

Project Name – “Mr. Flair” – A solar powered air purifier

Problem Statement- To filter air from PM2.5 while being ecofriendly.

Project Budget- INR 5,000

Description-

Being a resident in highly polluted city of Delhi, an air purifier in every room has become a commonality. I thought that these air filters consume a lot of electricity, but they only utilize a fan for air pressure and maybe a UV bulb or an ioniser all which can be powered through low grade energy.

With this I began thinking on how to build a solar powered air filter. I got a paint bucket and started cutting out a hole for an air filter. It was a design mimicked after a desert cooler a very cheap air-cooling mechanism in India. I cut out another hole for a very large server fan I had. Now the structure was ready I needed a way to power it. I installed a 12v lead acid battery 7.5 aH after doing some calculations. On full charge the system ran for 4 hours. I then proceeded to install a 20watt solar panel and another battery. To control the system, I wanted to go for an analogue aesthetic, so I built a dual battery charging system with meters to indicate each individual voltage current and power of the system.

If the panel is kept under the sun the system can run up to 12 hours after needing charge. It takes 24 hours to charge under complete sunlight. The power problem can be solved through an array of solar panels, but it is not space wise economical.

Materials Consumed-

1. 25 Litre Paint Bucket
2. Server Rack Cooling Fan
3. HEPA Filter Cartridges
4. Wires
5. Switches
6. Lead Acid Battery 12v 7.5 aH
7. Solar Panel 12v 20 Watt
8. Solar Charging Circuit Module
9. Analogue Voltmeters
10. Analogue Ammeters