

THOUGHT LEADERSHIP



IoT and Pollution – A Breath of Fresh Air

In light of the recent debate surrounding climate change, the topic of air pollution is increasingly becoming a major concern for many cities around the world. And with research from the World Health Organisation revealing that 91% of the world's population live in places where air quality exceeds WHO guidelines, cleaning up these pollutants is becoming even more challenging. Although Europe saw a decrease in emissions of air pollutants by more than 2.5% in 2018, concentration still remains high. It is therefore necessary to measure air quality and keep it under control; something the Internet of Things (IoT) is already helping with.

With a disproportionate level of pollution permeating cities in relation to inhabitant numbers, smart cities, which are built on the mantra of sustainability, are actively fighting the battle against air pollution. Making moves towards a smarter infrastructure or simple solutions such as traffic monitoring to help tackle the issue, many cities are implementing green legislation and creating greener spaces. For example, Paris is expanding their car-free zones and Tokyo is investing further into renewable power, becoming progressively more sustainable and resilient – and tangible benefits are already being realised.

Although highly polluted cities such as Delhi, India and Beijing are utilising smart sensors in order to alert residents when air pollution levels are high, this is not a long term solution to combat the source of the problem. IoT opens up better pollution data than ever before, which can be used to advance actionable results. For example, in the city of Uppsala, Sweden, the Green IoT project is creating an integrated solution for an environmental sensing system by implementing real-time air pollution monitoring through wireless sensors on public transportation vehicles. Through this sensor data, which is made available for governmental agencies, they are able to control traffic and as a result, make informed city planning decisions, such as rerouting traffic away from highly polluted areas. IoT enabled parking, which is able to identify empty car spaces, is able to not only decrease the amount of Co2 emissions, but also save drivers time and money through increased traffic flow, promoting more sustainable urban mobility.

Recent Research from the British Lung Association revealed that 248 hospitals and 2,220 GP practices are located in areas where air pollution is significantly above the World Health Organisations limit for fine particulate matter (PM2.5). With hospitals in polluted areas proven to contribute to worse outcomes for vulnerable patients who are more susceptible to the harmful effects, citizens are left exposed, increasing concern for public health. Britain has already pledged legislation to address pollution in London hospitals with monitors to measure toxic air levels planning to be implemented this year, however the government still has a long way to go, especially when it comes to building a framework for post-Brexit environmental law.

The European Environmental Agency (EEA) reported that battery powered electric vehicles have a net positive impact on air pollution in comparison to its petrol or diesel equivalent, and many cities are already leading an example by pushing to increase the usage of electric mobility. This, when combined with government partnered IoT driven air quality solutions, becomes an increasingly valuable solution to undertake pollution. Through established sensors, councils have the ability to help reduce pollution through changing transport routes and urban planning. Advances in technology have also led to the availability of the Low Power Wide Area Network (LPWAN) sensors as a low cost alternative to fixed monitoring systems, which makes them an increasingly attractive option.

Many cities have already taken the first step towards integrating IoT solutions into their ecosystem, and as a result are realising the long-term benefits. With the help of technology vendors in alliance with the government and conviction from the wider population, these projects will be able to fight the problem of air pollution in the UK. As ultimately, it is an understanding of the sources of pollution, causes and fluctuations that will enable cities to control air pollution and effectively curb climate change; findings that IoT can enable.

www.comms365.com
sales@comms365.com
01234 865880

Registered Office Address: Comms365 Limited, South House 3, Bond Avenue, Milton Keynes, MK1 1SW | Registered in England No. 06662688



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