



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Thomas K. Mouwen</b>	<b>Project Number</b> <b>J0813</b>
<b>Project Title</b> <b>Its Getting Hot In Here!</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My project is a study of solar energy collection. California has been faced with an energy crisis. Could solar energy provide a possible solution? I believe it could, but I want to make solar energy more efficient. The way that I might do this is to make the collectors better; after all, they gather the energy. The advantages to solar energy could be endless: reduced bills, energy conservation, less pollution, to name a few. Although the idea of using the sun's light as energy has been around since the 1970s, there is much room for improvement. <b>Methods/Materials</b> In this study, I tested three different designs of solar collectors. One design was a basic solar collector, one was a concentrated solar collector, and one was my designed solar collector. The basic solar collector was composed of a metal pipe. The concentrating collector used mirrors to direct light to the metal pipe. My designed collector made use of mirrors to create a room in which the pipe would be efficiently heated. Inside of the pipe was water. The water represented the carrier fluid in which the energy would be transferred. I tested the collectors against each other by placing them in the sun and taking the temperature of the water during different times throughout the day. <b>Results</b> I found that my hypothesis was correct, in that my designed collector was the most efficient in heating the carrier fluid. My design solar collector reached a temperature of 35° Celsius, within the first half-hour. The concentrated solar collector reached that temperature in an hour and a half. The basic solar collector, on the other hand, took five hours to reach that same temperature. Eventually, all three collectors were within one to two degrees of each other. Therefore, all collectors proved capable of reaching the same temperature. However, the difference was the time that it took for each collector to reach the highest temperature. <b>Conclusions/Discussion</b> I found that my collector was the best of the three designs for heating the carrier fluid. These findings show that there is still room for improvement in the solar energy industry. This study made me realize that what I focused on in this project is a tiny fraction of the endless possibilities for a pollution free and an energy efficient society.	
<b>Summary Statement</b> A study to determine if previous solar collectors can be improved to help collecting efficiency, bennifiting the enviroment in many different ways.	
<b>Help Received</b> Mr. Cohen (teacher) guided me through the project. Father helped me build collectors.	