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TOC·TN APPLICATION NEWS No.9

TOC Online Management of Collected Reusable Water In a Water Network Washing System

In rinsing systems for printed circuit boards, electronic components and mechanical components, the rinse water contains organic matter such as various surface active agents, chelating agents and cutting oil. As the concentration of organic matter in the wastewater becomes comparatively low after rinsing, this rinse water is recycled in a closed system, then processed using the ion conversion method or active charcoal absorption, to be used as rinse water. If there are a lot of impurities in this recycled water, these will remain on products after drying, which adverse]}f affects product quality. So there is a need to manage impurities. Here, we would like to introduce an example aping the Shimadzu Online TOC Analyzer to manage the collection of water for recycling in a water rinsing system.

Purpose

To milnage water quality using the Shimadzu Online TOC Analyzer after the l~ecycling process for lead frame rinse water.

Comparisons with Conventional Methods

Conventionally, electric conductivity meters are often used for thc management of impurities in water-processed for recycling. However, water rinse agents are mostly, comprised of non-electrolyte organic matters so that even if an agent is dissolved in waters hardly any of the ions will dissociate. Consequently, the management of organic impurities such as surface-active agents, cheaning agents and cutting oil is difficult when measuring is performed with an electric conductivity meter. Matched against this, TOC is an indication of the total weight of organic matter, and the Shimadzu TOC Analyzers uses a combustion oxidation method to detect all organic matter, which makes it the optimum system for managing water quality.

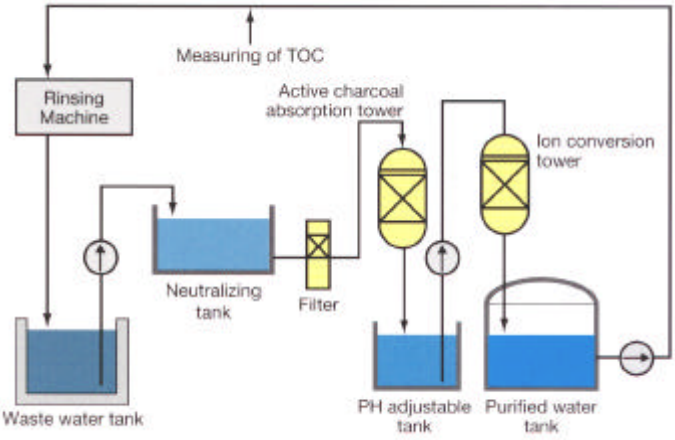
Measuring Conditions

Sample: Recycled water- (water that has been collected as lead frame rinse, water after use in the plating process and recycled)

Analysts instrument: TOC-4100 (high-sensitivity specification)

Measuring method: Continuous measuring of TOC

(acidification - sparse pretreatment)



Results

Measuring results (printout sample) are shown in figure 1.

(The printer is an optional accessory.)

Benefits

Using the Shimadzu Online TOC Analyzer to manage recycled water achieves the following

- It helps maintain product quality by preventing impurities gathering on products through the management of impurities in collected and recycled water.
- It aids determination of timing for replacement of functional materials such as the ion replacement film and active charcoal, and is economic as it can be used effectively.

- It enables speedy discovery of problems when they occur, such as the increase in impurity concentration.
- When a water network is being restarted after maintenance work on the rinsing system, etc., the point where usable water- quality level has been reached can be quickly determined if TOC management is employed, so startup time can be curtailed.

Applications in Other Fields

Here we would like to introduce examples of how the TOC analyzer is actually used to aid water management.

- Management of oil concentration mixture in rinse systems of water networks
- Management of etching fluid
- Management of plating solvents
- Continuous management of factory wastewater treatment
- Management of plant supply water (boiler supply water, recycled water, cooling water, etc.)
- Purified water collection and recycling plant management for manufacturers of electronic materials such as semiconductors
- Tests and research on high-performance films used for water purification and ion replacement resins, etc.

Shimadzu is available for consultation regarding possible applications of the analyzer

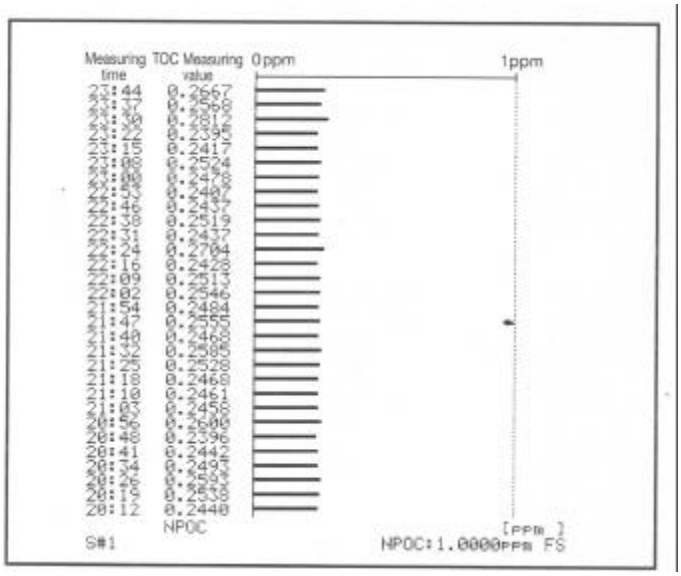


Fig. 1 Measuring results for recycled water

Features of the Shimadzu Online Water Analyzer 4100 Series

- Continuous measuring of TOC and TN is possible as a process in continuous water monitoring.
- Just one analyzer can measure a multiple of flow lines by switching between them.
- Measuring of POC (purgeable organic carbon) is possible (option).
- Flexible measuring schedules including automatic calibration and catalyst recycling can be set.
- Cylinder air is not needed as compressor air or house air can be used, which means there is no labor intensive cylinder changing, and also running costs can be cut down.
- The analyzer also comes with a variety of input and output functions to enable remote operation from an external location and transfer of measuring values, etc.

Related Solutions

- Price Inquiry
- Product Inquiry
- Technical Service / Support Inquiry
- Other Inquiry