



Final Year Project Showcase Batch-2017 Year 2021

| Department: Telecommunications Engineering Programme: Telecommunications Engineering | | |
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| 1 | Project Idea | To create an air monitoring system not only to detect but also to eliminate the harmful gases. It will also be detecting explosive and dangerous gases to avoid accidents and if accident takes place then it will ventilate harmful gases if accident occurs. |
| 2 | Process | Sensors detects gases in the form of voltages, high pollution is translated as 5 volts. As soon as the system is switched on it starts to sense the gases in the atmosphere and the concentration of these gases are shown in LCD in ppm. There's a different threshold level that is set for every gas. If the pollution reaches to the set threshold buzzer will ring while turning on the exhaust fan. |
| 3 | Outcome | Air pollution detection, Accident prevention, post accident recovery, solution regarding health issues. |
| 4 | Evidence (Theoretical Basis) | Report |
| 5 | Competitive Advantage or Unique Selling Proposition We have come up with an air pollution monitoring system which not only detects the air pollution levels but it also detects different gases in ppm and switches on an alarm along with a ventilation system as soon as threshold of dangerous level of gases are reached. It will help us keep a check on the air pollution levels leading to a healthier and a better lifestyle. Furthermore, it also detects explosive gases like methane. This way a lot of accidents can be prevented (e.g gas leakage). It can also post accident to check if there are still traces of any explosive gas so ventilation could be done properly. | |
| a | Cost Reduction of Existing Product | CO ₂ and ammonia sensor could be replaced by low cost sensors. |
| b | Process Improvement which Leads to Superior Product or Cost Reduction, Efficiency Improvement of the Whole Process (e.g. What is the issue is current process and what improvement you suggests) | NodeMCU is used to reduce cost and increase efficiency of microcontroller, Sensors used in the project are supposed to be protected from plastic fumes which is quite common in air and needs to be resolved. The sensors are basic and might get burned when switched on for a long time or when exposed to heat. We can also add in the element of GPS to locate the actual value of pollution at different places by integrating it with google maps. Similarly, it can also be integrated with GSM for regular updates etc. |



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| c | Attainment of any SDG (e.g. How it is achieved and why it is necessary for the region) | SDG#3, Good Health and Well Being Karachi has recently been listed as one of the most polluted city in the world. It is extremely important to keep a check on the air pollution and avoid it to as much as its possible. Moreover, there is an incident of fire or gas explosions every once in a while causing a lot of damage to the infrastructure and at times it even takes up a lot of lives. Fire accidents and explosion prevention can be done by the project that is necessary. |
| d | Expanding of Market share (e.g. how it expand and what is the problem with the current market) | It will not only attract the industries that deals with the gases that are explosive or dangerous to health but will also become popular among households especially among the road facing households. In future it can also be used for outdoor air pollution detection with a larger data storing capacity. Moreover, it can also be integrated in google maps so we could see the real time air pollution levels at different places (GPS). It can further be used in GSM mobile phones so daily updates could be sent to the mobile users as per the area they are willing to travel. Furthermore, it can be utilized to detect the amount of air pollution being produced by a particular factor (e.g. vehicle). |
| e | Capture New Market (e.g. Niche market or unaddressed segment) | Safety and health, bomb disposal squad, GPS, GSM. |
| f | Any Environmental Aspect (e.g. carbon reduction, energy-efficient, etc.) | Gas leakage detection, fire alarm, ammonia gas detection, CO detection and air pollution levels are monitored at all times. We can now figure out what causes the most pollution and we can build strategies to lower it. |
| 6 | Target Market (Industries, Groups, Individuals, Families, Students, etc) Please provide some detail about the end-user of the product, process, or service | Restaurants, houses, schools, industries, universities, factories, workplace. People will be able to keep a check on pollution levels and compare it too. Furthermore, if the gases rise to the threshold level (dangerous for our health) then alarm will automatically turn on along with the ventilation system. It can also be used by the government in order to keep the air pollution level monitored. They can also use it to analyse the most polluted areas and then they can come up with the root cause and strategies as to how to lower the pollution levels. |
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| 10 | Video (If any) | Videos |