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Ingenuity for life



Fine dust sensors

Fighting PM2.5 and PM10 air pollution in buildings

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In recent years there has been a growing awareness that airborne particulate matter has a significant impact on human health. This is especially true for metropolitan areas with high traffic and/or industrial production. However, even though we spend almost 90 percent of our time indoors, many people are unaware that even there they might experience problems with particulate matter. Protecting room users in these areas with an integrated solution is one of the tasks Siemens is tackling with the development of a new range of fine dust sensors.

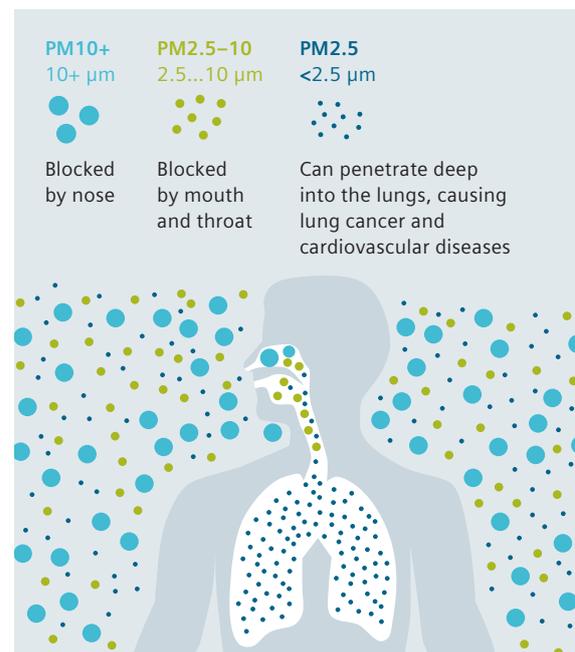
Fine dust air pollution – a global concern

Fine dust is a rapidly growing issue affecting inhabitants of bustling cities around the globe: from Beijing to New York, Paris or London. According to the EEA (European Environment Agency), 400,000 people in the European Union die per year prematurely due to fine dust pollution¹⁾. The rate of fatalities in China and India is even higher. Fine dust is emitted by burning hydrocarbons in vehicle engines, as well as coal and lignite in power stations, industrial processes or private homes. But there are also natural sources of fine dust, such as deserts.

What is fine dust?

Fine dust is contained in airborne particulate matter – invisible to the naked eye. The particles enter the nose, mouth, and throat and can even penetrate deep into the lungs, causing lung cancer and cardiovascular diseases. To be able to judge air quality in terms of fine dust pollution, and to communicate the degree of pollution, governments of a number of countries have defined individual AQI (Air Quality Indices), corresponding to different national air quality standards. These AQI numbers are calculated based on multiple pollutants: PM2.5, PM10²⁾, ozone, NO₂, SO₂, and CO.

As the AQI rises, an increasingly large percentage of the population is likely to experience severe adverse health effects.



Why is air pollution so bad for health?



The new fine dust sensors from Siemens – for optimized indoor air quality

Newly launched fine dust sensors

Extending its offering for healthy indoor climate, Siemens has developed a first-of-its-kind fine dust sensor range to monitor and control air pollution inside buildings. The sensors complement existing Siemens CO₂, humidity, VOC³⁾, and temperature controls plus various other applications to form a comprehensive Healthy Indoor Climate solutions portfolio. The products have been developed backed by 80 years of experience in sensor development and room climate control at Siemens.

Increasing building value

There is a growing awareness of the damaging health effect of fine dust and a corresponding need to ensure a healthy living or working environment. For property owners and developers, the provision of a healthy indoor climate can significantly increase the buildings' commercial value.

High performance

Siemens fine dust sensors are designed for high-end applications and are suited for a wide range of buildings, both commercial and residential. Use cases include single or multi-room air pollution control, as well as integration into sophisticated building management systems for overall climate monitoring and control. The fine dust sensors are suited for use with all freely programmable Siemens controllers, such as those of the Desigo Room Automation and Climatix ranges.

Easy setup, localization, and maintenance

The sensors can be operated in four different languages (English, German, French and Chinese) and the IAQ Class required for specific worldwide regions can easily be selected. Even the sensor module can quickly and easily be replaced during a routine service visit, thus avoiding the need to replace the complete sensor.

Highlights

- Accurate measurement of PM2.5 and PM10
- Very reliable room monitoring and control
- Variants with or without high-quality color display
- Selectable language and IAQ Class
- Modbus and DC 0...10 V outputs
- Presence activation of sensor and display, for longer service life
- Sensor module replaced quickly and easily in routine service

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1) EEA Report No 28/2016, Air quality in Europe 2016 – report
2) PM (particulate matter) sized less than 2.5 µm or less than 10 µm in diameter
3) VOC – Volatile Organic Compounds