



## SENIOR DESIGN ORGANIZATION SYNOPSIS – SPRING 2014

### Solar Powered Attic Fan

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**Team 14: Alejandro Osorio, Brent Houghton**

**Faculty Advisor: S.E. Beladi**

Our team plans on designing and building a solar powered attic fan in which photovoltaic technology will be implemented in powering a motor driven fan; aspects of this motor will be governed by an electronic controller/inverter and thermistor technology. Although these devices have been available to the general consumer for some time, it is our goal to greatly improve the performance of these systems with regard to heat removal from household attics.

Our initial design will consist of a pyramid/tetrahedral shaped housing in which photovoltaic film will be adhered to the surface. An Aluminum material will be used in this housing and the motor and other components will be positioned underneath this housing, within the attic; the housing will be fastened to the outer roof. Our main reason for the tetrahedral design is to increase the surface area of PV film while minimizing volume and allow for increased solar exposure when compared to currently existing systems. In addition, this will also allow for an increasing pressure gradient with regard to the rising heat expelled from the attic.

Due to the diminishing volume contained in a geometric pyramid from bottom to top, the rising heat will increase in pressure and be “squeezed” out from the Aluminum housing as the motor driven fan extracts it from the hot attic. A release valve at the top of the “pyramid” housing will then expel the hot air into the atmosphere. Other components include: rechargeable battery, thermistor, electronic controller/inverter, driven fan, electric DC motor, and PV film.