To What Degree? Combating the Greenhouse Effect in Vehicles

Crispino, Evan (School: Terrebonne High School)

Parked vehicles can reach unsafe temperatures, potentially leaving children, pets, and others in our care at risk for heatstroke or even death. The purpose of this project is to develop a prototype that measures and monitors a vehicle's interior temperature in real time. This prototype, an Arduino microcontroller, was programmed to introduce ambient air into a vehicle's cabin while extracting hot air through a vent in the roof, keeping the vehicle's interior temperature at approximately 32 degrees Celsius. After building and developing an Arduino paired with a heat/humidity sensor, I programmed the Arduino to activate two fans when the vehicle's interior temperature reached or exceeded 24 degrees Celsius. For experimental purposes, a mid-size sedan with a dark interior was parked outside on three sunny days. The interior temperature of the sedan was measured and recorded over several hours on each day of testing. The data logs were then analyzed. My prototype successfully kept the vehicle's interior between 31-32 degrees Celsius on a day that was 28 degrees Celsius. Without the prototype, the temperature would have risen to 52 degrees Celsius within the same one-hour period. Similar results were found on each day of testing. My prototype successfully combatted the greenhouse effect in the test vehicle. It is my hope that this prototype will become an automotive industry standard, potentially saving lives. To expand my project, I would like to make the prototype smart-phone compatible, via texting or application, so as to alert owners when their vehicles reach unsafe temperatures.

Awards Won: