

## Truck Aerodynamics

Relevance to the Automotive Industry:	With the increased demand for "greener" / low emission vehicles as well as the need for higher efficiency in order to reduce our nations dependence on foreign oil it is imperative to develop new energy efficient vehicles. In particular trucks that support the backbone of the nation's commercial transportation suffer by tremendous drag that results in fuel demands on the order of over 10% of total oil demand in the US. This project will develop flow control methods to manage the wake of the truck and improve its aerodynamics in order to substantially reduce the drag.	
Research Location:	TUD	VT Advanced Experimental Thermofluids Engineering Research (AETHER) Laboratory
Homepage (Engl.):		<a href="http://www.me.vt.edu/AETHER/">http://www.me.vt.edu/AETHER/</a>
Faculty Mentor:		Prof. Pavlos Vlachos, Ph.D.
Faculty Mentor Email:		<a href="mailto:pvlachos@vt.edu">pvlachos@vt.edu</a>
Graduate Mentor:		Sam Raben, MS
Graduate Mentor Email:		<a href="mailto:sraben@vt.edu">sraben@vt.edu</a>
Project Description:  Jun 1 - Jul 29, 2009; (8 weeks, 40h/week)	This project will use global and planar flow field measurements in water and wind tunnel facilities to quantify the flow field around generic truck geometries and with direct force (drag) measurements and pressure distributions determine how different active and reactive control approaches reduce the drag.	
<b>Necessary Skills/ Knowledge:</b>	<ul style="list-style-type: none"> <li>Working/basic knowledge of Matlab, CAD, introductory fluids courses</li> </ul>	
Desirable Skills/ Knowledge:	<ul style="list-style-type: none"> <li>LabView, Tecplot, introductory optics</li> </ul>	
Additional Online Resource:		

NSF REU Students must have completed at least two semesters of engineering studies prior to the proposed summer research, and they must have at least one semester remaining before they can earn their BS in Engineering.