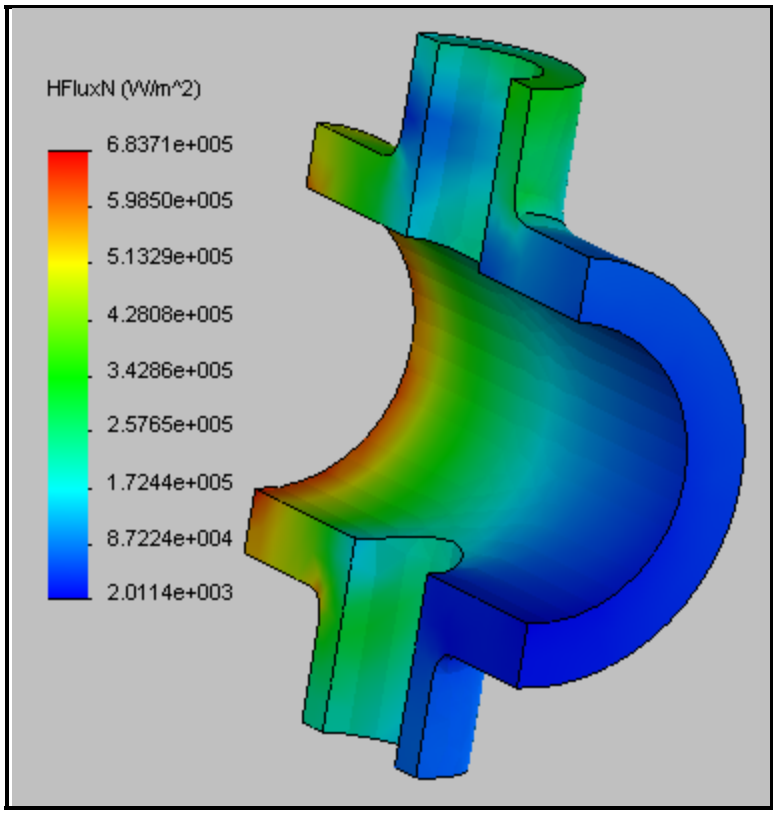
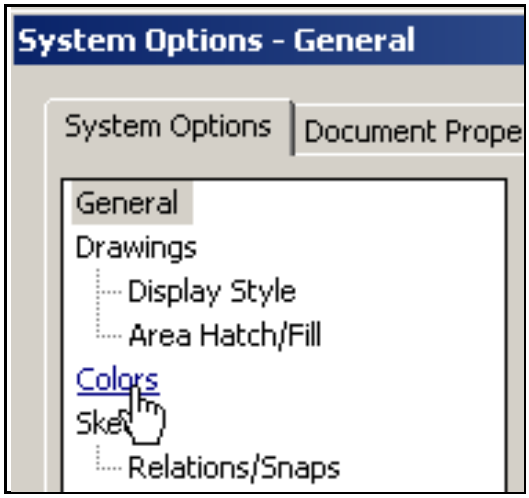
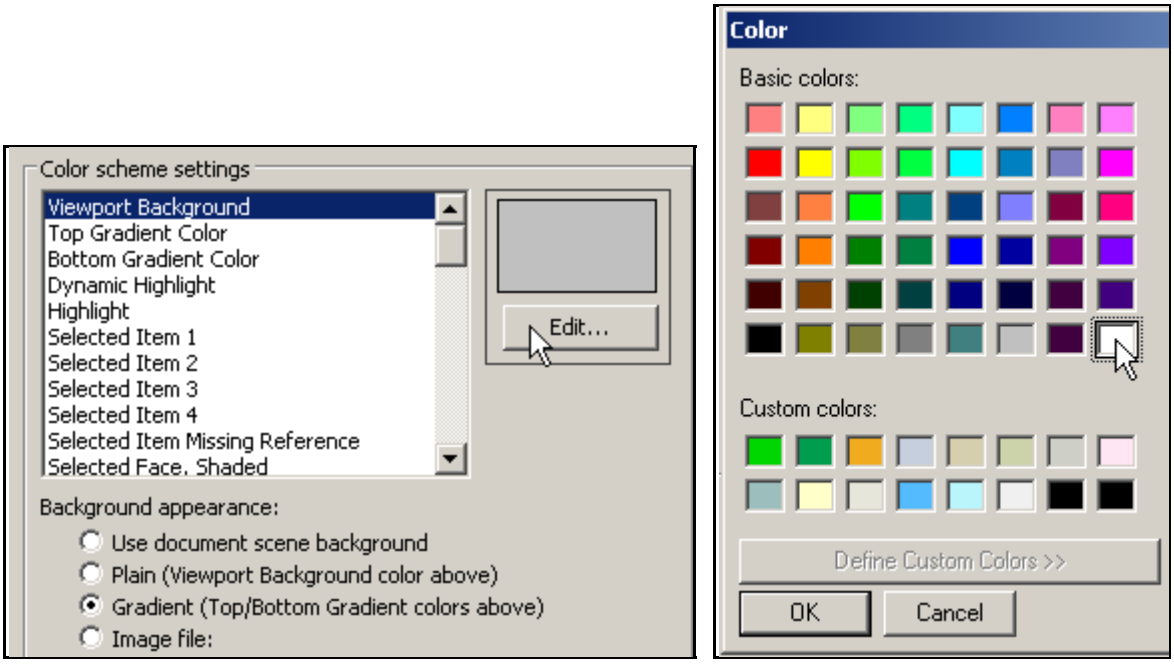
Image Guidelines for SolidWorks Reports

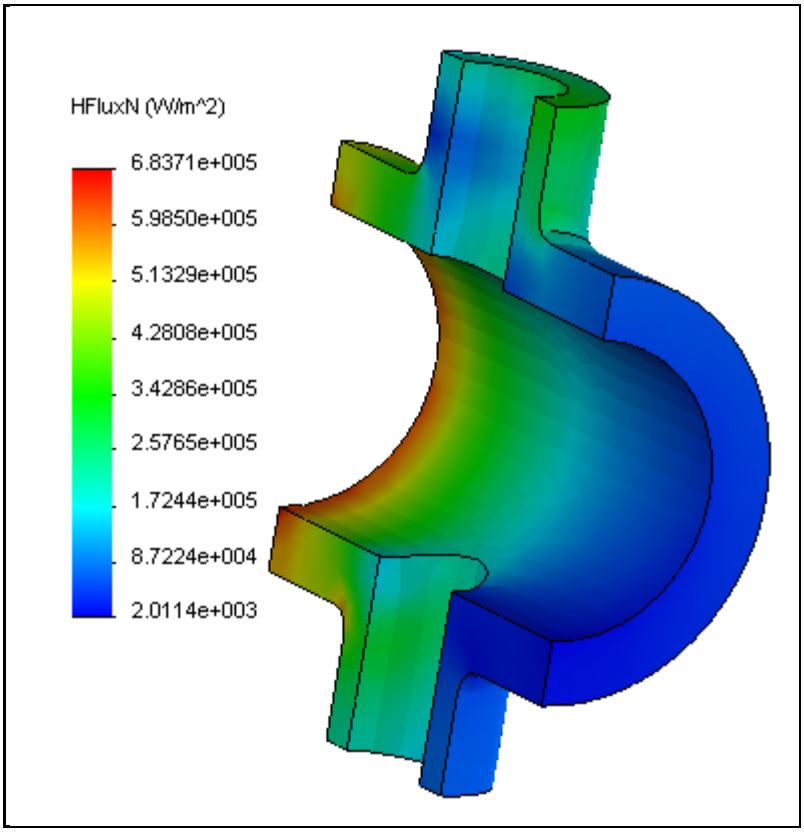
When using SolidWorks (SW) and similar systems there are ways to improve the capture images that you plan to utilize in a report. First, a typical default analysis image is presented:



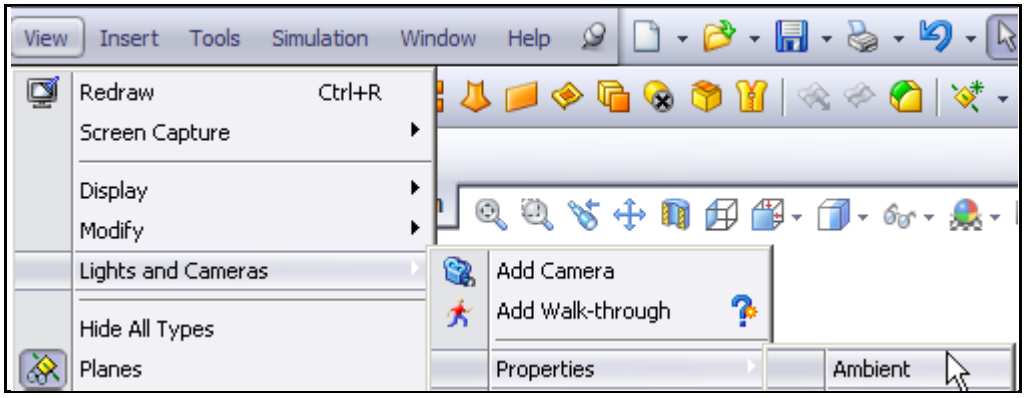
Now some options to enhance this report image will be illustrated. Most display systems have a default background color intended to reduce eyestrain. It this case it is gray. For your printed report images, you typically want a white background. That is a system level option. In SW use **Tools→ Options →System Options→Colors** and edit the background color.

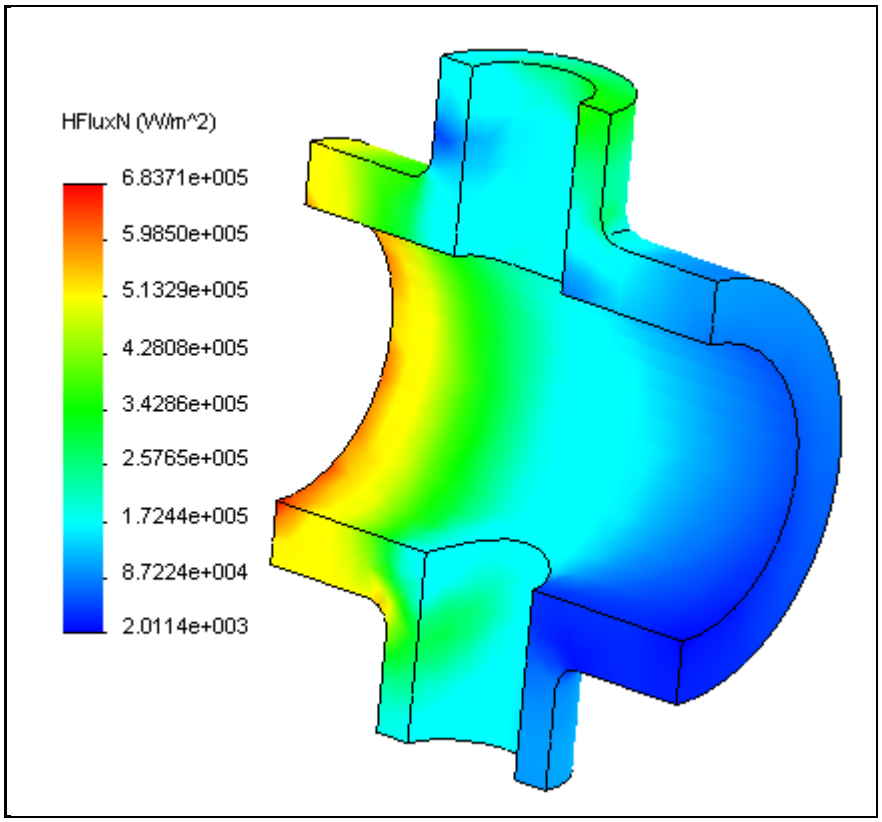






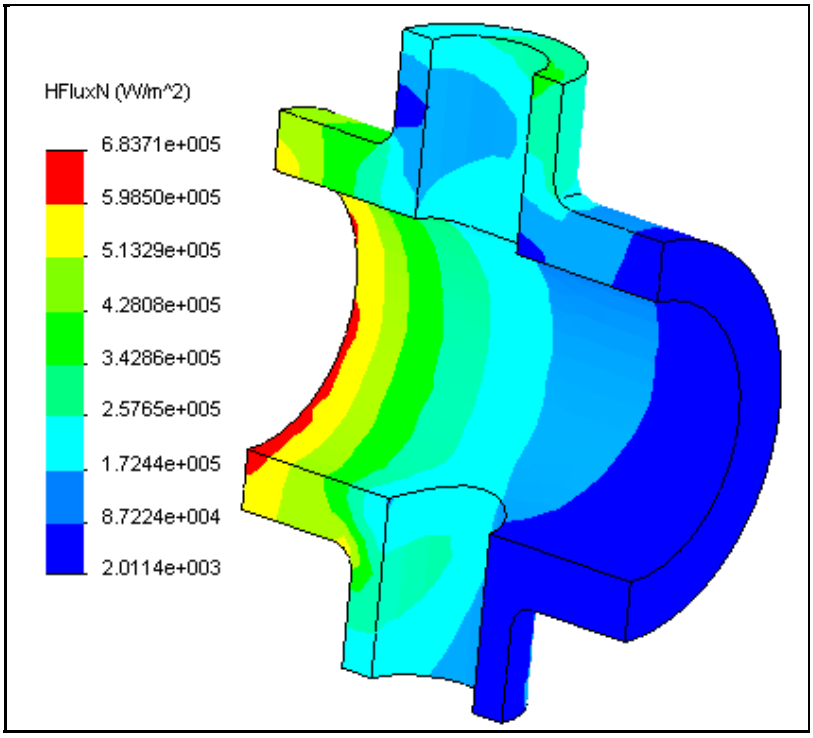
The part is still dark due to its lighting. There are several light options in most systems. Usually the ambient lighting is the easiest to change. Use **View → Lights and Camera → Properties → Ambient**. In the **Ambient** tab raise its light level to get a new display, **OK**.



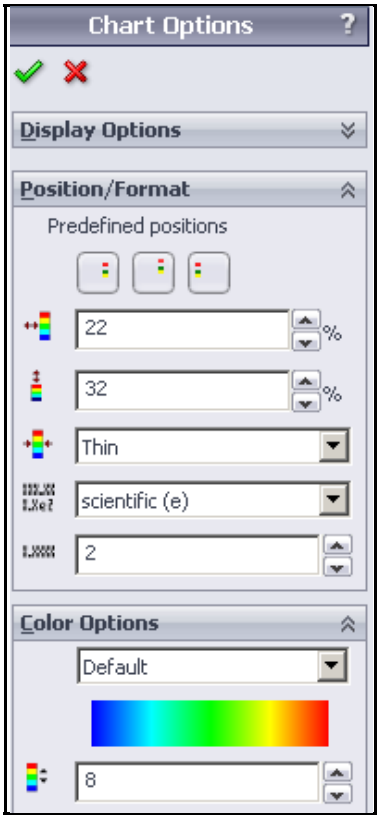


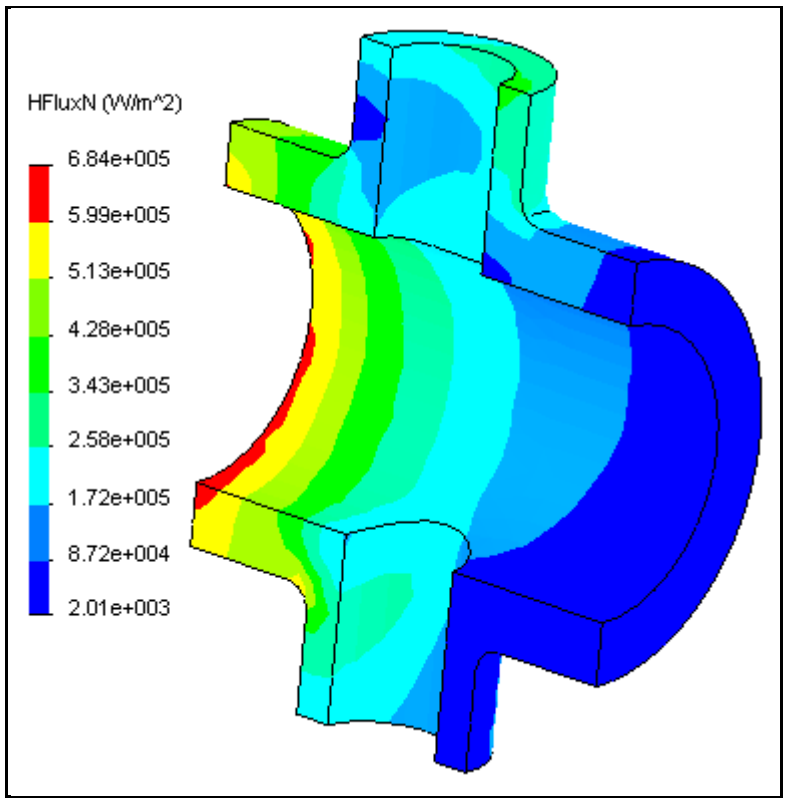
The above plot just shows the part outline, but not the mesh utilized. If not shown elsewhere, you can display the contour result along with the mesh that created them by clicking on **Settings→Mesh**. While a continuous color does describe the actual solution, it can also *hide*

poor mesh results during the averaging process. Often contour **lines** or **discrete colors** print better on paper, and may reveal poor mesh results. Right click on the plot name and use **Settings→Discrete** or **Settings→Line** to see them:

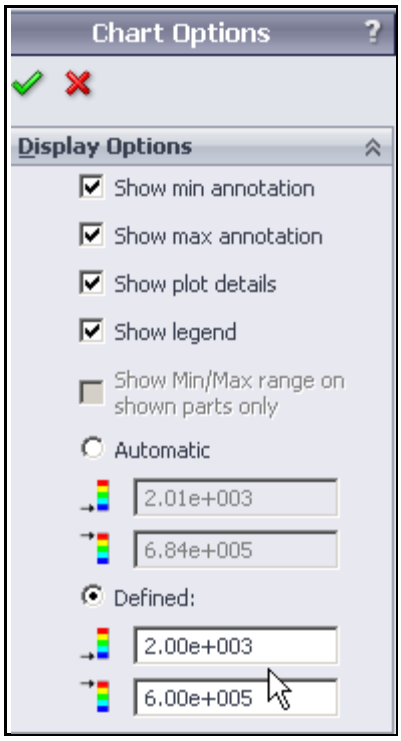


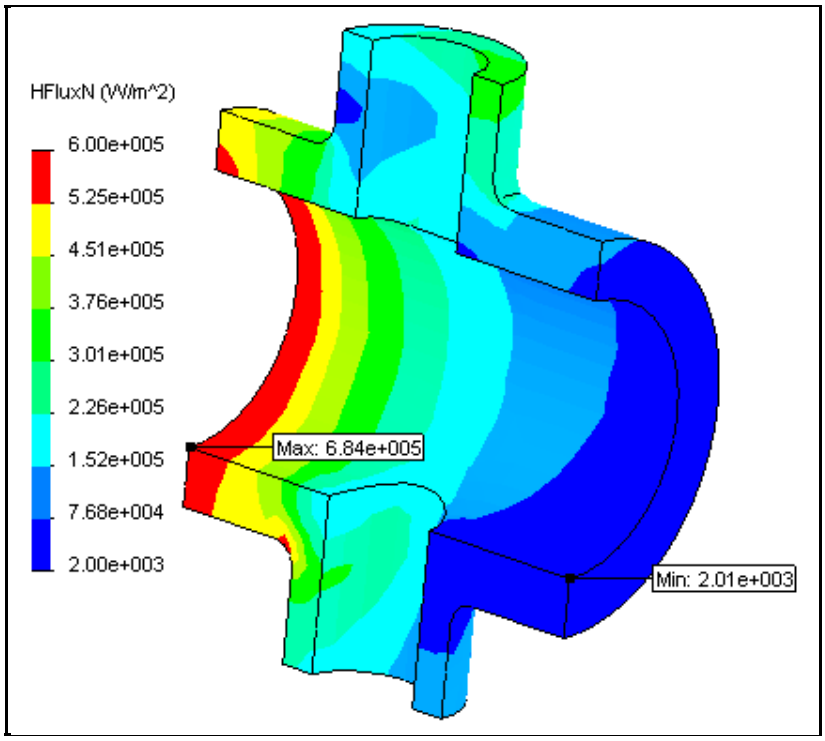
Space is limited in reports so you may want to reduce the space occupied by the color chart by reducing the number of digits displayed and the width of the scale bar. In addition, you should not display a large number of significant figures in flux or stress results. You can control such formats by a right click on **Chart Options**.



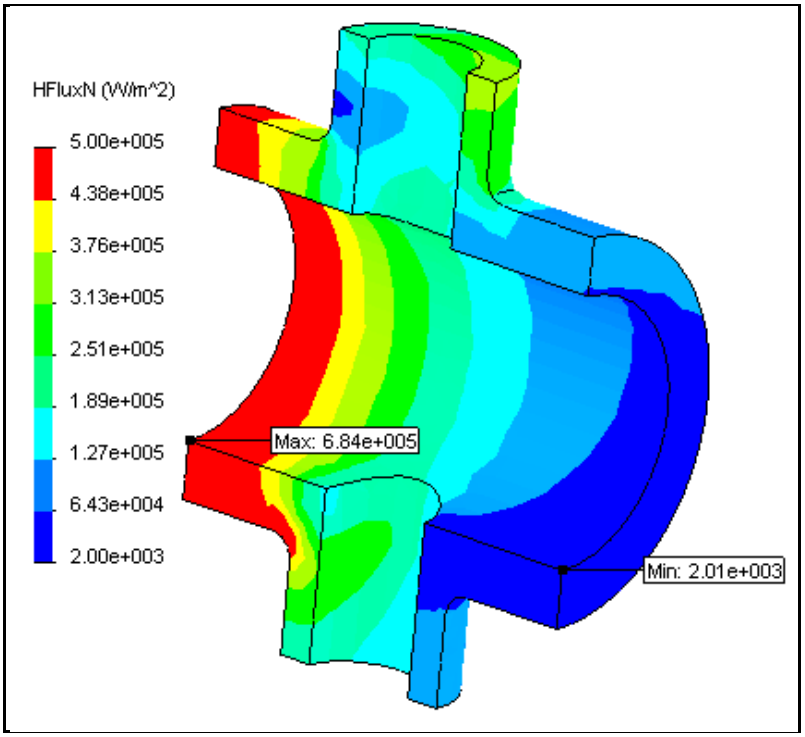


Most systems display default contour levels defined by the extreme values occurring in tiny regions (not the case here). Then the contour plot is essentially a non-informative single color. You can, and should, control the contour ranges to covey more information. Also, check the **max**imum or **min**imum range **buttons** so they are clear after the contour rescale:

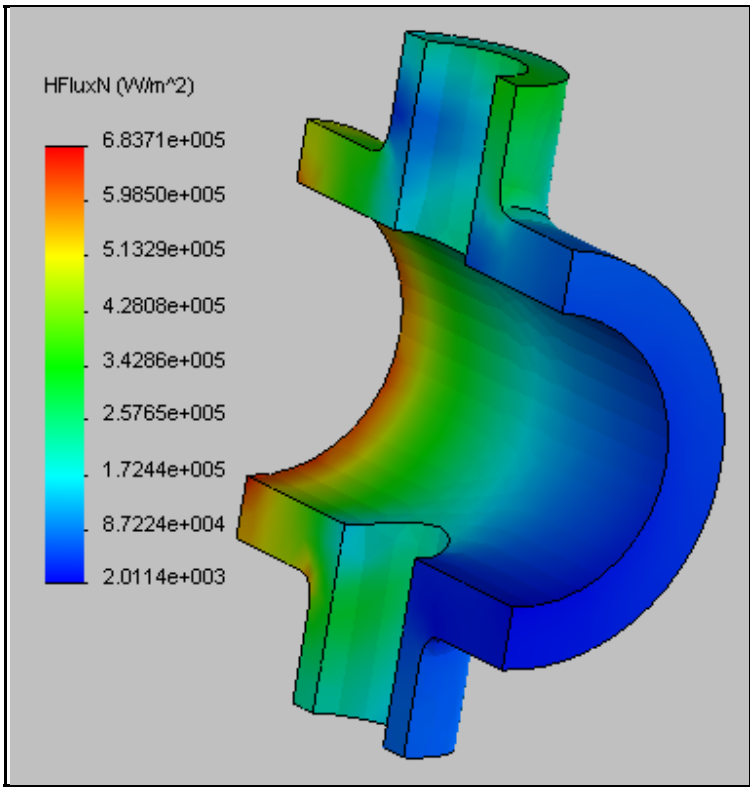


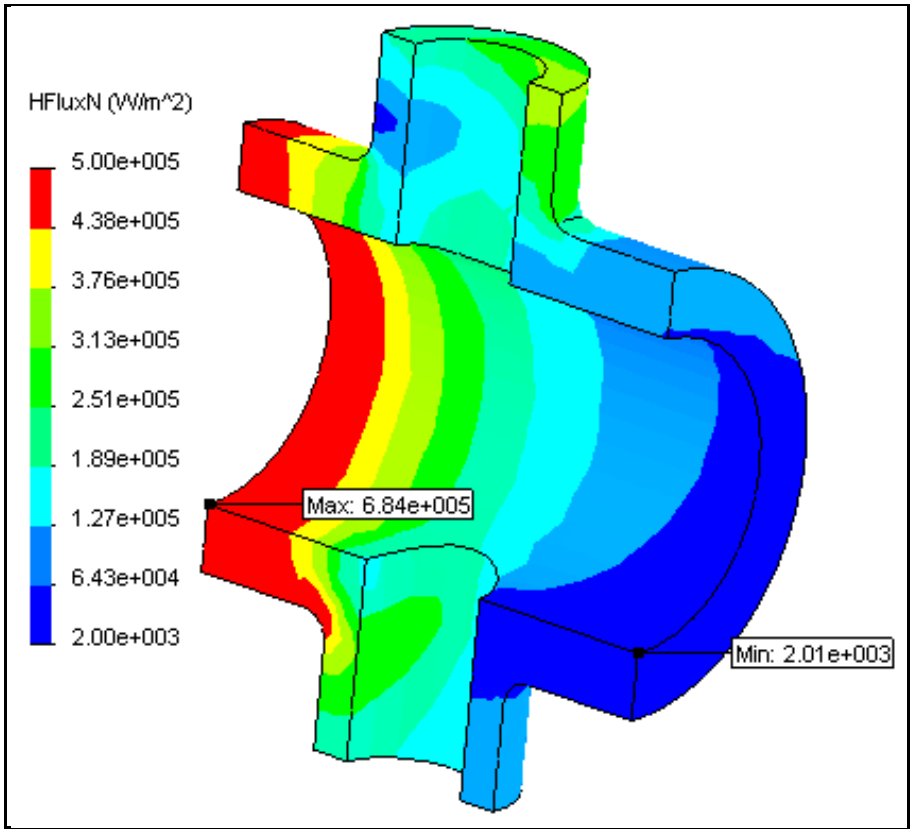


Try different **Defined** ranges to show the trends of interest:

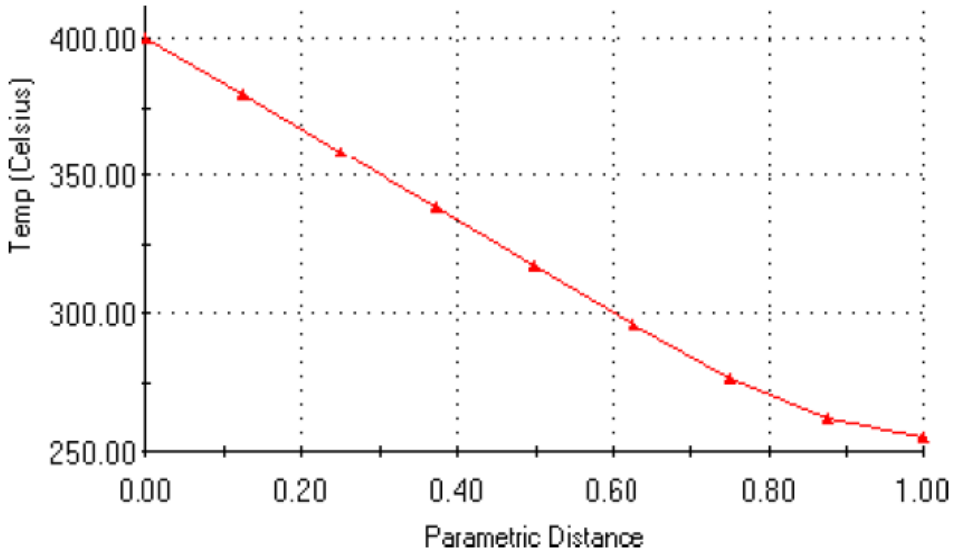


In conclusion, note the difference in the original and final revised report images. The final version does a better job of conveying engineering information, and is more ecstatically pleasing to the reader.

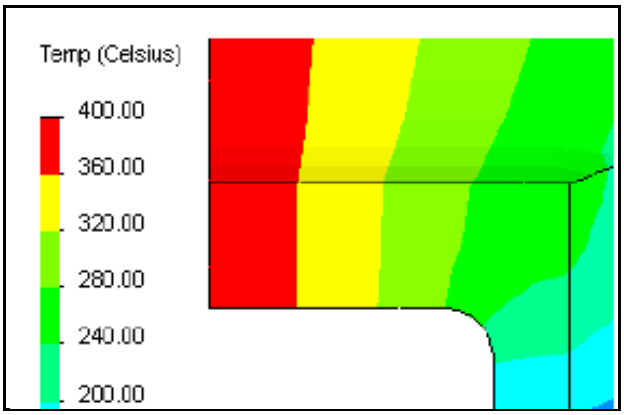




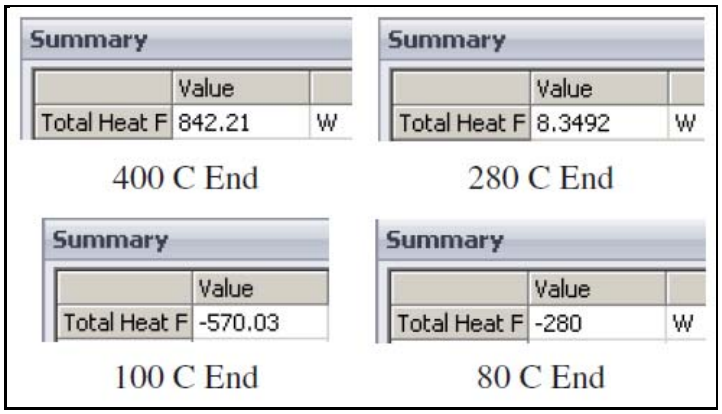
Surface contours give a good overview of a result, but sometimes a simple graph gives local details more clearly. For example, the graph below shows the temperature change for the same part along a selected line. Here the line length is non-dimensionalized to unity. Other systems will plot the actual physical locations along the line. Such a graph in SolidWorks is created with a right click on an active part name, **List Selected**→select the line or curve→ **Up Date** → pick graph icon.



The graph is more precise that the corresponding surface value plot:



You can also use **List Selected** to pick surfaces and sum or average an item of interest. For example, the total heat flow in or out of a surface of given temperature tells you what is needed to enforce that temperature boundary condition. Here the four results from **List Selected** are



Then the part image can be annotated (in SnagIt etc.) to show the necessary equilibrium balance.