

Mechanical engineering

Profession



Currently, Mechanical engineering is becoming one of the most important fields in the world. Mechanical engineers are required in all types of fields, such as manufacture, repairing and maintenance. It is a subject of engineering which is combined by the principles of computer science, physics, material science, math, business and management. As for a professional mechanical engineer, you are not only required to know well the general knowledge of engineering, you are also expected to master diverse transferable skills. However, mechanical engineer cannot only take the goal as production of moral hero; they also have to take responsibility to themselves and the products that they made. For instance, vehicle mechanical engineers have to be responsible to the vehicles that they made. A professional engineer should not treat his task easily, even though he is being squeezed by the company. Therefore, in this essay, a case study which is referred to Ford Pinto disaster will be introduced and analyzed. In addition, this essay also will describe the core knowledge skills which are expected to mechanical engineers, the jobs that mechanical engineers can undertake, and the roles that mechanical engineers play in society. Ford Pinto accident is a famous vehicle disaster which was happened in the last century, the main reasons of this disaster are Ford Pinto's design flaw and development phase issue. In 1971, the Pinto which is produced by Ford had become the most popular modal in the subcompact level. From 1971 to 1980, more than 3, 000, 000 of the cars had been sold. However, in the middle of that decade, Pinto was got into the trouble, which was reported that Pinto was easily to get fire after rear-end 1 collision (Flammang, JM, 1994). Mother Jones magazine stated that the fuel tank system is so vulnerable that it can be punctured easily in a rear-impact collision, and fire hazard will happen.

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Additionally, Pinto cannot even satisfy a 20 miles per hour crash which is under the normalized value. From these two evidences, it can be demonstrated that Ford Pinto has shortage with fuel tank system. In other words, there is a design deficiency in the part of fuel tank system. On the other hand, Pinto was the first entrance into small vehicle market, which was produced by Ford (Flammang, JM, 1994). Additionally, it was also made against the competition from Japanese vehicle companies. Therefore, the development period of design and production had been compressed into 25 months instead of 43 months (Flammang, JM, 1994). Meanwhile, the engineers were also squeezed in the beginning of design (De George RT, 1981). The test of rear-end collision for fuel tank was not even processed until the vehicle has been created. Although the mistake of mechanical engineers has not been regarded as a reason of Ford Pinto disaster, it cannot be guaranteed that they are not responsible in this case. Mechanical engineers play a significant role in corporations, although this role is not a policy or decide on probability of venture, which means they do not have to take moral responsibility of policy when risk happens. The exclusive important point that they are important to the companies and the public is their knowledge and capacity. However, to become a professional mechanical engineer, being responsible is also an important aspect. Professional mechanical engineers should not only regard more 2 advanced and technical products as a position, although this is the reason why they endeavor to work. From Ford Pinto case, it can be recognized indirectly that mechanical engineers' fault is also one of reasons which led to this disaster. Initially, Ford Company decided to reduce production period from 43 months to 25 months, which brought massive pressure to engineers. However,

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engineers ought not to help companies make profit blindly within a limited time instead of ignoring engineering ethics. It is mentioned in the National Society of Professional Engineers Codes of Ethics, engineers should guarantee the health, safety and welfare of the public and they are not expected to process the actions which are beyond their capacity (Online Ethics Center for Engineering and Science, 2005). Hence, engineers should perform their duties as testing the performance of Pinto and detecting the deficiency of Pinto, although the time is insufficient in this event. In addition, engineers also did not catch the last chance to disassemble the vehicle and modify the issue before Pinto vehicles were pushed into market formally, although the potential problem of fuel tank system had been doubted. To be a mechanical engineer, the skills which he has to masters are extensive, as many as the jobs that can be undertaken by him. Firstly, engineers should contain the ability to distinguish the task whether can be competent by themselves or not. In addition, they have to be able to complete the task successfully via logic, effective and efficient methods, once they decide to accept the challenge. From the Ford Pinto case, this point can be easily demonstrated. Secondly, mechanical engineers are expected to be 3 proficient in computer science, math and physics, which are the fundamental engineering knowledge. Thirdly, in the mechanical engineering career, the challenge would come irregularly and frequently. Hence, mechanical engineers ought to be able to keep getting ready continually. On the other hand, they are supposed to be able to work under the pressure. Next, they should be moral. For example, they have to take the responsibility, when the disaster happens due to unsuccessful design, defective products or lack of tests. Finally, it will be more efficient for the job

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schedule, if they are capable to exchange opinions and communicate with other engineers. Mechanical Engineering is complex field that contains the manufacture, installation, maintenance, development, design, research, and testing. It is a discipline which includes electronic and electrical engineering, dynamics, statics, fluid mechanics, mechatronics, design graphics, materials, manufacturing, stress analysis, etc.(Engineers Australia, 2012). However, the role of mechanical engineers has a significant difference from the rule of scientists. In the society, scientists are supposed to discover and research the new products and calculate the feasibility of new product. The role of mechanical engineers is to solve the mechanical problems which have been distinguished by scientists, and build necessary infrastructure as bridges, buildings, and transportations. Therefore, the most of jobs that can be undertaken are in the industry sectors, such as manufacturing, automotive, and maintenance. There are also jobs available in the company sectors, such as product design and relevant mechanical engineering research. 4 In this essay, it is mainly stated and demonstrated the engineering ethics which is one of the most important role should be observed by mechanical engineers, through introducing and analyzing the Ford Pinto case. They are expected to ensure the health and safety of the public. Moreover, the core knowledge skills that are required to be an engineer, the role that is played by engineers in the society and the jobs which can be taken by engineers are also referred into this essay. 5 References: De George RT, 1981, ' Ethical Responsibility of Engineers in Large Organizations: The Pinto Case', Business & Professional Ethics Journal, Vol. 1, no 1, pp. 1-14. Engineers Australia, 2012, Engineers Australia, viewed 7 May 2012, . Flammang, JM, 1994, ' Ford Pinto rear-impact defect' in when technology fails: significant technological <https://assignbuster.com/mechanical-engineering/>

disasters, accidents, and failures of the twentieth century, ends Schelager and Neil, pp. 156-162. Online Ethics Center for Engineering and Science, 2005, Online Ethics Center for Engineering and Science, viewed 8 May 2012, . 6