Biomimicry: The Effect of Mother Nature on the Automotive Industry

Brumback, William (School: Rockdale Magnet School for Science and Technology)
Escalera, Jorge (School: Rockdale Magnet School for Science and Technology)

The purpose of the study was to research how the application of differing body panels, each based on bio inspired designs (biomimicry), could positively or negatively affect the drag coefficient, and therefore the efficiency of our 1/64th model Grumman Long-Life Vehicle (LLV). The reason for the choice of vehicle for testing was the real LLV's long outdated service date and ease of function when it came to applications of body panels due to its squared shape. Testing was done by utilizing the drag coefficient mathematical equation, which would only require for the drag force to be tested. Said data which was collected through wind tunnel testing of the differing panels utilizing a force sensor attached to the model and its individual panels applied. Final data results displaying that the Dimples panel increased the drag force (0.95936), in comparison to the control (0.89632), whilst the Fish Scales module showed a significant decrease in the drag coefficient (0.8033). Concluding, the Fish Scales module showed an increase in efficiency, meaning that applications of said panel could be useful in real-life scenarios.

Awards Won: