

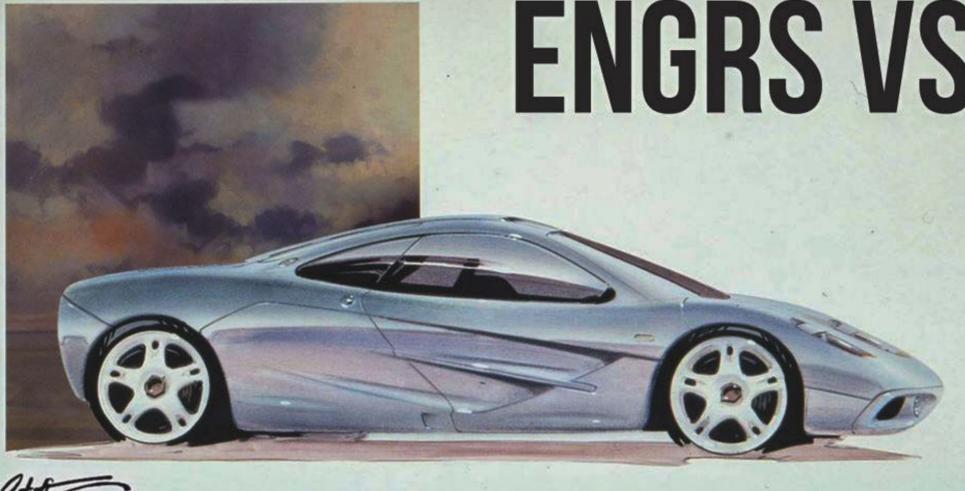


SHIFT

AUTOMOTIVE PUBLICATION OF The Daily Star

ENGRS VS PHYSX

INFOGRAPHIC: SHAER REAZ



Engineers who work for hypercar manufacturers like McLaren, Bugatti, Pagani and so on tend to be a little... eccentric. At any given time, they're probably thinking of drag coefficients, slip angles and how they're going to get a ridiculous design for the retractable spoiler past the form obsessed designer. However, their wacky world has produced some of the most technically marvelous miracles of the 20th and 21st centuries, brought us vehicles capable of mind bending speeds and machines that grabbed physics by the scruff of the neck and tamed it to their will. However, even the best of them seem stumped at one hurdle...

WHY CAN'T CARS REACH 300MPH YET?

1) Drag coefficients

Our knowledge of aerodynamics has not advanced yet to deliver a low enough drag coefficient for cars and keep them from taking flight at the same time. The balance between downforce and slipperiness is a crucial one. The power required to overcome drag at 300 MPH? A minimum of... 1476 BHP

2) Cooling

Keeping the balance between cooling and reducing aerodynamic drag at the same time is highly challenging. Engines making enough power to overcome drag at 300 MPH usually generate a huge amount of heat, and thus these cars are very low on thermal efficiency. Prioritising aero means... 3000 BHP rejected as heat

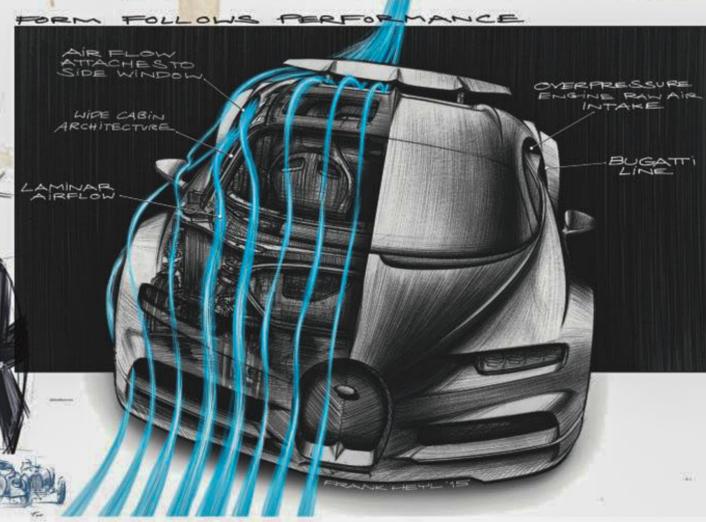
3) Tyres

The Veyron required nearly 6 years of continuous tyre development by Michelin. Michelin will only allow two sets of tyres, costing about \$42,000 a set, be fitted to the Veyron before the rims, \$69,000 a set, also have to be replaced to ensure integrity at high speed.

4) Power loss @drivetrain

Drivetrain loss occurs when the car's transmission tries to put down the power to the ground. All that power has to be transferred, and during that process, some of it is lost. For RWD cars, a 15% power loss is considered normal, for AWD it is 20%. Even by conservative estimates, that power loss amounts to... ~1700 HP at 15% est. power loss.

Want to know how we arrived at these figures? Check out the Engineering Explained channel on Youtube.



The McLaren F1 reached 240 MPH in 1998. It took nearly 15 years to break that record.

The McLaren F1 was a vehicle like no other. Gordon Murray had a vision as an engineer and the car that was built to his specifications conquered the world and stood at the top for almost a decade. It had a BMW V12, gold plating for engine bay insulation and doors inspired by the Toyota Sera(!). It still holds the record for being the fastest naturally aspirated car on the planet, so that should tell you something.

**6100 CC V12 (BMW), natural aspiration
R-MR layout, RWD, 6-speed manual
627 BHP, 479 lb-ft torque.**

Designed by Gordon Murray and Peter Stevens.

That record was broken by the Bugatti Veyron in 2005 (254 MPH). Didn't stand for long.

16 cylinders, 4 turbochargers, fuel tanks that deplete in 12 minutes at top speed, tyres developed from scratch - the Veyron reads like an engineer's erotic novel. After being challenged by Hennessey with the Venom GT, Bugatti increased power and came up with the Veyron Super Sport, which remains the world's fastest production car, with a top speed of 268 MPH. The Chiron might beat that, it might not - the Veyron will remain its over-achieving dad and the most inspiring machine of the 2000s.

**8000 CC W16, quad turbo
R-MR layout, AWD, 7-speed DSG**

1200 BHP, 1100 lb-ft torque (Super Sport).

Designed by Hartmut Warkuss and Jozef Kaban.

The latest contender with a shot at raising the bar is the \$3 million Bugatti Chiron.

**8000 CC W16, quad turbo
1500 BHP, 1180 lb-ft torque.**

Top speed (limited): 261 MPH, Theoretical: 288 MPH



AUTO NEWS

Fiat makes a great car...uglier



COLLECTIBLES



McLaren Vitamin 12C

Pros: Smooth paint, very straight non-wavy metal casting. Functional spoiler albeit fragile. This one needed repairs. The dash is amazing with every little button accurately detailed. Body lines are also perfect. Body panels gaps are superbly tight.

Interior is brilliantly detailed but doesn't come with carpet which is oddly annoying.

Cons: Doors do not close smoothly. Tried it on two other models. You will have to jiggle and wiggle a bit but when it shuts it stays shut nicely. Taillight detail is non-existent other than being hidden behind a grill like the real car.

Prices: Roughly about \$150. For a budget version, Kyosho has a 1:64 version for under \$15.

WORDS AND PHOTOS: E.R. RONNY

The Fiat 500 is a quirky little European supermini that oozes style, looks right at home on the French Riviera being driven by a leggy blonde in a summer dress and shades, rips up the tarmac at the hands of boy racers in Abarth form and is generally a throwback to what made the 1950's original great.

It's a formula that works brilliantly. Why, then, would Fiat be so daft as to make variants? Have they learned nothing from BMW and its experimentation with the Mini brand? Yeah, they're well built, but darn ugly and purists would call it them an abomination next to the original.

The Fiat 500 now has a random letter 'L' added to it. L means large. It means mini-SUV based on a supermini

hatchback. It means weird protrusions at the back, unnecessary bulges to fit the undoubtedly larger drivetrain, bigger wheelbases which take everything away from the driving experience and introduce loads of roll for the top-heavy body, and more space which inspires you to have more babies. The Bubonic plague did that, and that wasn't necessarily a good thing.

Although the car is bigger, the motors are a little underwhelming on paper - 1.4 litre (95 HP), 1.4 litre T-jet (120 HP), 0.9 litre TwinAir (105 HP) as well as a range of bi-fuel versions of these. Meh.

Having destroyed itself in the process of being cool and quirky without actually being anything more than a curse on humanity, Chrysler seems to have spread heavy

doses of horridness into Fiat. There are Mopar parts on offer to tart up your 500L, Chrysler's motorsports division now providing the hot bits catalogue since Abarth probably flat out refused to touch this monstrosity.

The 500L is no doubt a result of Fiat thinking of Chrysler as a legitimate part of itself, which any European car manufacturer should absolutely avoid if they want to succeed while dragging an American brand in tow. Just ask Daimler AG. Lets just hope Chrysler keeps its cheese-and-freedom-dipped fingers out of Alfa Romeo, Ferrari and Maserati.

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