

Professor says Volkswagen scandal a failure of 'ethical engineering'

September 30 2015



The Environmental Protection Agency says these Volkswagen vehicles do not comply with applicable emissions standards: the Beetle TDI and Beetle Convertible TDI (model years 2012-2015); Jetta SportWagen TDI (2009-2014); Golf TDI (2010-2015); Golf SportWagen TDI (2015); and Passat TDI (2012-2015). Credit: Freeimages.com

The automobile manufacturer Volkswagen announced Tuesday a plan to fix 11 million of its cars that have software designed to cheat emissions tests in the United States and Europe.

The world's second-largest auto maker has admitted to designing the diesel engines in its Volkswagen and luxury Audi cars to hide their actual

output of environmentally damaging gasses when being tested at emissions-control centers. The scandal has cost the chief executive of the company his job.

Abdel Ra'ouf Mayyas is an assistant professor of automotive engineering in the Polytechnic School, one of the Ira A. Fulton Schools of Engineering at Arizona State University. ASU News asked his thoughts on how something like this could happen, and what the fallout will be.

Question: Does this mean it's easy to fool the EPA tests?

Answer: From technical point of view, yes, it is easy—especially as these EPA standards are well known to the public and academia, as well as to manufacturers. Therefore, it is easy for auto design/control engineers to develop defeat codes that are smart enough to retune their cars' engines to behave differently at different driving scenarios. However, I would say that this has been occurring in different ways even by individual customers when they use aftermarket chips to retune their own [car](#) ECUs (engine control units) for performance driving but rarely get caught. However, I would categorize this issue as being of an ethical-in-engineering type of issue.

Q: The automaker could face U.S. fines of \$37,500 per vehicle, the EPA told reporters. With around 482,000 of its diesel vehicles sold in the U.S. since 2008, this could mean a penalty of up to \$18 billion. In your opinion, can Volkswagen bounce back from this financially, and if so, what would it take for the company to earn back public trust?

A: I am not a business specialist, but I would imagine it is going to be a major drawback for Volkswagen before it will recover from this impact. A new start and leadership change is an ultimate reaction to recover [public trust](#), especially for a company like Volkswagen.

Q: The increase in computer-controlled electronics in cars has brought convenience and advancements, but can car companies now hide things, such as a way to gather data on us?

A: That is true! There is a need for regulatory standards adopted by all parties involved in order to organize such unprecedented change in car technology.

Q: Is this a by-product of the growth in environmental regulation and related political pressure, or is this a car company struggling against competition and looking for a shortcut?

A: I think it is more about customer satisfaction while maintaining compliance with federal regulations. In order to be competent, I would consider this as a shortcut for a company struggling in competing with other competitors.

Q: Is a recall of Volkswagen diesel vehicles issued between 2008 and 2015 likely? If so, what would be involved for owners of the vehicles as far as vehicle repair time?

A: Recall is certain in this case since no one will accept cars that hurt our

environment. The software has to be modified to comply with all federal and non-federal regularities. However, as far as repair, since it is a software issue, it would be same-day repair to update/modify the software.

Q: What can regulators do to avoid a repeat of this kind of scandal?

A: First of all, with an increased use of electronics in cars, ethical situations like this will become even more common in the future. Therefore, new regulatory and standardized "ethics in engineering" might be the controller for such process.

Q: Any additional thoughts?

A: We work hard as engineers to improve our lives; we have to consider the projections of all consequences of the developed technology from all angles. For instance, Tesla made an environmentally friendly car as of now and seems to pose a competitive performance compared to other non-electric cars. Yet, one should think about the consequences of the disposal of these cars in the next few decades. Therefore, I would think this issue is more about ethics.

Provided by Arizona State University

Citation: Professor says Volkswagen scandal a failure of 'ethical engineering' (2015, September 30) retrieved 25 April 2024 from <https://phys.org/news/2015-09-professor-volkswagen-scandal-failure-ethical.html>

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