

Are Automotive Engineers Sitting on a Major Weight-Saving Opportunity ?

World oil supplies are finite and dwindling, oil supply from politically unstable countries is increasingly uncertain. Fuel economy has become increasingly important in the new vehicle purchasing decision and major improvements in CAFE are required in the USA. Public awareness of “green” issues has heightened significantly.

Against this background, it is not surprising that vehicle manufacturers world-wide have markedly increased their efforts to improve the efficiency of their products and reduce or eliminate tailpipe emissions. Announcements from the OEMs highlighting use of new composites or other advanced materials, new light-weight body structures, hybrid powertrains and other efficiency gains appear on a daily basis.

Whilst all these new developments are intriguing and should be applauded, the fundamental enemy of vehicle efficiency is mass: excess weight. In this article from CAR Magazine (first published in December 2010), Mark Walton wonders if there is not a simpler idea to remove significant weight from a vehicle – and the engineers and designers might just be sitting on it...

The Real Auto Revolution ? You're Sitting On It

“You know how all the manufacturers are investing trillions of dollars in efficiency measures ? Inventing those fiendishly complicated stop / start systems, fuel injectors cleaned by nanorobots, lightweight body panels gleaned from the spit of tropical birds – all to save a couple of grams in weight and a thimble-full of fuel ?

The trouble is, all the while they're also wasting piles of money and adding dozens of kilos in extra weight by insisting on the greatest waste of resource the car industry has ever known – the modern seat.

I hate the 21st century car seat in the same way I hate the Mars Duo chocolate bar. I mean, on the one hand, great, double the fun, who's complaining, but then again, yuck, it's excessive, why the hell am I eating my own bodyweight in hydrogenated vegetable fat and glucose syrup ?

So yes, sitting in the average 12-way, fully adjustable, all-electric driver's seat with lumbar support may indeed be like resting your body in a remote-controlled, leather-trimmed human nest; but the obscene self-indulgence of it boggles my mind. Because how often, seriously, do you actually use all those electric motors ? Most people buy a car, set up the seat to drive home from the dealership, then never touch the power-operated headrest again. Okay, sometimes a husband and wife share a car – but the traditional sliding rail remains a much easier, lighter and more efficient way of moving the driver's seat so far forward it's jammed under the dashboard (where most women prefer it). And how often does the passenger seat move ?

Seats aren't like climate control, CD players or sat-navs, things you fiddle with day-by-day; electric seats are more like having 12-way electrically-powered adjustment for the contrast on your TV. Pointless, and redundant almost straight away.

These thoughts first struck me years ago, when we had a Renault Grand Espace. Part of the appeal of the monobox people carrier like the Espace is the way it can turn into a removals van if you take all the seats out; but for those who've actually tried this, I hope your back is feeling better. The first time I unclipped a back seat and tried to take it out of the car I thought there was some kind of hidden lock still holding it down; turned out it was just gravity. When I'd asked my neighbour to help with his workshop pulley operated by a couple of pit ponies, the sheer scale of the seat, once it was out of the car and sitting on my garage floor made me feel slightly phobic. Modern seats are enormous.

Then a recent spate of lightweight special editions highlighted all this, because the car manufacturers – keen to tell us how much weight they're saving by fitting optional 'sports seats' – inadvertently revealed how over-engineered the original seats were in the first place. So, let's start with a reasonable example, the Porsche Boxster Spyder – its lightweight seats saved 6kg each over the standard car, apparently. Fair enough.

But when Aston Martin launched the DBS it boasted its optional seats could save 20kg each, a 40kg saving. Then there was the Bentley Continental Supersports GTC – the car is 90kg lighter than the standard car overall, but half the difference is just in the front seats: 45kg ! Remember, they're not removing the front seats entirely and making you sit on the floor, they're replacing the overcomplicated standard chairs with comfortable, supportive, beautifully-trimmed sports seats, that somehow manage to do without the power-operated eight-way thigh massagers. So why don't the manufacturers just fit the lighter ones in the first place ?

Mind you, I'm never going to persuade some manufacturers to offer lightweight alternatives. The Lotus Elise already comes with (I reckon) some of the best seats in the world, made by ProBax, which are slimline, comfy, and weigh just 6.375kg each (pleasingly exact, no ? Colin Chapman would love it). If Lotus shaved any more off those you'd be sitting on an empty plastic crate.

And then there's Rolls-Royce – the Phantom has 18-way, fully electric, hand-stitched leather thrones that weigh 35kg each. Of course, the Rolls-Royce brand is all about tradition, Englishness, comfort, so what else are they going to do ?

Deck chairs are nice.

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