International Journal of Applied and Natural Sciences (IJANS)
ISSN (P): 2319–4014; ISSN (E): 2319–4022
Vol. 10, Issue 2, Jul–Dec 2021; 75–84

International Academy of Science, Engineering and Technology
Connecting Researchers; Nurturing Innovations

LOW-COST PROPOSAL TO MEASURE AIR QUALITY IN AN URBAN AREA: ACAPULCO CASE STUDY

Alfredo Ricardo Zárate-Valencia [1], ***Antonio Alfonso Rodríguez-Rosales*** [2] ***& Maximino Reyes-Umaña*** [3]

[1,3]*Research Professor, Doctorate in Environmental Sciences, Autonomous University of Guerrero, Mexico*

[2] *Research Professor, Institute of Applied Sciences and Technology, National Autonomous University of Mexico, Mexico*

ABSTRACT

The design and construction of a proposal to measure air quality in the urban area of Acapulco, Guerrero, is presented hereby, based on studies conducted on the existing pollution problems due to the growth of the metropolitan area and the lack of infrastructure to determine the current state of pollution accurately. The equipment consists of a Raspberry Picomputer system, sensors for carbon monoxide (CO), particulate matter (PM10 andPM2.5), ozone (O3) and a weather station. The Python programming language was used to construct a management and control system and then evaluate different environmental parameters. The sensors were calibrated using standard gas and statistical references. For the first phase of tests, our management system was installed at Centro de Investigación Científica y Tecnológica de Guerrero, A.C. (Scientific and Technological Research Center of Guerrero, A.C.) (CICTEG). We obtained preliminary results over a total of six months. Our implementation was cheap, required little operating time, and was easily accessible.

KEYWORDS: *Air Pollution, Calibration, Communication Protocol, Low Cost, Sensor, UART*

Article History

Received: *21 Apr 2021* | ***Revised:*** *19 Oct 2021* | ***Accepted:*** *23 Oct 2021*