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Ethics

Have you ever heard of the term “defeat devices”? If you Google the term Wikipedia will define it saying, “A defeat device is any motor vehicle hardware, software, or design that interferes with or disable emissions controls under real world driving conditions, even if the vehicle passes formal emissions testing.” Basically a defeat device is a way to beat the system so a car appears to be passing emissions tests but is actually polluting the environment. It has recently been revealed that the automobile manufacturer Volkswagen has been putting defeat devices into many of their diesel engine automobiles. In September of 2015 The National and State Air Regulators accused Volkswagen of installing software in about 500,000 cars designed to pass federal emissions tests but release higher than acceptable levels in everyday driving situations. If global warming and pollution weren’t such a big problem in the world right now this would not be a big issue. However these are some of the biggest and most threatening issues to our entire species/planet, and every company and person in the world needs to be contributing to try and solve them. To give a little more detail on the accusation, “The software allowed VW cars to activate emission controls during emission tests but during normal use to release up to 40 times the permitted amount of nitrogen oxides, which help generate nitrogen dioxide and minute particulate matter, which causes breathing issues and is linked to millions of early deaths” (Hulac). Not only

are these specific emissions direct health hazards to people, nitrogen dioxide is a greenhouse gas that captures and holds heat from the sun. These heat-capturing molecules linger in the stratosphere and this is the phenomenon known as the greenhouse effect, and the science behind the term “global warming”. In my personal opinion, global warming is going to be the cause for human extinction if we don’t blow each other up before then. Though vehicle emissions regulation can be a pain in the ass for the car owner and the manufacturer, there is a very important reason behind all the legislation. Those who knowingly perpetrate these laws are damaging the world and the quality of life for over 7.5 billion people, and should thus be severely punished for their actions.

Focusing strictly on Volkswagens case, between 2009 and 2016 Volkswagen produced and sold approximately 590,000 diesel engine vehicles equipped with defeat device software. The Environmental Protection Agency filed claims against Volkswagen for violating the Clean Air Act. This claim went to the United States District Court and three partial settlements were reached. One for Volkswagen’s 2.0 liter diesel engines, one for their 3.0 liter diesel engines, and one settlement addressing civil penalties and injunctive relief to prevent future violations.

“The 2.0 liter partial settlement stated that Volkswagen must remove from commerce in the United States or perform an approved emissions modification on at least 85 percent of the affected 2.0 liter vehicles by 2019. VW must also meet a separate 85 percent recall rate in California. If VW fails to reach the 85 percent recall rate, VW must pay additional funds into the mitigation trust in an amount equal to \$85 million for each percentage point for which it fell short of the national

recall target, and \$13.5 million for each percentage point by which it fell short for the California recall target” (U.S. EPA). That is so much money lost it honestly hurt me to type! Even if the company recalls the amount demanded by the courts or can find a way to fix the defeat device software, the company is at a huge loss because in order to recall those vehicles they must buy back the vehicle at a fair replacement value. In order to fix the software they have to invest a significant amount of money into development and it might not even be possible to fix with software.

“Under the 3.0 liter partial settlement, Volkswagen must remove from commerce in the United States or perform an approved emissions modification on at least 85 percent of the affected 3.0 liter vehicles, and the additional 85 percent in California as well. If VW fails to meet the recall rate for the generation 1 vehicles, VW must pay additional funds into the mitigation trust in an amount equal to \$5.5 million for each percentage point they fell short, and \$900,000 for each percentage point short in California. If VW fails to reach the 85 percent recall rate for the generation 2 vehicles, VW must pay additional funds into the mitigation trust in an amount equal to \$21 million for each percentage point they fell short of the national recall rate, and \$5.5 million for each percentage point they fell short of the California recall target” (U.S. EPA).

The 2.0 liter and 3.0 liter settlements also demand that VW contribute over \$3 billion in funding to the mitigation trust fund. This additional funding is supposed to pay for the damage these vehicles have done to the environment. The 2.0 liter settlement also requires VW to invest \$2 billion in Zero Emission Vehicle infrastructure. Talk about making an example out of Volkswagen. This mistake is

likely to destroy the company, however it will hopefully cause other vehicle manufacturers to be more mindful of the environment when designing their vehicles.

Not only did the company itself get damaged by the case, six Volkswagen executives were charged for their roles in the emission scandal including: “Heinz-Jakob Neusser who oversaw development of the company’s brand, Jens Handler who oversaw engine development, Richard Dorenkamp who was another supervisor of engine development, Bernd Gottweis who oversaw quality management, Jurgen Peter who was a liaison between regulatory agencies and the carmaker, and Oliver Schmidt” (Tabuchi). All of these people had management roles, and played a part in the development of these faulty vehicles, and from what I read they are still looking into the case trying to find other people in the company to prosecute. They also fired the CEO at the time and appointed the CEO of Porsche to be the new CEO of Volkswagen. This goes to show that as an engineer and a product manager it is your duty and responsibility to ensure that what you are creating is compliant with the laws and regulations. Not only that, as a designer you should consider the moral implications of what you are creating. The goal in life is to make money, but one cannot sacrifice the wellbeing of the environment or others health to do so.

This scandal also affects the automobile industry as a whole. Some might say that it could benefit other vehicle manufacturers because the settlement is going to cripple their competitor. Others would suggest that it would cause other companies money, by leading them to invest in more quality insurance in fear that this doesn’t

happen to them. Either way, the revealing of this scandal will lead to more intense oversight to ensure this does not happen again, which means the vehicle manufacturers must work harder to ensure their products are well below acceptable emission specifications.

Volkswagen made a huge mistake by trying to beat the system. They were caught and exposed for this mistake, and are now paying the huge consequences. Hindsight is always twenty-twenty, but this is a great example for all designers out there that you should always consider the implications of your design. Not just the financial implications because I am sure VW made the decision to use the defeat device software with the sole thought that they would be saving a lot of money by doing so. Though their decision also affected the environment, the innocent employees of their company, the rest of the automobile industry, and all of their customers. Every action has a reaction, and as an engineer I think we need to constantly be thinking about how our work could potentially have negative impacts on the world.

Sources

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