

Monitoring the air quality in cleanrooms in the nano range, and identifying particle sources with the **testo DiSCmini**.



The cleanest rooms in the world are no longer to be found in hospitals. They are situated in so-called fabs, the production plants in the semi-conductor industry. And there's a good reason for this, because the raw production materials are getting smaller and smaller. The advantage of this is that the chips require considerably less energy and space, but require a high level of performance. On the other hand, there is the disadvantage that the production processes are

becoming increasingly sensitive. If a spec of dust is the same size as several conductors next to each other, it can easily render the whole chip unusable. With the portable nanoparticle measuring instrument testo DiSCmini, Testo provides chip manufacturers with a valuable support tool for monitoring air quality in the nano range, and for identifying undesired particle sources.



The challenge.

The production of computer chips has now reached the 14 nm process. This not only signifies another milestone in process technology, but is also in much lower ranges than norms specifying the limit values for air purity in cleanrooms in fabs. In its highest class, the currently valid norm ISO 14644-1 prescribes fewer than 10 particles per m³ with a diameter of more than 0.1 µm. Smaller particles are neither covered by the regulations, nor recorded by the stationary monitoring instruments. For this reason, the instrumentation needed for monitoring nanoparticles in the production process is often lacking, and apart from this, the emission sources of particles in the nano range can only be localized with great difficulty using the usual instruments.

The solution.

With the portable instrument testo DiSCmini, cleanrooms can be monitored easily and without complications, even in the nano range. testo DiSCmini records the particle number in a time resolution of 1 second, in the range from 10 to 700 nm, and the mean particle size in the range from 10 to 300 nm, additionally providing the LDSA value, which indicates the influence on the human organism. Thanks to its handy size, the low weight and the patented measurement method which functions without the need for operating materials, the instrument is always ready for use.

With one or several testo DiSCmini, the different measurement points inside and outside a cleanroom can be easily monitored and documented. The high time resolution allows the location of origin of nanoparticles to be detected based on the measured data, even if there are no visible signs such as smoke or steam indicating an emission. The generously sized rechargeable battery is designed for an operating time of up to 8 hours. The measurement data are saved on an SD card as a CSV file, where they can be easily further processed. Data can also be collected real-time by using the driver/data collection tool.

The advantages at a glance.

The portable nanoparticle measuring instrument testo DiSCmini supports semi-conductor manufacturers in all important questions surrounding the topic of nanoparticles:

- Simultaneous measurement of particle number, mean particle size and LDSA, with a time resolution of 1 second
- Mobile operation, without operating materials, unaffected by vibrations and independent of the position of the instrument
- Easy identification of particle sources, easy set-up of measurement grids and long-term measurements

More information.

For more information on testo DiSCmini and answers to all your questions concerning nanoparticle measurement in semi-conductor production, please contact Testo.



The nanoparticle measuring instrument
testo DiSCmini