

Testing and Inter-comparison of Low-Cost Sensors (SDS 011) and Mid-Cost Sensors (AN2 and AN3) for Particulate Matter

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The low-cost sensor SDS 011 (Nova Fitness Inc.) found meanwhile widespread use within citizen-science projects in Germany for the measurement of PM₁₀ and PM_{2.5}. Therefore, the Duesseldorf University of Applied Sciences (HSD) has built up 50 sensor units for quality assurance tests and for measurements within different student projects.

Moreover, HSD has built up two pairs of sensor units with the AN2 sensor and AN3 sensor, both produced by Alphasense Inc.. The AN2 and AN3 sensors are not as cheap as the SDS011, but show up with real OPC features, as size resolved aerosol measurement and the potential ability to deliver parallel information about PM₁₀, PM_{2.5}, PM₁ and PNC.

All Sensors have been field tested by HSD in urban environments under different conditions of temperature and humidity in comparison with a standard reference OPC of the HSD measurement truck. Selected results of these inter-comparisons will be presented within this paper. Moreover, selected applications will be presented for the sensor use.