Designing a better seatbelt

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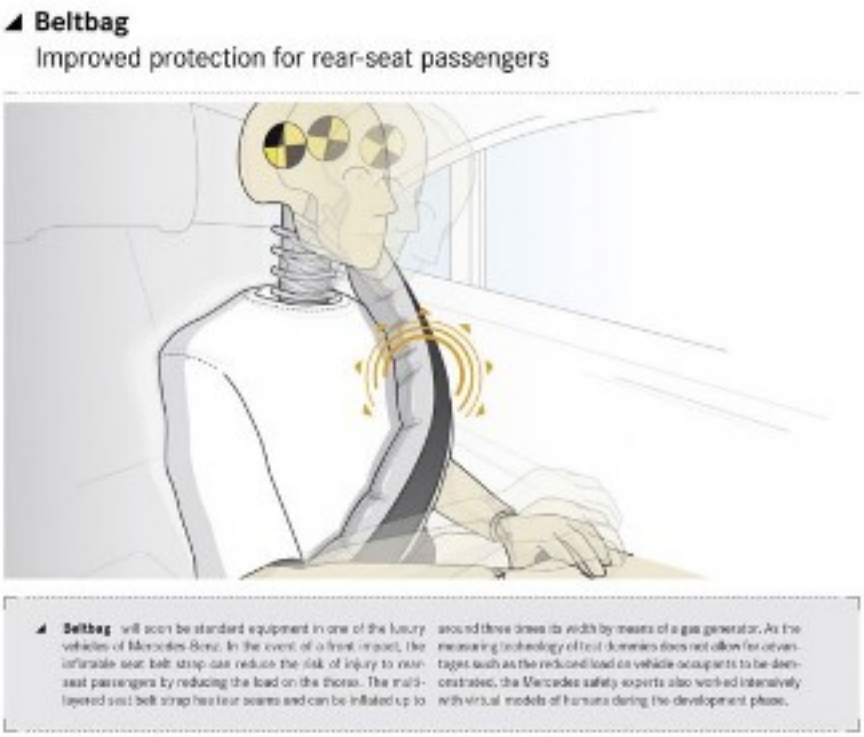

When it comes to safety in new cars, seat belts are a no brainer. They reduce crash-related injuries and death by 50 percent, according to the CDC. Forty-nine states—New Hampshire is taking Live Free or Die a little seriously—have laws requiring people to wear seatbelts, and it’s estimated about 80 percent of people actually wear the belts when they’re in the car.

As technology improves so have seat belts, but designers are always looking for better ways to engineer the belts. Fun fact: The first seat belt was patented in 1885

by Edward J. Claghorn for securing fireman or window washers to the platform while being raised , but they wouldn't find their way into cars until 1949 (Nash) and 1955 (Ford).

Luckily, we've come a long way since then. Mercedes [1] has designed a new inflatable seat-belt strap, which will roll out in its vehicles soon. The Belt Bag was first introduced in their 2009 ESF2009 Experimental Safety Vehicle, but it's just now being implemented into the cars. Ford had a similar safety device in their 2011 Explorer.

Basically, if the crash sensors detect a severe impact, the belt—which otherwise looks like a normal belt—inflates via a gas generator. By expanding to three-times its normal size, the multilayer belt expands the surface area so the impact is spread over more of the chest, hopefully lessening the force. These seatbelts will only appear in rear-seats since front seats already have airbags.

The company has been testing the belts using virtual human models to figure out the biomechanical strain from having the belt deploy.

Photo courtesy of Mercedes Benz

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