

TOC·TN

APPLICATION
NEWS
No. 2

TOC Measuring of Boiler Water With Shimadzu's On-line TOC Analyzer

Water supplied to boilers needs to be appropriately maintained to assure boiler performance and safe operation. The following types of damage can occur if organic matter - in particular fats and oils - is in the boiler supply water.

1. Foaming or carryover occurs and results in trouble.
 2. The types of fats and oils that adhere to the inside of the boiler become the adhering nucleus for corrosive products such as iron oxide and copper oxide, metallic scale forms, which leads to over heating of the heat transfer surface.
 3. The oxidized product of organic matter corrodes the device.
- Therefore it is desirable to keep the concentration of fats and oils as low as possible in boiler supply water.

Purpose

To measure fats and oils in boiler supply water as TOC using the TOC analyzer. Here is an example of continuous measuring and controlling of TOC in boiler water using the TOC-SOOOA on-line measuring system combined from Shimadzu's total organic carbon analyzer TOC-5000A and the continuous sampler CSM-5000.

Measuring Conditions

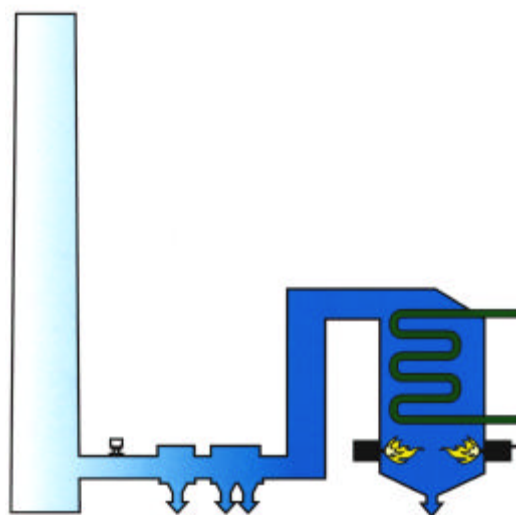
Sample: Boiler water

Analyte: TOC use of high sensitive catalyst

Measuring Method: Being acidified, eliminate inorganic carbon (IC) by purging with high-purity air, then measure TOC.

Result

Result shown in Fjg.1.



Benefits

1. Prevention of carryover
2. Prevention of scale formation
3. Prevention of corrosion
4. Maintenance is easy
5. Off-line measuring possible

Application in Other Fields

1. Plant supply water management (boiler supply water, recycled water, cooling water, etc.)
2. Control of water recycling plant in semiconductor industry
3. Control of purified water in pharmaceutical industry
4. Purified water control for nuclear power plants
5. Testing and researching for purified water production plant manufacturers
6. Testing and researching of high-performance membranes and ion exchange resins used for water purification

Features of Shimadzu's TOC Analyzer TOC-5000A

1. The time required for measuring is short so that sudden concentration changes in samples can be quickly captured
2. TC, IC, TOC (NPOC), and TOC (TC-IC) can be selected to match sample characteristics and measuring purpose.
3. The measuring range covers from 200 ppb full scale to 4000 ppm full scale.
4. If an instructed value goes over range, re-measuring will be automatically performed with changes measuring conditions and switched calibration curve for high concentrations, so that there is no lost data.

Features of Shimadzu's On-line TOC Analyzer 4100 Series

1. Up to 6 flow lines switching possible.
2. POC(purgeable organic carbon) measurement can be conducted (optional accessory).

This enables the exact measurement of TOC (NPOC + POC) (by supplementing the loss of volatile TOC (organic solvents, etc.) during the acidification and purging processes for IC removal, which is a drawback to the NPOC method).
3. Any schedules can be set including automatic calibration and catalyst regeneration.
4. Cylinder gas is not needed through the use of compressed air or instrument air, so high pressure bottle change not necessary to reduce running costs.
5. External remote control and export of measurement data are possible.

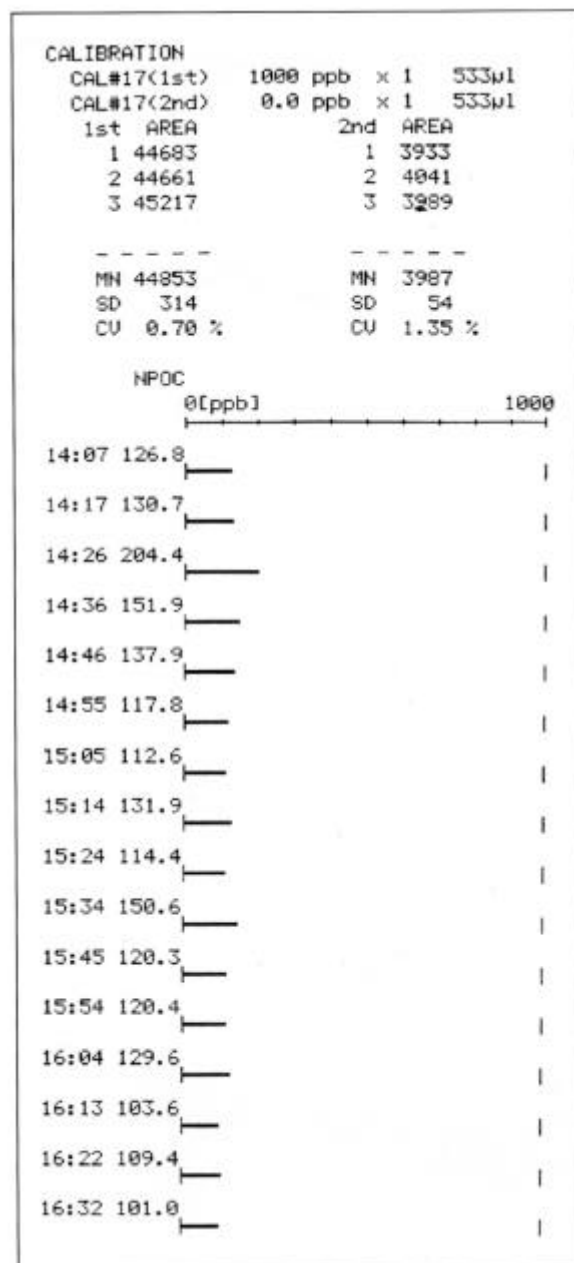


Fig.1: Measurement results for boiler water

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