



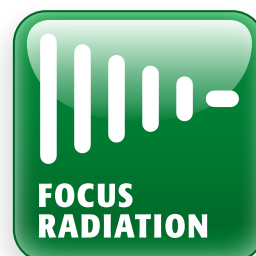
Applications for the semiconductor industry



In the manufacture of electronic components and semiconductors extremely pure water is needed for various processes. Starting with the feed water for the production of ultrapure water to the regeneration of the process and rinsing waters the content of inorganic and organic contamination is often monitored constantly using online equipment or sensors. Here, the TOC value is one of the most important parameters to be monitored.

Besides the continuous monitoring of process flows offline equipment (laboratory devices) is also used in many companies in the electronics, microelectronics and semiconductor industry

These offer the advantage of enabling the analysis of various samples from different sampling points that are not monitored continuously.



multi N/C® – Applications for the semiconductor industry

✓ Advantages of TOC analyzers for the laboratory operation

- The sample digestion takes place in a reactor that guarantees the complete oxidation of organic ingredients, including difficult to digest complex and temperature-stable compounds, into CO₂
- Digestion principle: high temperature oxidation at high temperatures or UV digestion
- Detection: selective and specific for CO₂ using non-dispersive infrared detection (NDIR)
- Non-specific conductivity detectors, which also respond to inorganic contamination in the water, are not used in laboratory devices. Laboratory devices (dependent on the model) have very low detection limits and can some times also process very large sample volumes, affecting the detection accuracy positively
- Laboratory TOC analyzers are characterized by variable and very dynamic measuring ranges – TOC contents from a few µg/l to several g/l can typically be detected – this guarantees the flexible use for the most varied applications
- Automation is possible at any time – laboratory devices can be extended with autosamplers of different capacity for the unsupervised analysis of a multitude of various samples with greatly differing TOC concentrations
- TOC laboratory devices can not only analyze aqueous samples, but also solid samples for TOC (with the appropriate extension modules)
- The calibration and maintenance of the devices are easy and can be carried out independently by the user

✓ Advantages of the TOC laboratory device family „multi N/C® series“

- TOC analysis by way of catalytic high temperature combustion at temperatures up to 950°C or by way of
- high power UV digestion at high energy wavelengths 185 nm and 254 nm
- Innovative detection system: **Focus Radiation NDIR detector** achieving highest sensitivity in the detection of trace elements through its special optical arrangement
- Detection limits of 2 – 4 ppb
- Flexible injection volumes up to 3,000µl (high temperature oxidation) or 20,000µl (UV digestion)
- Dynamic measuring ranges from 2 (4) µg/l to 10,000 mg/l TOC
- **Easy Cal** function for multipoint calibration from a single standard up to the lowest µg/l range
- Long-term stability and comfort of use in all devices of the multi N/C® series
- Flexible degree of automation – both „small“ and large autosamplers for very high throughputs are available

Recommended for the following applications:

- TOC monitoring in feed water, rinse and process waters, water from regeneration
- Wipe test for purity control of surfaces for the quantitative detection also of organic compounds insoluble in water



Recommendations

Device models	multi N/C® UV HS, multi N/C® pharma HT
Accessories/options	- swab test module for multi N/C® pharma HT (for the direct solids analysis after a „wipe test“), - autosampler APG 10, 21, 49, 64

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Subject to changes in design and scope of delivery as well as further technical development!