

Hybrids May Be a 'Green Myth'

There's no doubt that hybrid vehicles are much more complicated than existing machinery, so why are vehicle makers bothering with them? Emissions and economy are the main drivers.

Today's engines already have a plethora of emissions gear on them and they'll need more to meet the next round of global restrictions. Multiple computers, variable valve timing, exhaust gas recirculation, variable nozzle turbochargers, catalytic converters, urea injection and particulate filters are complications that yesteryear's engines didn't need. But even this sophisticated technology isn't going to be enough to meet the next emissions round without some economy and driveability tradeoffs, so that's where hybrids come in – at least for some vehicle makers.



By adopting a parallel-hybrid design vehicle makers can engineer out some of the undesirable operating characteristics of the internal combustion engine – idling pollution is an obvious one – without sacrificing driveability and at the same time improving economy.

Electric motor boost off the line allows a smaller engine to be used, without any performance penalty, or provides a performance boost from the same sized engine.

There are potential compensations for the additional complication of a hybrid: around town economy is better, so it needs less tankage; electrically reinforced engine braking can be stronger than engine braking alone; short-term electric traction alone is possible, for vehicle use in sensitive environments; and electric power for auxiliaries is much greater than that available from a conventional system.

However, the sophisticated battery pack, the extensive electrical and electronic componentry, and high-voltage cabling warn of high maintenance costs. These reservations don't deny the engineering excellence of hybrid cars, in particular the recently released luxury hybrid Lexus RX400h 4WD wagon.

In electro-mechanical engineering terms the Lexus RX400h is a masterpiece; the automotive equivalent of the swimming duck, with obvious ease and smoothness, but a flurry of activity underneath.

However, we hate to think of the potential electrical and electronic damage should some unwary bush mechanic weld up a broken exhaust system bracket on a Lexus RX400h. Also, panel beaters need to employ special procedures when working on damaged hybrids.

How Green?

Yet another issue with hybrids is their claimed 'green-ness'. There is little doubt that the hybrid vehicle's reduced fuel consumption in stop-start operation offers emissions and fuel usage benefits, but these economy and emissions reductions come at a whole of life cost. Independent US research

shows that the so-called 'dust to dust' energy use of hybrid vehicles is higher than that of similarly sized petrol-powered vehicles, let alone that of frugal European car diesels.

CNW Marketing Research Inc spent two years collecting data on the energy necessary to plan, build, sell, drive and dispose of a vehicle from initial concept to scrappage. This includes such minutiae as plant to dealer fuel costs, employee driving distances, electricity usage of the material used in each vehicle and literally hundreds of other variables.

To put the data into understandable terms for consumers it was translated into a 'dollars per lifetime mile' figure, or, the energy cost per mile driven.

The shock findings were that driving a hybrid vehicle costs more in terms of overall energy consumed than comparable non-hybrid vehicles. For example, the Honda Accord Hybrid has an energy cost per mile of US\$3.29 while the conventional Honda Accord is US\$2.18.



The reasons hybrids cost more than non-hybrids are the manufacture, replacement and disposal of such items as batteries, electric motors (in addition to the conventional engine), lighter weight materials and the complexity of the power package.

Many consumers and environmentalists have targetted 4x4s because of their lower fuel economy and perceived inefficiency as a means of transportation, the energy cost per mile shows at least some of that disdain is misplaced.

For example, the industry average of all passenger carrying vehicles sold in the USA in 2005 was \$2.28 cents per mile, but most 4x4s came in under US\$2.00, including the Hummer! That figure is also lower than all currently offered hybrids.

"If a consumer is concerned about fuel economy because of budgets or depleting oil supplies, it is perfectly logical to consider buying high-fuel-economy vehicles," said Art Spinella, president of CNW Marketing Research, Inc.

"But if the concern is the broader issue of environmental impact of energy usage, some economy vehicles actually cost society more than conventional or even larger models over their lifetime."