Animating Results with Insight
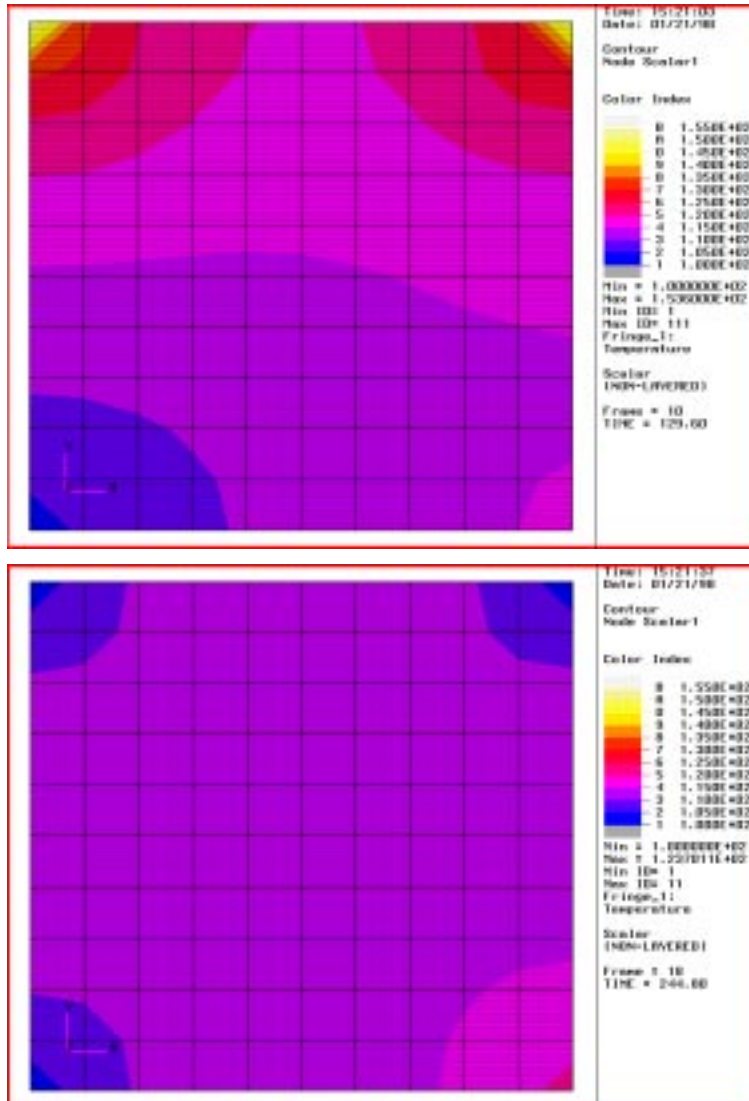

Objective:

- In this exercise you will post-process the time dependent results of Exercise 10 using **Insight** *Tools*.

- You will create an **Insight** animation of the transient heat transfer analysis.

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Model Description:

In this exercise you will reopen the database developed in Exercise 10 which now includes time dependent results data. You will use the **Insight** post-processing tools to enhance the presentation of the available results.

A **Fringe** *Tool* will be created from the entire set of results. The results will then be animated using the **Animation Control** options within **Insight Control**.

Exercise Overview:

- Open the existing database named **exercise_10.db**.

- Use **Insight** to create a **Fringe** *Tool* with which to view a fringe plot of the results.

- Use **Insight Control/Range Control...** to freeze the spectrum range in the '*Insight Graphics Window*'.

- Use **Insight Control/Animation Control...** to Setup and control the animation in the '*Insight Graphics Window*'.

- Exit **Insight** and **Quit** MSC/PATRAN.

Exercise Procedure:

1. Open the existing database named **exercise_10.db**.

Open an existing database

Within your window environment change directories to the microcircuit.db working directory. Run MSC/PATRAN by typing **p3** in your xterm window.

Next, select **File** from the *Menu Bar* and open the existing microcircuit database.

.

File
Open

Database List   **exercise_10.db**

OK

MSC/PATRAN will open a Viewport and change various *Main Form* selections from a ghosted appearance to a bold format.

If the display shows the Fringe Plot results from Exercise_10, clear the screen using the *Reset Graphics* icon.


The display should appear as shown below.
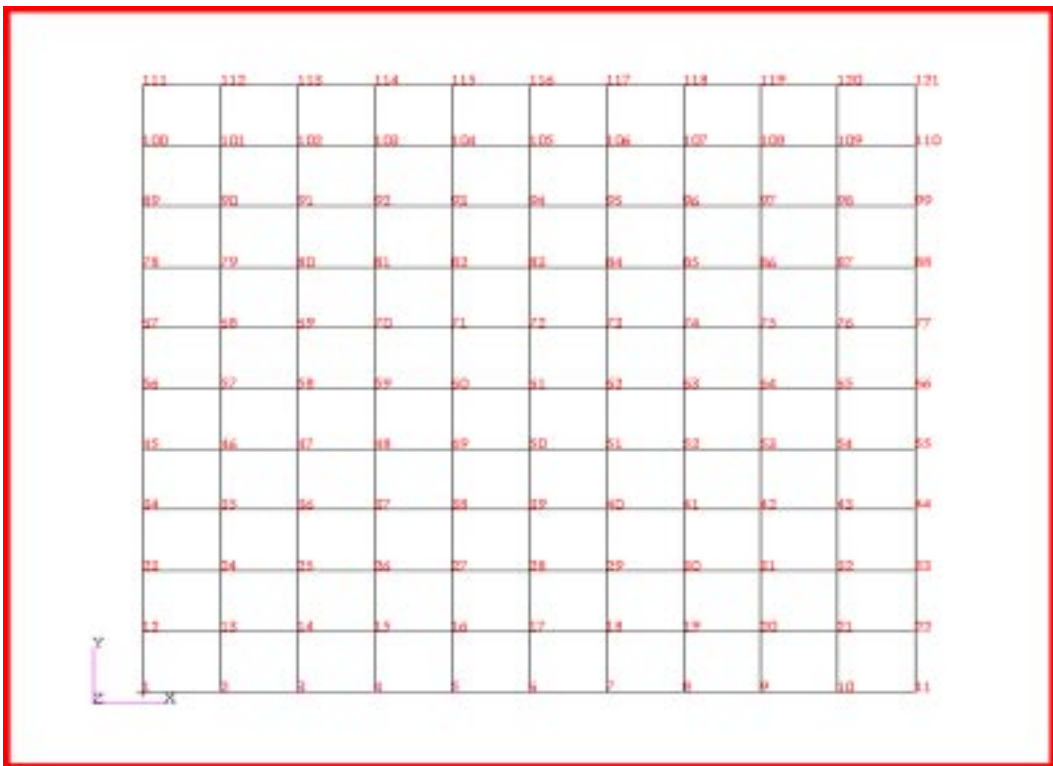
Create an Insight Fringe tool

2. Use **Insight** to create a **Fringe** *Tool* with which to view a fringe plot of the results.

Select the **Insight** *Applications radio button*. There will be a short delay while insight is loaded and the *default_viewport* is modified to show an *'Insight Graphics Window'*. Set *Action/Tool* to **Create/Fringe**.

◆ **Insight**

Create/Fringe

Results Selection...

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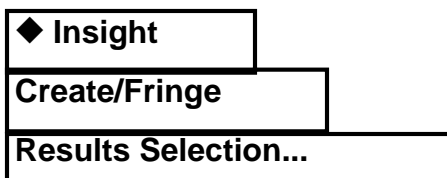
Select all the results cases listed in the *Current Load Case(s)* list box and select **Update Results**. Select all the results files by depressing the left mouse button and dragging down through the list.

Select **Temperature** data from the *Fringe Result* list box in the Results Selection form. Be sure to select **Temperature** from the *Fringe Result* list box. It is selected when it is highlighted with a dark background.

Current Load Case(s)

<depress left mouse button and drag through all listed results from top to bottom, highlighting them>
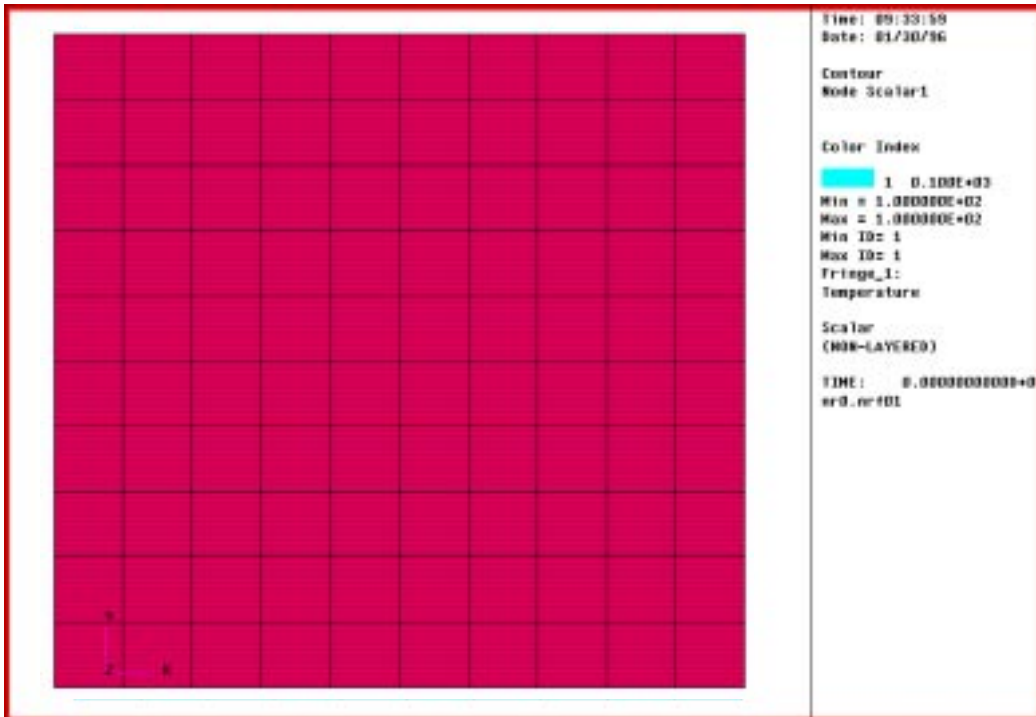
Update Results

Fringe Result

1.1-Temperature,

OK

Apply

The display should appear as shown below. It shows the fringe plot for the first results set at **t=0.0s** which is isothermal at **100°C**.

Freeze the spectrum data range

3. Use **Insight Control/Range Control...** to freeze the spectrum range in the *Insight Graphics Window.*
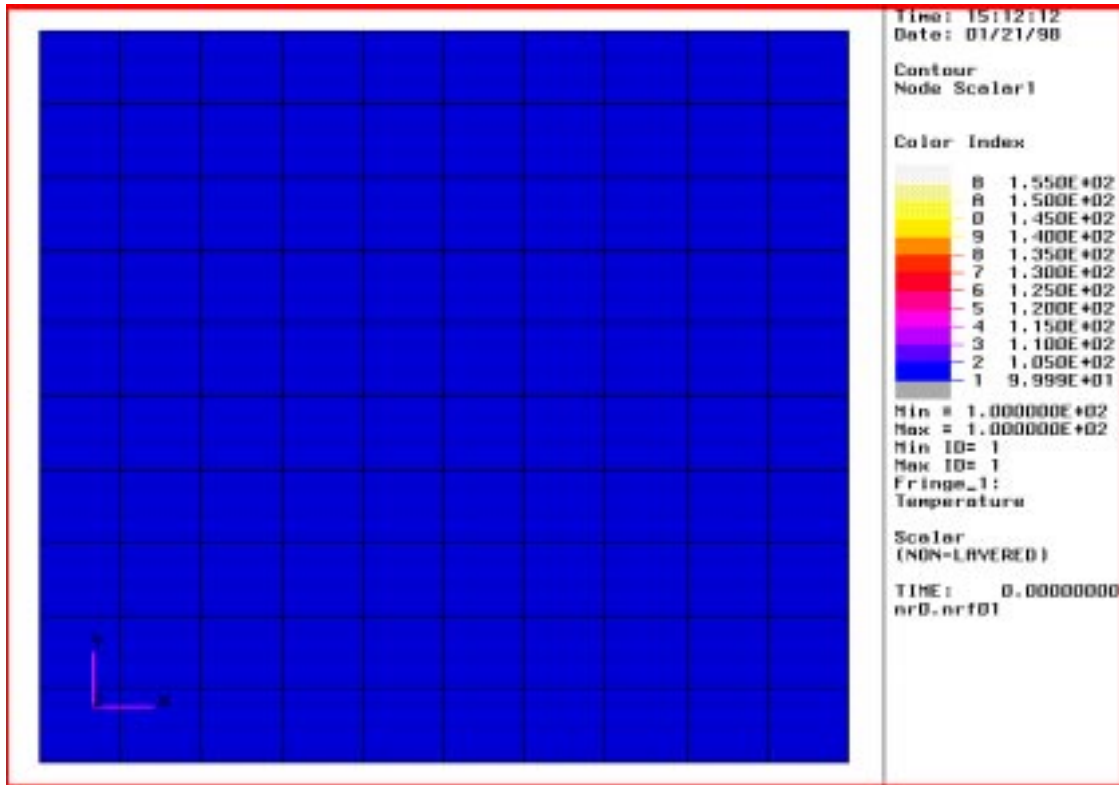
From the constraints applied to the analysis you know that all temperatures will remain between **100.0ºC** and **160.0ºC**. Taking advantage of this information we will freeze the spectrum range for all image frames created during the animation setup.

Insight Control

Range Control...

■ **Freeze Range Values**

Min.

100.0

Max.

160.0

Apply

Cancel

This step could also be performed at any time after the animation is created. If the temperature range is not known before hand, however, the initial animation may have a surprising appearance since each frame will auto range to the minimum and maximum temperature for that frame. Adjust the spectrum to range from blue/cold to white/hot.

Display

Spectrum

Spectrum Type   ◆ **Temperature**

Apply

Cancel

The display should appear as shown below.

4. Use **Insight Control/Animation Control...** to Setup and control the animation in the *Insight Graphics Window*.

Setup and run the Insight animation

From the constraints applied to the analysis you know that all temperatures will remain between **100.0^{o}C** and **160.0^{o}C**. Taking advantage of this information we will freeze the spectrum range for all image frames created during the animation setup.

Insight Control

Animation Control...

Setup...

Non-Animation Tool(s)

FR-Fringe_1

Selecting the **FR-Fringe_1** tool you created earlier initiates the <u>Animation Attributes</u> form. From this form we will define the *Animation Type* and *Global Variable*.

☐ **Enable Animation**

Global Variable

TIME

Ok

The Animation Attributes form will close. At this point define the number of frames, **13**. This will create an animation frame for each **30**s interval beginning at **t=0s** and ending at **t=360s**.

The choice of number of frames is arbitrary and need not be identical to or a multiple of the number of results sets. Insight will interpolate on the *Global Variable* based on the result sets that are available. Hence, you could have chosen **25** frames for an animation frame at **15**s intervals. In fact, this Animation is much better at 25 frames.

Frames

13

Animate

At this point **Insight** will build, in memory, each frame of the animation. Obviously choosing a greater number of frames to animate will result in increased frame processing time. The frames are built only once for a given animation setup and may optionally be saved to a file. This option was located on the Animation Setup form.

As each frame is built you can observe the *Time* value change in the viewport. You can also assess *Min* and *Max* values, if necessary, to freeze the range at a later point.

Once the animation begins the Animation Control form becomes available. On this form you may **Pause/Stop Animation** to adjust any of the features available. Toggling *Pause/Stop Animation* stops and starts the animation (frames are not rebuilt, they are already available).

If your system is fast and your model is small some persistence may be required to pause or slow the animation. Use the slider to decrease *Animation Speed*. The *Animation Speed* slide is available even when an animation is playing.

Reduced Rendering will speed animation on slow systems or on animations with large amounts of results. However, it will produce only contour values.

Cycle displays results for frames 1 through N repeatedly.

Bounce displays results for frames 1 through N forwards and backwards repeatedly.

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Selecting **Ok** in the Animation Control form will create an *Animation Tool* from the setup and selections you've made. This tool will be available the next time you invoke **Insight** and you will not need to rebuild this animation; though, the frames will be reprocessed unless they were saved to a file in the Animation Setup form.

| Ok |

5.   Exit **Insight** and **Quit** MSC/PATRAN.

To return to the standard set of *Applications radio buttons* and close **Insight** reselect the **Insight** *Applications radio button* in the *Main Form* at the top of the screen. *Applications radio buttons* are toggles which may be switched at any time.

Answer **Yes** to the message requesting if the animation is to be cleared.

◆ **Insight**

Do you wish to clear animation | **YES** |

To stop MSC/PATRAN select **File** on the *Menu Bar* and select **Quit** from the drop-down menu.