

Reusable, Energy-Absorbing Crash Cylinder Saves Lives, Money

Vanderbilt University



Professor John F. Carney III, Ph.D., of Vanderbilt University wanted to design a reusable crash cylinder that would survive multiple collisions with vehicles on the highway. Not only would this reduce department of transportation costs, but fewer crash cushions would be discarded in landfills. So Carney did just that.

Working at Vanderbilt's Department of Civil Engineering, Carney developed the "Crash Impact Attenuator Constructed from High Molecular Weight/High-Density Polyethylene" in the early 1990s.

Crash terminals are typically used on highways to shield hazard areas, such as the ends of rigid barriers and fixed objects sitting in the median, on the shoulder, or between the roadway and exit ramp. The attenuator absorbs the energy of an errant impacting vehicle by dissipating the energy of the hit through a series of cylinders made of high molecular weight/high-density (HMW/HDPE) polyethylene. After the impact, the cylinders self-recover and return to their original shape and position.

“ HMW/HDPE cylinders can absorb large amounts of energy and deformation without breaking.

The fact that the cylinders self-recover after impact means these crash cushions can remain in place and absorb multiple hits with minimal replacement costs and minimal downtime for maintenance as compared to conventional crash cushions.

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The U.S. Department of Transportation approved use of the device on U.S. highways in 1995.

The technology is licensed to Energy Absorption Systems, which markets the REACT (Reusable Energy Absorbing Crash Terminal) 3507 line of products. For more information, visit www.energyabsorption.com.

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