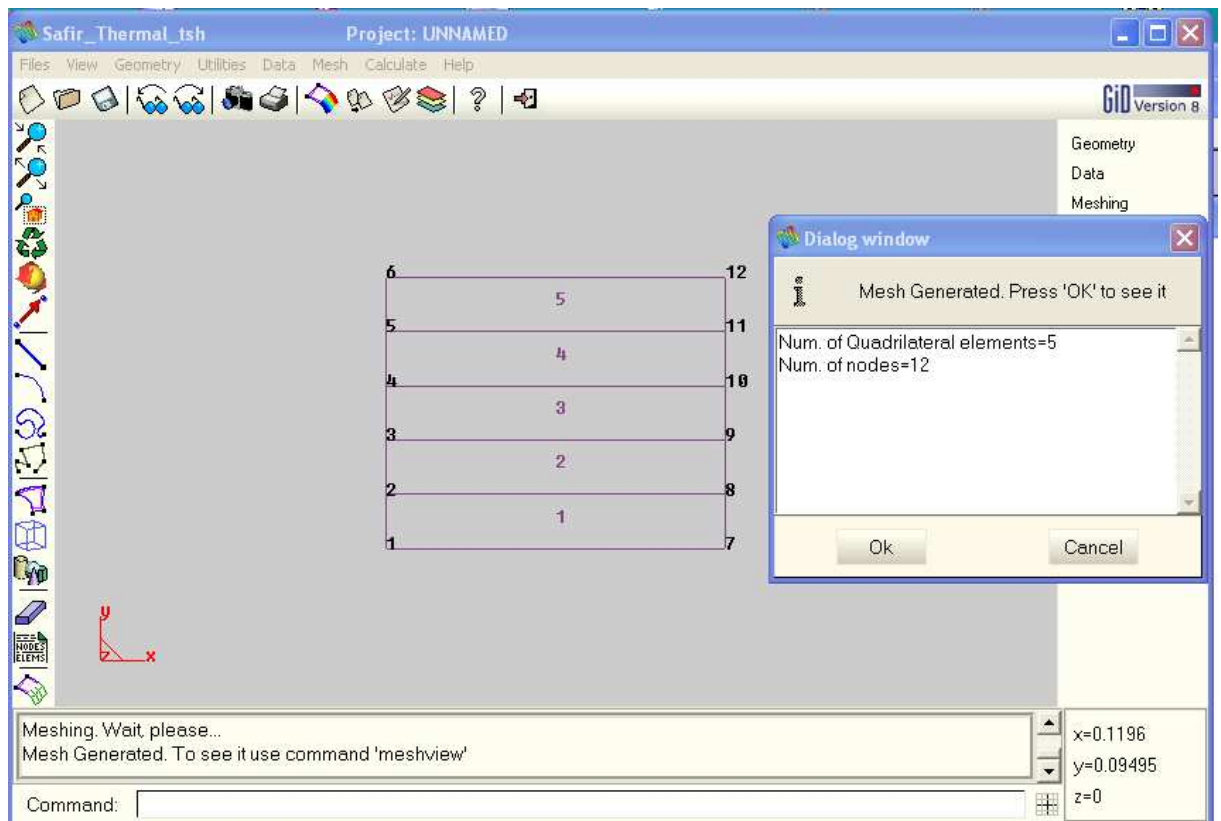
In a new GiD project select from the pull down menus:

*Data->Problem type->SAFIR2007-> Safir\_Thermal\_tsh*

GiD displays the following Dialog Box:



Enter the shell thickness and the number of elements and press *Apply*:



In the Dialog window press **Cancel** to assign Material and Frontier constraints to the mesh.

## 2. Assign Material

Form the pull-down menu select:

*Data->Materials*

GiD displays the following dialog box:

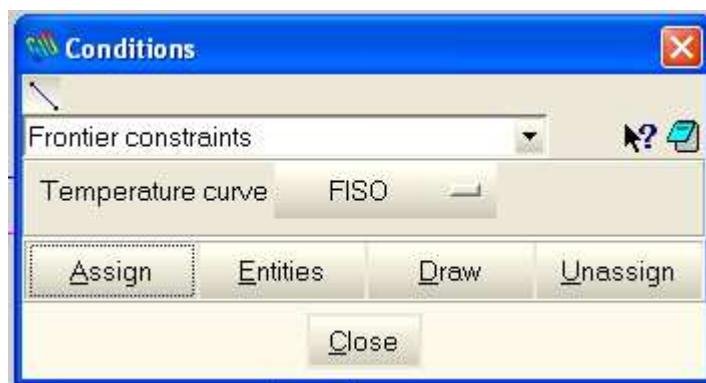


Select a material and *Assign* it to the elements or surface. Use the *Draw* button to display the assigned material in a filled color mode.

## 3. Assign Frontier constraints

Frontier constraints can be assigned by:

*Data->Conditions->Frontier constraints*

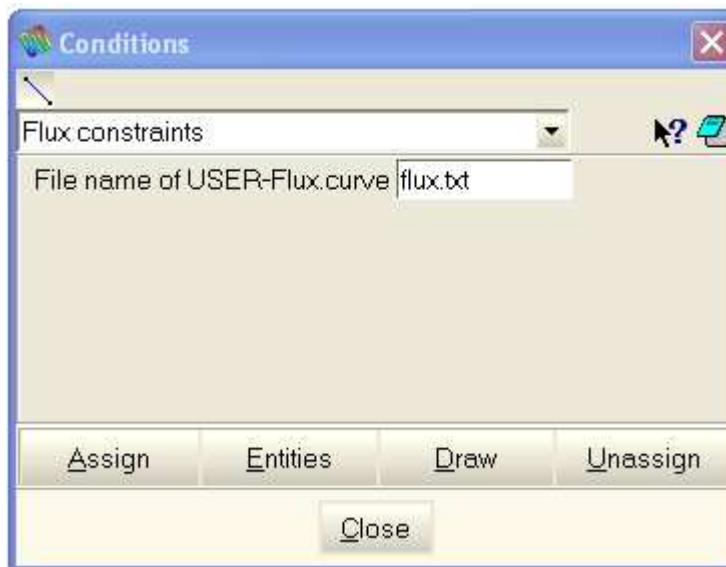


Select one of the predefined SAFIR - temperature curves or select *USER* and enter the name of a user defined temperature curve. Assign the temperature curve to the top and bottom boundary curve of the cross section. The button *Draw/color* lets you draw the frontier in color. If you use a user defined temperature curve you must place this file in the *project-name.gid* directory before calculation starts.

### Flux constraints

Flux constraints can be assigned by:

*Data->Conditions->Flux constraints*



For a MAKE.TSHHA calculation you may enter instead of a filename HASEMI.

**Note :** If you assigned material and frontier constraints to the mesh do not recreate the mesh because in this case the assignment is lost !!. Continue directly with assignig the *Problem Data*.

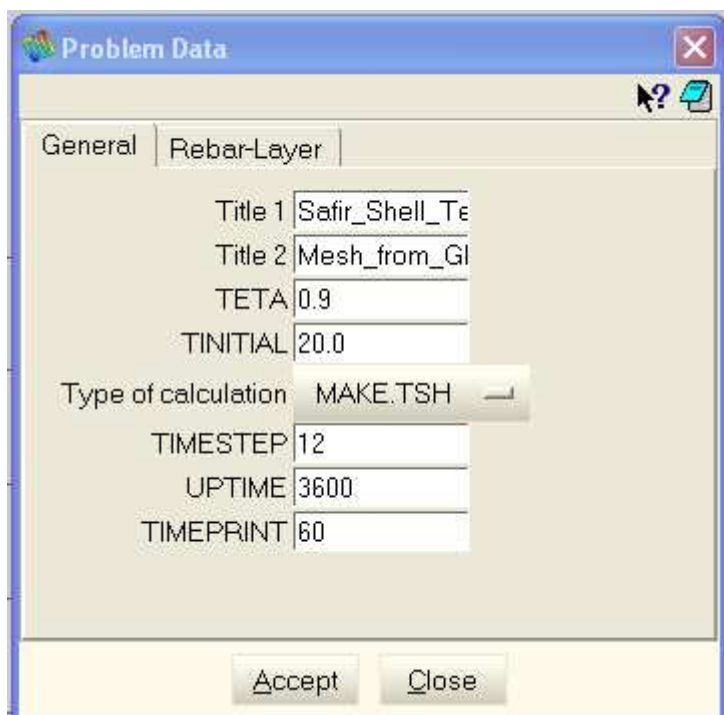
**Note :** If you however assigned material and frontier constraints to the surface of the section you must recreate the mesh. Material and frontier constraints will be directly trasferred to the mesh by GiD.

## 4. Input General Data for SAFIR

From the Pull down menue select:

*Data->Problem data*

Enter the values for TIMESTEP, UPTIME ,TIMEPRINT and press *Accept*.

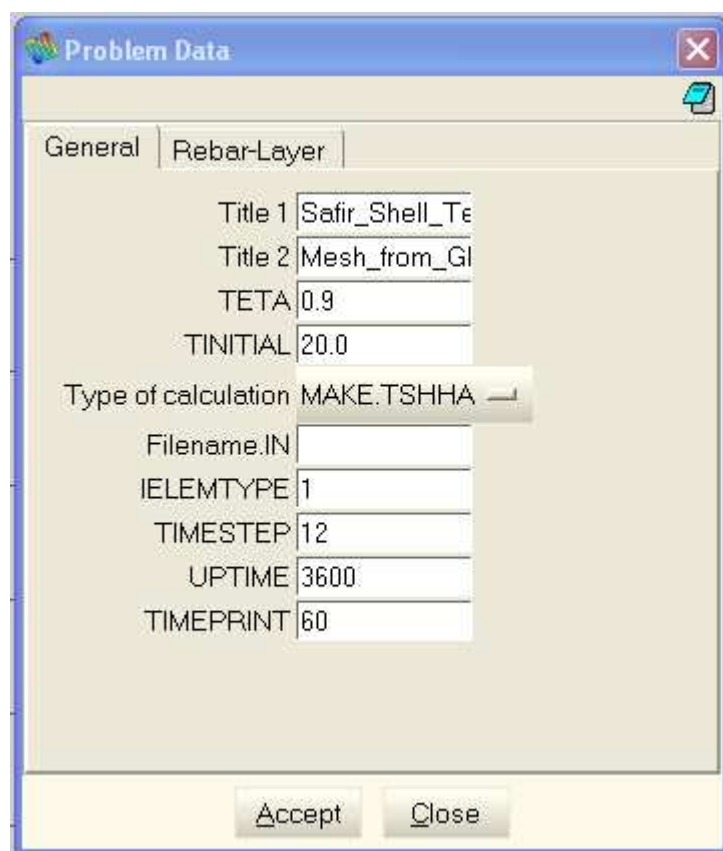


The 'Problem Data' dialog box is shown with the 'General' tab selected. The 'Rebar-Layer' sub-tab is also active. The following fields are visible:

Field	Value
Title 1	Safir_Shell_Te
Title 2	Mesh_from_Gl
TETA	0.9
TINITIAL	20.0
Type of calculation	MAKE.TSH
TIMESTEP	12
UPTIME	3600
TIMEPRINT	60

Buttons at the bottom: Accept, Close.

If you select for *Type of Calculation* MAKE.TSHHA the input fields for Filename.IN and IELEMTYPE are in addition displayed.



The 'Problem Data' dialog box is shown with the 'General' tab selected. The 'Rebar-Layer' sub-tab is also active. The following fields are visible:

Field	Value
Title 1	Safir_Shell_Te
Title 2	Mesh_from_Gl
TETA	0.9
TINITIAL	20.0
Type of calculation	MAKE.TSHHA
Filename.IN	
IELEMTYPE	1
TIMESTEP	12
UPTIME	3600
TIMEPRINT	60

Buttons at the bottom: Accept, Close.

*Filename.IN* : Enter the name of the complete .IN file of the structural analysis. This file must be present in the GiD-project directory when the analysis is started. Also the file HASEMI.txt must be located in this directory (see the SAFIR2007 manual)

*IELEMENTYPE*: is the number in the structural input file of the shell type to be analysed in this thermal analysis. SAFIR creates for each shell element of this element type four .TSH files (sxxxx\_1.TSH , sxxxx\_2. TSH , sxxxx\_3.TSH , sxxxx\_4. TSH, xxxx is the number of the shell element).

## 5. Rebar Layers

If the shell section has rebar layers you may select 1 to 4 rebar layers (default value is 0). For each layer enter the local material number in the field MATERIAL, the cross section area of this rebar layer [in  $\text{m}^2/\text{m}$ ] in the field SECTION, the y-distance in [m] in the field LEVEL and the angle in degrees in respect to the local x-axis in the field ANGLE.

Rebars: 4	
Rebar1 MATERIAL	2
Rebar1 SECTION	0
Rebar1 LEVEL	0
Rebar1 ANGLE	0
Rebar2 MATERIAL	2
Rebar2 SECTION	0
Rebar2 LEVEL	0
Rebar2 ANGLE	0
Rebar3 MATERIAL	2
Rebar3 SECTION	0
Rebar3 LEVEL	0
Rebar3 ANGLE	0
Rebar4 MATERIAL	2
Rebar4 SECTION	0
Rebar4 LEVEL	0
Rebar4 ANGLE	0

**Note.** In the case of a MAKE.TSH calculation the information of the thickness of the shell, the material and the rebar layers will be automatically inserted into the TSH file

by the GiD-SAFIR interface. In case of MAKE.TSHHA calculation the information is only stored in the *projectname-1.dat* file in the project directory.

## 6. File the project

To save the project select:

*Files->Save* or type *Ctrl-s*



Enter the **File name**. GiD creates a directory with this *project-name*. All working files of GiD are placed here, also all SAFIR files with the name *project-name.IN*, *project-name.OUT* and *project-name.TSH*

## 7. Create the SAFIR input-file and run SAFIR

From the pull down menu select:

*Calculate->Calculate window*



GiD displays the process-Window. Click the *Start* button to start the calculation.

Click the *Output view* Button to display a window, where you can watch the progress of the calculation and also error messages of SAFIR.

The SAFIR result file *projectname.TSH* respectively the files *sxxxx\_1.TSH*, *sxxxx\_2.TSH*, ... are placed in the GiD project directory.