## 11.10 COMPARISON OF LOW-COST PM SENSORS IN AN INDOOR ENVIRONMENT

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**Background and Aims:** Based on previous research, people spend more than 90% of their time indoors. Contrary to popular belief, indoor air can be more polluted than outdoor air. The interior of the building is a specific closed environment in which the possibilities for dilution and self-purification of air are reduced, which causes increased concentrations of pollutants. Real-time PM particle concentration monitoring, based on reference measurement methods, is a demanding and expensive process. Advances in miniaturization and reduced production costs have led to the development of small and relatively inexpensive optical PM sensors, which due to low cost and high response speed have obvious potential for application in modern real-time air quality monitoring systems [1, 2]. In this paper, a comparison of two low-budget devices for measuring the concentration of PM particles indoors is performed and the results of comparative measurements are presented.

**Methods:** Comparative measurement of the concentration of suspended particles $PM_{2.5}$ and $PM_{10}$ was performed in the premises of the Faculty of Occupational Safety in Niš for 10 days using an air quality measuring device based on SDS011 sensor module and Arduino platform - PAQMON2020 and Dylos DC1700 (Dylos Corporation) PM monitor, which is widely used to monitor the concentration of the number of particles in the indoor air. The PM concentrations measured by the Dylos DC1700 monitor were compared to the results obtained by the PAQMON2020 device using linear regression.

**Key results:** The test was conducted in the premises of the Laboratory for Air Quality Management, Faculty of Occupational Safety in Niš, University of Niš. The devices were placed on the same desk, at a distance of 15 cm from each other, and were exposed to the same conditions of air pollution for 10 days. The average hourly values of PM mass concentrations obtained using the PAQMON2020 and Dylos device were compared. It was found that there is a strong positive linear correlation between mass concentrations for both PM fractions (for $PM_{2.5}$ $r = 0.80$ and for $PM_{10}$ $r = 0.82$).

**Conclusions:** The test showed that the obtained results of measuring PM concentrations using PAQMON2020 and Dylos DC1700 devices are very compatible and that both devices can be used for indicative measurements of $PM_{2.5}$ and $PM_{10}$ concentrations indoors after appropriate calibration with a reference instrument.

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