

FLUENT - 3D Convection through an Electronics Box

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Problem Specification

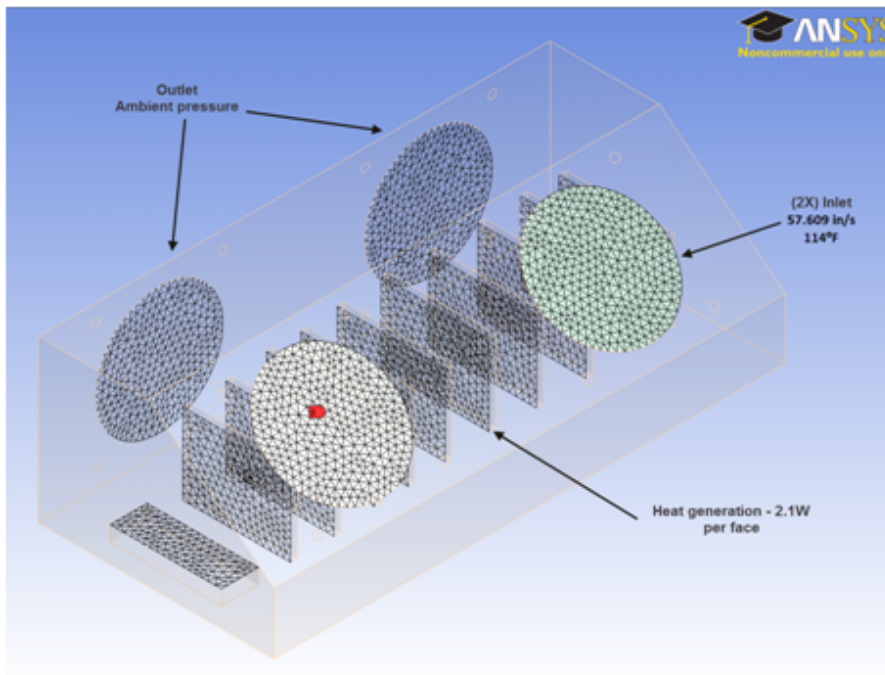
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3D Convection through an Electronics Box

Created using ANSYS 13.0

Problem Specification

Currently, a design for an electronics box calls for 11 electronic boards and a battery to be enclosed. Each electronic component will generate a heat of 2.1 watts. The current design uses two fans to blow air through the box to cool the electronics. The fans blow air at a rate of 35 cubic feet per minute. The box is expected to operate in an environment where the temperature reaches a maximum of 114 degrees Fahrenheit. The main constraint on the design is that the electronic components need to be maintained below 200 degrees Fahrenheit, otherwise the components could be damaged.



The box itself is ABS plastic, the components will be modeled as copper, and the material properties are shown in the table below.

Material	ABS plastic	Copper	Air
Density (kg/m ³)	1080	8800	0.946
Thermal Conductivity (W/mK)	0.188	391	0.0314
Specific Heat (J/kgK)	1260	385	1009

This tutorial will show you how to use FLUENT to model this problem.

[Go to Step 1: Pre-Analysis & Start-Up](#)

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