AMC is a concern for any high technology manufacturing process, especially in the microelectronics industry. Organic contamination may cause adverse effects on production tools and consequently increase costs for high-tech companies.

The level of AMC contamination in cleanroom environments is predominately created by internal sources of solvents and acetic acid, re-entrainment of exhaust air, aromatic compounds from ambient air and return air as well as material outgassing.

Even more important, spills, leaks and mishandling have to be taken into account and can cause serious costs in terms of wafer loss and tool-down time.

Contamination-free manufacturing is a viable goal and is achieved by source control and source monitoring in combination with filtration solutions in air handling systems. Permanent monitoring of the AMC level helps identifying sources, stabilises production and prevents unexpected shortfalls of the service life of filtration units. To ensure people’s safety and a good repeatability of industrial process, the analysis of cleanroom air is crucial.

Especially, electronic boards are produced in cleanrooms by complex lithographic processes using very reactive chemicals. The nature and concentration of volatile compounds can be different depending on the chemical process and can also vary rapidly. There is a need to analyse precisely and continuously the gas produced and by these processes which is ejected into the air with an instrument designed for industrial use. airmoTWA solutions give our customers the ability to perform online measurements over a long period of time without taking specific point-of-time samples. Nevertheless, the detection limit is as low as sub ppb level and can be down to 1 ppt.

Chromatotec® Solutions

For over 30 years, Chromatotec® has manufactured automated Gas Chromatography (autoGC) instruments, which are based on the online GC principles, to measure Volatile Organic Compounds (VOCs) at trace and ultra-trace levels in ambient air. Thanks to the advanced autoGC methodology, Chromatotec® airmoVOC analysers have been certified by Sira thanks to National Physical Laboratory (NPL) testing laboratory for Monitoring Certification Scheme (MCERTS) Performance Standards for Continuous Ambient Air Quality Monitoring Systems in the concentration range of 0.15 to 15 ppb. Following this, Chromatotec® airmoVOC has been selected by the National US Environmental Protection Agency (EPA) after laboratory evaluation for online VOCs monitoring in ambient air at sub ppb and low ppb level.

The airmoTWA system developed by Chromatotec® is the first rack mounted online GC-MS system for VOCs monitoring in the market. It is composed by a specific trap to concentrate the sample, a metallic capillary column for separation of chemicals and two detectors: a new micro Flame Ionisation Detector (FID) and a process quadrupole Mass Spectrometer (MS) for automatic quantification.
Many chemicals used in the manufacturing process often become the cause of contamination. Ammonia is a well-known contaminant in the lithography process. Among its possible sources is the Hexamethyldisilazane (HMDS) converted into...