

Equipment Name: Nano Test Center, IGF

Category:
D. Particle exposure assessment

Institute: IGF

Location: Dortmund

Contact Details of Technology Expert:

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Short technology description/Overview: Large facility to perform intercomparison experiments for measurement devices (direct reading or sampling devices) for nanoparticles (ultrafine particles) for the purpose of quality control or research. A schematic is given in Figure 1.

The NTC is located in Dortmund, Steinhammerstr. 84, and consists of the following components:

- aerosol generation (A)
- wind tunnel for equilibration purposes (B)
- measurement chamber plus attached additional measurement site (C)
- downstream ventilator for the generation of airflow within the system (D)
- filter element for cleaning of the air before release into the atmosphere. (E)
- F Evaluation Center
- G Emergency Exit

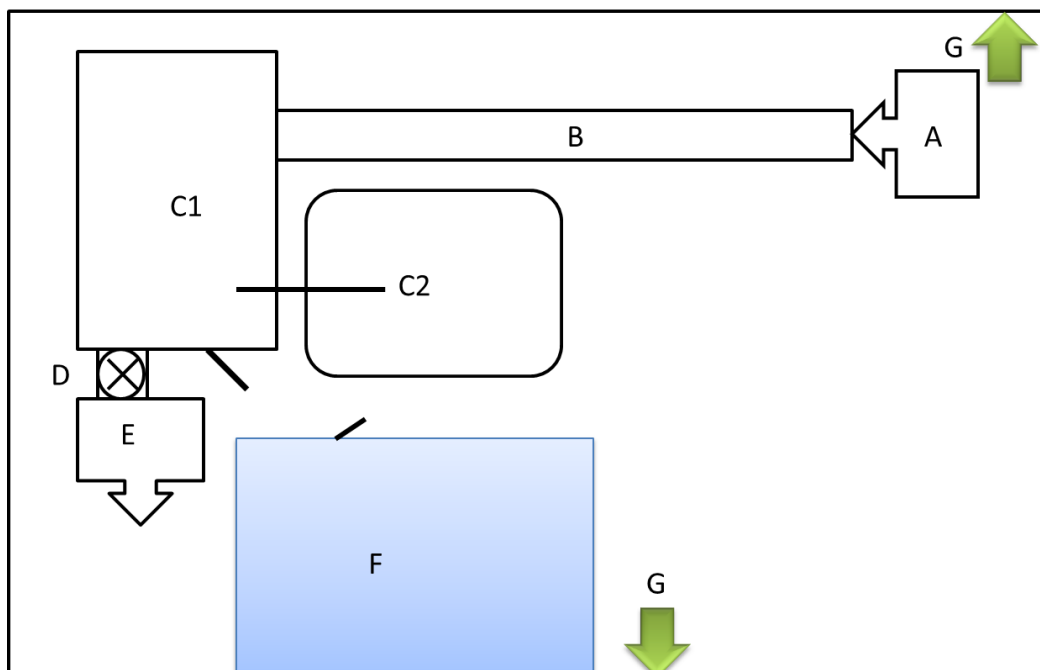


Figure 3: Schematic of the NTC

Main Features (Equipment Capabilities):

Up to 40 different devices in parallel have been compared in the past. They receive identical homogenous aerosol either in the presence of background (urban) aerosol or under clean room conditions (high performance filtration). The aerosols can be presented to instruments for up to several hours. 4 different methods of aerosol generation are available (combustion engine, atomizer, spark generator, flame generator). The particles' properties can be varied over a large range (morphology, modal size, particle size distribution, concentration).

Access modalities for QNano for particle characterisation:

Users can utilize the NTC and the provided test aerosols for a variety of purposes.

1. Users can test new developed devices and characterise in general their performance and shortcomings in comparison with the test aerosol and/or existing well calibrated equipment (gold standard methods). This is especially useful in the developing stage of new devices.
2. Users can test new developed devices to demonstrate a superior or new ability to better characterise certain metrics (particle number or surface concentration and – distribution, morphology) of the test aerosol provided by the different aerosolisation methods. better in comparison with the test This is especially useful in the developing stage of new devices
3. Users can test their measurement device and characterize their performance and shortcomings in comparison with the test aerosol and/or existing well calibrated equipment (gold standard methods). This can be done in a sort of round robin and is especially useful for quality assurance and can serve as a mean to establish SOPs for the tested devices.

Issues to consider when planning TA visit:

- See the attached SOP

Typical Samples & Images:

Example publication:

C. Asbach et al., "Comparison of four mobility particle sizers with different time resolution for stationary exposure measurements," Journal of Nanoparticle Research, no. 11, pp. 1593-1609, 2009.

C. Asbach et al., "Comparability of portable nanoparticle exposure monitors," Ann Occup Hyg (2012) 56(5): 606-621 doi:10.1093/annhyg/mes033

Any further Information:

Standard operation procedure available – [SOP](#)