ANSYS AIM - Thermal Analysis of an Electrical Wire

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Thermal Analysis of an Electrical Wire

Created using ANSYS AIM 18.2

Problem Specification

For this demonstration we are asked to determine the centerline temperature, Tc, and surface temperature of a bare steel wire carrying a current, I, and having a resistance, R. The surface convection coefficient between the wire and the ambient air (at temperature Ta) is h.

Given values:

$k = 13\ BTU/hr*ft*F$

$h = 5\ BTU/hr*ft^2*F$

$R = 0.0001\ \Omega/ft$

$Ta = 70\ F$

$I = 1000\ A$

Go to Step 1: Pre-Analysis & Start-Up

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