

Distributed Network of Inexpensive Air Quality Sensors for Particulate Matter Monitoring in Poland

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Poland has one of the biggest problems with fine particulate air pollution in Europe. Out of 50 most polluted countries in Europe 33 of them are in Poland. To make it worse, many people are unaware they are breathing polluted air because there are no monitoring stations near their locations. Current number of official monitoring stations is insufficient to measure air pollution with enough resolution and many local governments can't afford them. Airly was created two years ago to fight that problem and increase awareness of people living in polluted areas. We created air pollution monitoring system which consist of inexpensive particulate matter (PM2.5, PM10) sensors which send data every 5 minutes to our Platform. Data are analysed and then presented to the citizens through website, mobile apps and API. We also perform air pollution forecasts based on machine learning models which allow to include human-based patterns. Airly system is a solution for local governments allowing them to monitor air pollution and to increase citizens' awareness. The network has more than 2000 devices installed across Poland and few European countries (Berlin, Budapest). With a density not achievable by official monitoring stations our network is able to detect sources of air pollution such as polluting factories, fires of garbage dumps and other. Data openness allows people to analyse air pollution and to find potential causes. Example of such cases will be presented. Airly website and mobile apps are visited by more than 200 thousand users daily.