CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
J0721

Project Title
Incandescent vs. Fluorescent Measuring Amperage and Heat

Abstract

Objectives/Goals
I wanted to find out how much electricity will be saved if fluorecent light bulbs are used for lighting instead
of incandescent bulbs. I also wanted to find the out the diference in heat out put between the two kinds of bulbs.

Methods/Materials
I used a amp. meter to measure curent flow at 120 volts. I used the formula amps x volts = watts to measure
total electrical consumption. I used an Igloo ice box, with a volume of 1,105 cubic inches. I used a thermometer
to measure temperature change, also a drop light for a portable lamp.

Results
I found that the 75 watt incandescent produced a 80 degree rise in temperature with in the igloo 30 minutes and it used .6 amps. The equivalent fluorescent bulb produced a 20 degree rise in tempature and used .1 amp. The 60 watt incandescent bulb produced a 60 degree rise in temperature and used .4 amps. The equivalent fluorescent bulb produced a 15 degree rise while only using .1 amps. It should be noted that the amp meter would register no lower than .1 amps. However the 75 watt equivalent fluorescent bulb measured slightly more than .1 amps so I feel the measurement is accurate.

Conclusions/Discussion
Flourescent bulbs are more energy efficient and produce less heat than incandescent bulbs. However it would appear that flourescent bulbs produce more heat per .1 amp used . But since they use less amps for equal light output they produce less heat. My experiment shows that every .1 amps produces a16 degree rise in the given volume of air, from the results of the 75 watt incandescent bulb. The 60 watt incandescent produced a 15 degree rise per .1 amp . The 75 watt fluorescent equivalent produced a 20 degree rise from .1 amps. From this last result we can deduce that the 15 degree rise from the 60 watt equivalent fluorescent would mean that it would consume 25% less amps than the 75 watt equivalent fluorescent, or .075 amps. The difference in amperage use between the 60 watt incandescent and the fluorecent equivalent would then be .325 amps, or 18 degrees per .1 amp. Thus more heat was produced per .1 amp from the fluorescent bulbs.

Summary Statement
Comparing the heat produced and electricity used between incandescent and fluorescent light bulbs.

Help Received
Teacher helped paste information on poster board.