

ABSTRACT

SKH Bishop Mok Sau Tseng Secondary School

When you have the feeling of hot and muggy, you would probably turn on the air conditioner. As a result, a large amount of electricity is used in air conditioning. In fact, the temperature may not be very high but the reason that you feel hot and muggy is due to the high concentration of carbon dioxide in indoor areas.

Our aim is to design an indoor carbon dioxide filter to absorb carbon dioxide so as to lower its concentration. Then the air conditioners will not be turned on unnecessarily in order to save electricity.

Our device contains 3 major components: the fan, the filter and the indicator. The fan draws air into the filter which contains calcium oxide to absorb carbon dioxide. The calcium carbonate formed can be recycled by heating it. $(\text{CaCO}_3(\text{s}) \rightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g}))$. The carbon dioxide formed can be absorbed by plants. The indicator will tell whether the filter is still effective or not. It contains hydrogencarbonate indicator, which is sensitive to carbon dioxide. The additives gelatin, benzoic acid and sodium hydroxide make the indicator thick and resistant to microorganisms.

All in all, the device is cheap and can reduce the unnecessary use of air conditioning.