

# Aerodynamic Technology



UNIVERSITY OF  
NOTRE DAME

## Vehicle Drag Reduction via Plasma Actuators

Patents Issued

### Background

The **drag produced** by class 8 trucks **requires two-thirds of the engine's output** to maintain a highway speed. To put in another way, a large portion of the power consumed by these types of vehicles is spent in overcoming aerodynamic drag. The reduction of this drag force would benefit vehicle characteristics, such as fuel efficiency and engine horsepower requirements.

### Technology

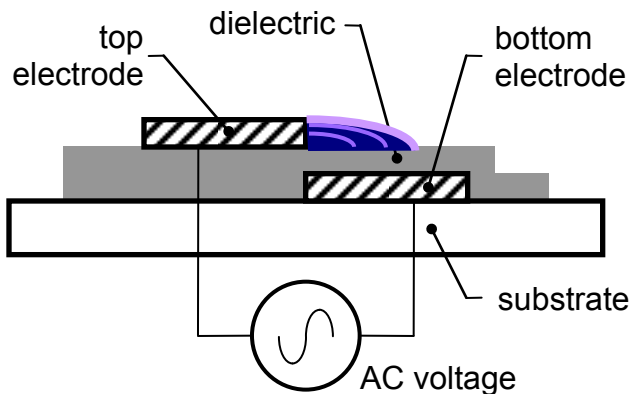
An **active flow control system utilizing plasma actuators** has been developed at the University of Notre Dame. This system is capable of generating a body force which controls flow separation from a vehicle. **By controlling flow separation, the drag force on a vehicle is minimized.** In essence, a vehicle can be streamlined independent of its actual shape. Physical devices such as spoilers, bobtails, flow plates, and diverter tabs have been used to move the airflow in a desired direction. Plasma actuators ionize the local airflow to induce a similar affect without the added structural components or weight. **Even the best designed physical devices attempt to divert flow**, unlike plasmas which modify the existing flow field.

### Advantage

Being able to **reduce fuel costs** can add directly to a company's bottom line. With less drag affecting a vehicle, **fuel efficiency will be improved.** With this technology fully developed on a vehicle, less horsepower will be required under the same trip conditions.

A **reduction in a quarter of the aerodynamic drag** which affects large highway vehicles is thought to be possible.

**Small form factor (mm)** allows device to be placed at any desired location and in combination with other passive devices.



### Notre Dame Patents

The university has been issued patents on plasma actuators and their use on vehicles including class 8 trailers

US patent include 7,380,756 ; 7, 624,941 ; 7,954,768 ; 8,091,950

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# UND-07-009 Vehicle Drag Reduction

this technology is made possible by the efforts of students, researchers and faculty at . . .

## UNIVERSITY of NOTRE DAME Aerospace Engineering

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### Interested in Licensing or Sponsored Research opportunities?

**FAX To  
(574) 631-6630**

TO: Tim Joyce, Licensing Associate

\_\_\_\_\_ I am interested in learning more about the general aspects of this technology. Please contact me. The best time to reach me is:

\_\_\_\_\_

\_\_\_\_\_ I would like to learn more about the specifics of this technology and would be willing to complete a Confidential Disclosure Form in order to discuss it further.

\_\_\_\_\_ I am not interested in this technology but would be interested in learning more about: (please specify):

\_\_\_\_\_

Please Enter Your Contact Information Below

Name: _____	Phone: _(____)_____
Title: _____	Email: _____
Company: _____	Fax: _____
Address: _____	
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