



Is the End in Sight for Gas Engines?

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Jul 15, 2016 ([Archives](#))

The unthinkable has happened. The auto industry is seriously thinking about the end of the internal-combustion engine and the new electric era. And it's happening much faster than anybody expected.

"Get a horse!" yelled the naysayers when early cars got stuck in the mud. (Virginia Historical Society)

When we switched from the horse to the horseless carriage, it didn't happen overnight, and there was no Big Bang. There were plenty of naysayers. If you recall, a popular pastime was to observe an early motor car broken down (or stuck in the mud that prevailed before paved roads) and yell, "Get a horse!"

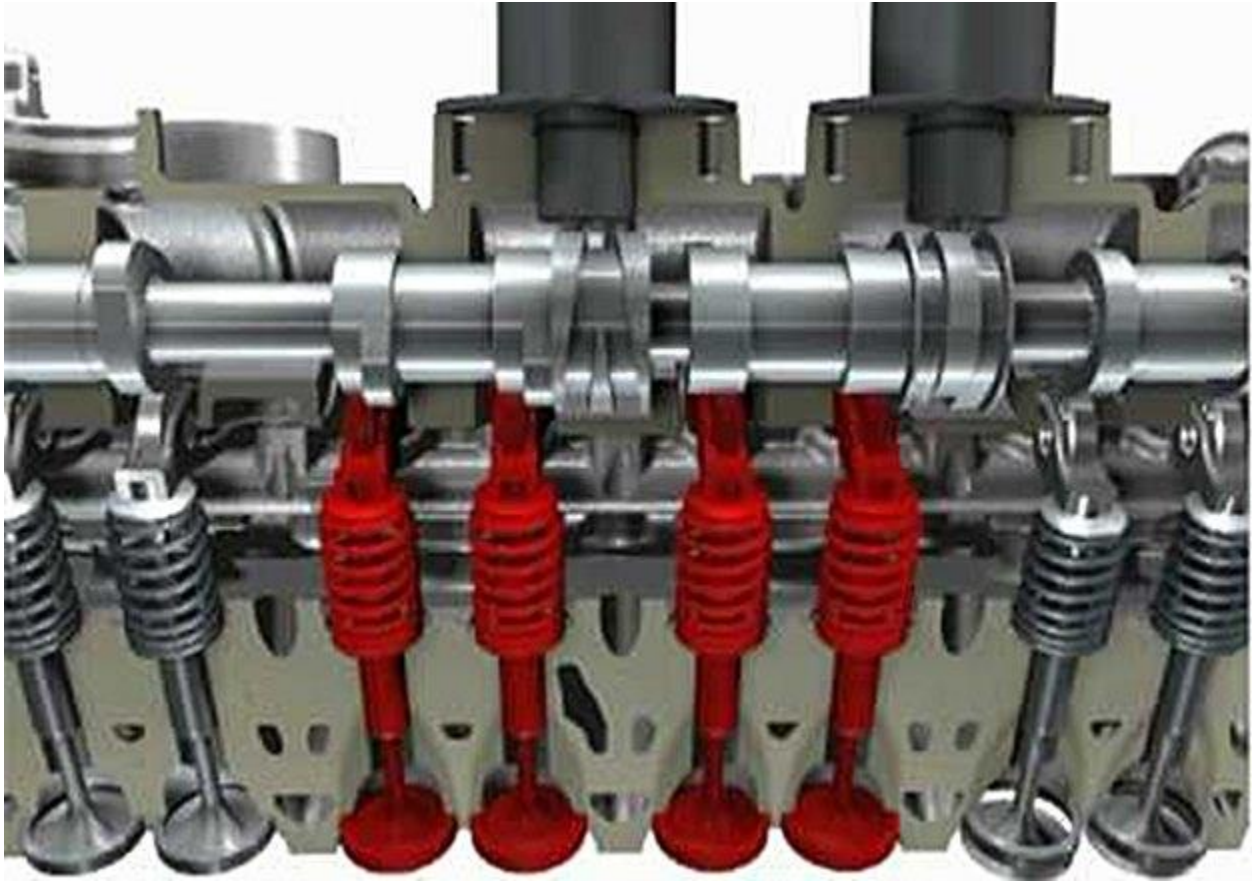
Let's look at just a few things that happened this week:

R.I.P. Internal Combustion?

Car and Driver ran [a thoughtful column](#) arguing that we may have reached the end of reasonable development for the gasoline engine. At some point, the author concludes, it's easier to just switch to electric than it is to turbocharge *and* supercharge your engine, and run cylinder deactivation and direct or water injection, and while you're at it, switch to aluminum castings to save a few pounds and add start-stop technology.

According to author Aaron Robinson, a pretty techie guy, "The only way to reduce carbon dioxide (CO₂) is to use less fuel, so the engine is being pushed to increasingly tortured lengths

for fuel efficiency. The question is, are we now reaching peak engine?"



VW shows off cylinder deactivation for four-cylinder engines. Now VW is betting on hybrids and EVs for fuel economy. (VW photo)

Later, Robinson concludes, "The internal-combustion engine seems to be collapsing under the weight of its own Gordian complexity... Well, if this is indeed peak engine, don't be too downcast. It's been a good run.... Yes, electric motors, whoopee."

Is this the same Car and Driver that routinely badmouthed EVs as the spawn of Ralph Naderite regulators? These days, Teslas often grace the cover of their print edition.

VWs with Plugs

The Volkswagen Group, stung by the ongoing diesel scandal, is seriously talking about a lineup dominated by hybrids and EVs, and is seeking a battery partner. The Detroit News reported this week that Volkswagen AG is considering investing \$1.89 billion in several large battery plants around the world, with possible partners LG Chem or Panasonic (neither of which is commenting).

VW's settlement with U.S. regulators includes a requirement that [the company invest \\$2 billion in green energy and zero-emission vehicles](#), but maybe it would be putting this money forth

anyway.

At a recent Porsche event, Car and Driver's Robinson reports, a Porsche executive was pressed about the rumored Porsche 960, a super-complex quad-turbo flat-eight. Herr Zellmer said the car was "irrelevant," given the VW Group's new interest in hybrids and electric cars.



The 2017 Porsche 960 could look like this, but on the other hand, why bother? It might be better just to ditch the tailpipes. (Porsche photo)

VW envisions a stunning volume of between two and three million purely electric cars by 2025. The company is playing catch-up; like Car and Driver, it long derided the possibilities of EVs...in favor of clean diesels. Now that strategy has proven impossible to achieve without cheating. So VW is introducing electric cars across the range, including the Model S-challenging Mission E at Porsche and a 300-mile-range electric Audi Q6 crossover, both by 2018.

Range Is Key

The biggest stumbling block for EVs is range. Once that obstacle is overcome, nobody's going to worry about getting stranded, or the availability of public charging stations. And 300 miles on a charge is in sight. Hyundai, which is set to introduce its trio of Ioniq cars (hybrid, plug-in hybrid and electric) later this year, is also working on a 250-mile long-range car for 2020, Automotive News reports.

Mercedes-Benz is pursuing a similar strategy. It recently announced that its B-Class electric will

soon [have range of more than 300 miles](#). And the ranks of 200-mile affordable EVs will include the forthcoming Chevy Bolt, the Tesla Model Three, and probably something from Nissan.



The Chevrolet Bolt will deliver 200 miles of range for \$35,000--what's not to like? (General Motors photo)

Speaking of range, Tesla [has announced](#) that its 2,000 Roadster owners can now get a 3.0 battery pack (for \$29,000) that extends the car's range to a whopping 340 miles. Other carmakers should follow Tesla's lead, so you can buy, say, a Nissan Leaf pack to double its range. Why not?

Goosing the Market

EV takeup has been somewhat slow in Europe, but now Germany has introduced \$4,400 in government incentives. The result has been, [German sources say](#), a “many times over” increase in orders for the all-electric i3 model.

The U.S. is currently the biggest EV market, and a recent milestone saw them achieving one percent of sales. But the volume Stateside could also take a big leap—not because of new subsidies, but because of the availability of the aforementioned affordable cars like the Bolt and Model 3 (which has nearly 400,000 advance orders).

A possible sticking point is the two-year, \$35 million EPA and NHTSA “Midterm Review,” which will examine the future of the federal fuel economy target—a 54.5 mpg fleet average by

2025. Dan Becker, the climate campaigner at the Center for Auto Safety, tells me that automakers “want an end to the rule,” and will lobby for that outcome—arguing that the technology isn’t available to meet it. Actually, he claims, carmakers wanted it to fail all along, and see the review as an opportunity to get that done.

“But the agencies need to hold firm or even strengthen their rules,” said Becker. “Because 54.5 mpg is quite achievable.”

The federal target is obviously made harder by consumer defection to crossovers and SUVs in the face of \$2.25 a gallon gas. But Becker says automaker complaints are “crocodile tears.” He says, “Automakers spent \$15 billion on advertising their SUVs, and now they’re blaming consumers for buying the cars they advertised.”

Unforeseen circumstances could change the equation, but right now I see a trajectory toward an electric car fleet on the world’s roads. And sooner than people think.

<http://www.cartalk.com/blogs/jim-motavalli/end-sight-gas-engines>