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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