

Should We Change Now?

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During the past decade, a significant amount of researches have proven that climate change has a strong correlation with severe weather. For instance, flooding, global warming and abnormal weather. According to the UN Framework Convention on Climate Change signed at the 1992 Rio Earth Summit, "climate change" is defined as "a change of climate which is attributed directly or indirectly to human activity that alter the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." People might think that climate change has nothing to do with them in the past. As the severe weathers cost more human injuries and deaths in this decade, climate change has drawn a greater attention to the world. Many countries have put much more effort on minimizing their harms to the environment either by regulating the pollution produced by the domestic industry or comprising with other countries on environmental issues. Action Blue Sky Campaign in Hong Kong ^[1] and the Kyoto Protocol ^[2] are two concrete examples of how they are trying to combat with the climate change. However, as a building services engineer, what can we actually do for our planet? Should we design the building services system to be more environmental friendly? In fact, Green Building is a very good channel to provide opportunities for human to involve in activities that could hopefully save our environment. Green building can be defined as an outcome of a design philosophy which focuses on increasing the efficiency of resource use such as energy, water, and materials while reducing building impacts on human health and the environment during the building's lifecycle, through better siting, design, construction, operation, maintenance, and removal. ^[3] As we all know that most of the energy are scarce resources, this essay will give you a very good idea on how energy can be used more efficiently and effectively in the building.

Engineer Michaels J.D. ^[4] suggested that lighting and air conditioning system could occupy about 50% of the entire energy. As a result, energy consumption on lighting and air conditioning system is the highest compared with others usage. Since energy source is limited, we need to use energy more efficiently for its operation. According to Herzog (1997) ^[5], an energy-consuming device is operated efficiently when it only consumes the energy needed for providing intended function. How can we use energy more efficiently by designing a good building system?

Firstly, there is misuse of lighting and air-conditioning systems, people may not turn off the lighting or air-conditioning systems even the room is vacant. It is simply because people do not have the awareness to turn off the systems. As a result, the energy efficiency would be very low. More importantly, it would cause the waste of energy. In order to improve the problem of misuse regarding the lighting system, we can install the automatic switching off system such as Building Management System (BMS). If sensor cannot sense any signs of movement, lights and air-conditioning will be turned off automatically. Above methods may only be suitable for buildings other than residential building. In residential building, we may still make use of BMS system; however movement sensor might not be suitable in this case. Thus, we could set up a timer for control of the system by switching off or adjusting the energy output after a certain time period.

Secondly, People tend to choose energy ineffective devices for lighting or air-conditioning systems. Being a Building Services engineer, choosing a right and suitable equipment is one of our important responsibilities other than making a good design of a building services system.

In order to improve the problem of misuse on choosing energy ineffective devices, technology is one of the factors determining how we can minimize our energy use. Technology has improved rapidly in this recent decade. It allows us to perform better on different tasks

and improve our standard of living as well. There are significant amount of products which have high coefficient of performance. Coefficient of performance (COP) can be described as how much output can give per unit energy. In the other words, higher COP means higher efficiency of energy use. For lighting system, we may choose Light Emitting Diode (LED) lamp. A LED lamp is a solid state lamp (SSL) that uses light-emitting diodes (LEDs) as the source of light. Since the light output of individual light-emitting diode is small compared to incandescent and compact fluorescent lamps, multiple diodes are used together. LED lamps can be made interchangeable with other types. Most LED lamps would also include internal circuits to operate from standard AC voltages. LED lamps offer long life and high efficiency which is alternative choice for our conventional lamps. Only one product is kindly introduced in this essay, indeed many high COP products have already launched into the market.

In conclusion, as energy source is limited, being a BS engineer, we now have to take some actions before it becomes too late to save our environment. There are many things we can do beside what I have suggested in the essay. The set-up cost for those environmental friendly systems or equipments are relatively high, however the returns of these investments are significantly beneficial to the human being as well as the world. When we come to design a building system, we may need to take our environment, our world and our future generation into consideration. By choosing an environmental friendly systems and building materials, we could make a difference on saving our world. Last but not least, making profit might be the ultimate goal for the corporation which we are working in. However, as an ethical and professional building services engineer, we should be responsible to the society in implementing ethical and moral behaviors aside just from making profit for the company.

Reference

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