

An Engineers Role in Fighting Climate Change and Global Warming

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Over the last few decades climate change and global warming has been increasing at an alarming rate. This is mainly due to the alarming rate that greenhouse gasses are being released into the atmosphere. This has caused a shift in the world climate and the overall temperature of the earth to increase. The increase in temperature has led to glaciers melting, sea level rise, and other extreme weather. These disturbances to the world lead us as engineers to combat climate change and global warming through different technologies. In this several technologies will be explored that may help combat the problem of global warming and climate change.

Before the technologies are explored it is important to explain why we as engineers have a social responsibility to the world. The responsibilities include but are not limited to safety, sustainability, ethics, public trust, and legal and regulatory compliance. Safety is important because engineers have a responsibility to ensure that their designs are safe and do not pose a threat to people or the environment. Failing to do so could result in serious harm or even death. As the ones designing the products and infrastructure in the world around us we have the ability to design and implement sustainable solutions that minimize environmental impact and conserve resources for future generations. Engineers also have a responsibility to act ethically and with integrity, considering the social and environmental impacts of their work. Oftentimes the products or things that we engineer are used by people that do not know exactly how they work so it is important to keep the public trusting in us so that we can continue doing our jobs. Engineers are subject to laws and regulations governing their work. Failing to act in a socially responsible manner can result in legal and financial consequences. Now that the social responsibility of an engineer is explained we can better understand why some of the following technologies to help combat global warming and climate change are so vital to be engineered at a higher level and have more focus brought to them.

Renewable energy is what I believe to be the most important factor in combating global warming and climate change. The reason that this issue is so prevalent today is because there used to be no regulations on emissions and greenhouse gasses were being put into the atmosphere. Energy obtained by burning fossil fuels such as coal and oil have many emissions, mostly being greenhouse gasses. Greenhouse gasses are what eat through the protective layer in our atmosphere and help to protect us from the harmful rays of the sun. Renewable energy such as wind and solar do not have any

emissions while running, thus producing no greenhouse gasses. Renewable energy is also abundant and clean unlike fossil fuels. According to the International Renewable Energy Agency (IRENA), renewable energy sources are now the most cost-effective sources of electricity in many parts of the world, making them an attractive alternative to fossil fuels. The emissions of greenhouse gasses can be reduced by up to 70% by 2050 if the transfer to renewable energy is pushed. This will drastically reduce the amount of wear and tear that the atmosphere takes as a result of fossil fuel burning. However, there are negatives to the switch to renewable energy. For example, wind turbines have to be placed in specific areas in order for them to be worth putting in. These turbines also produce a significant amount of noise pollution, so they are not ideal to be put near areas where there are people living. Wind turbines also kill a lot of birds due to them flying through where the blades spin. There may be substantial unintended consequences when switching to these renewable energy sources, however, if there is no push for these the amount of greenhouse gasses being polluted into the atmosphere will stay the same, consequently increasing the effects of global warming and climate change.

Another technology in which global warming and climate change can be reduced is a switch to electric vehicles. Electric vehicles do not burn fossil fuels in order to move, they use stored energy that was produced by a power plant elsewhere. This would eliminate the greenhouse gasses that are produced during travel for people by car, however the amount of greenhouse gasses produced by power plants would increase as a consequence. This may be a good starting point to reduce emissions of greenhouse gasses but will only displace these to a different category of emitters. There is also another area of an engineer's social responsibility that comes into play with electric vehicles, this being safety. Electric vehicles have many advantages to reduce the number of crashes that happen with these vehicles such as regenerative braking and other such safety features. However, these vehicles also pose a large issue to the general public while getting in crashes. They weigh more than the traditional vehicle due to the weight of the battery packs within the vehicle. This increased weight is dangerous when getting into a crash with another non-electric vehicle on the road. This issue is still fairly new, and I could not find any information on if there are any efforts being taken to reduce this negative impact. I would think (or hope at least) that it was an unexpected consequence of the design. I think the engineers were more concerned with the safety of the passengers in the electric vehicle and the safety of passengers in the other vehicles slipped through the cracks. The issue is still ongoing and there are few articles published on this due to how recent this has occurred. I believe that the solution to this problem lies both in the electric vehicle engineers designing for more typical cars that are on the road and the

traditional internal combustion engine vehicle engineers increasing the safety in the event of a crash with a heavier vehicle. With these issues dealing with other factors of an engineer's social responsibility electric vehicles may not be a viable choice until other issues are resolved to help combat global warming and climate change.

In conclusion the amount global warming and climate change has been an increasing problem over the last several decades and in order to combat this, engineers need to work together to reduce the amount of greenhouse gasses being polluted into our atmosphere. There are many more possible technologies out there to help stop global warming and climate change than the two discussed the above paper. In my opinion these are two great starting points in order to combat climate change. Renewable energies need to become safer for the environment ways that may not even be known yet. Once this happens and renewable energy gets implemented the increase of global warming will slow and then electric vehicles will become a more viable option for the world. Electric vehicle manufactures must keep the safety of other drivers in mind when designing their vehicles in order not to violate other parts of our social responsibility as engineers. Once global warming is slowed then other technologies can be implemented into society in order to reduce it. As a whole engineers have to work together in order to save this planet and stop global warming and climate change.

References:

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Also used discussion about electric vehicles from MECH-312 Mechanical Component Design taught by T. Atkinson