



---

## **MONITORING REAL-TIME AIR QUALITY AND WEATHER DATA**

### **AT TWO DIFFERENT LOCATIONS IN KANDY CITY**

Ariyaratne R.G.R.N.K. \*, Karunaratne D.G.G.P., Elangasinghe M.A., Manipura A.

and Pallegedara A.

Department of Chemical and Process Engineering, University of Peradeniya, Sri Lanka

rajithanuwank@gmail.com

---

#### **ABSTRACT**

Deterioration of ambient air quality in Sri Lanka due to addition of a large number of motor vehicles, traffic congestions, combustion of fossil fuels and poor quality of fossil fuels has made enormous negative impacts to economy and public health of the country. It was observed that Kandy city has a higher degree of ambient air pollution owing to its geographical location and heavy traffic congestions. However proper and effective air quality management plans are not being implemented in Sri Lanka, causing for lack of continuous air quality monitoring and air quality databases. Use of low-cost yet reliable air quality monitoring solutions are a promising solution to monitor air quality continuously and with high spatial and temporal resolutions. In this research, a variety of such electrochemical gas sensors were used to monitor real time CO, NO, NO<sub>2</sub>, SO<sub>2</sub> and O<sub>3</sub> concentrations at parts per billion (ppb) levels along with real time meteorological data monitoring. The results presented here are of two locations in Kandy city (Bank of Ceylon (BOC) and Central Province Education Department (EDU) for a period of two weeks. At BOC a maximum hourly CO level of 1.1 ppm was observed and at EDU that value was 1.05 ppm. Further weekend CO averages have shown an increase compared to weekday CO averages. When comparing with the meteorological data CO levels have shown a significant decrease with increasing wind speed and rainfall. However further improvements are to be done for improving the data accuracy of NO, NO<sub>2</sub>, SO<sub>2</sub> and O<sub>3</sub> sensors. These sensors are a promising solution for higher costs associated with air quality monitoring due to their many advantages such as low cost, low power consumption, high selectivity and ability to use them in widespread sensor networks.

**Keywords:** Kandy air pollution, Air quality and meteorological data monitoring, Low-cost electrochemical sensors