

Homework 2: Materials and Devices

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Due October 11th at 3 PM, 2012

1 Resistor Color Codes

A resistor has the color stripes of red black red gold. What range of resistances could this represent?

Modify this line to represent the correct equation for changing the color code to resistance:

Equation: $color_1 * 10^{color_3+1} + color_2 * 10^{color_3} \pm color_4 = resistance \pm error$

Modified Equation: $2 * 10^3 + 0 * 10^2 \pm 5\% = 2 * 10^3 \pm 5\% \text{ ohm}$

Therefore, the range of the resistor will be $1.9 * 10^3$ to $2.1 * 10^3 \text{ ohm}$

2 OSU Solar Vehicle Team

Research the OSU Solar Vehicle Team.

Group Website: <http://people.oregonstate.edu/groups/solar/>

Video: <http://www.youtube.com/watch?v=8jwVyBbDfjY>

Before the Phoenix project began, the OSUSVT has to deal with something explosive; the battery of the solar car exploded while driving on the 15th Street and the solar car was gone. The Phoenix project began. To make a better solar car, the OSUSVT focuses on three keywords: safer, quicker, and more efficient. Safer – the lithium nano-iron phosphate cells are used as the battery pack. Quicker – Using the Egress system. Efficient - improve break, wheel cover, and luminator. Moreover, the solar car body was made by Carbon-fiber which is durable and light weight that is a factor to help improve the efficiency. In general Phoenix solar car includes with 1,032 solar panels which makes of crystal silicon and can generate approximately one kilowatts on full sun¹. At the rate, the solar car can move with the speed of 40 mph. For the controlling system, Phoenix uses its unique program that was created from Visual Basic Developer and display on a Windows7-tablet as a surface of the steering wheel.

1. How efficient are these solar panels? why are they flatening? I have heard shape does matter on how efficient the solar panels will be.
2. What would be the most practical way of getting a driver in a solar car without going under and then sit in the seat?

¹The intensity of the full sun has range between 32,000 to 130,000 lux