

Electrolysis Plant Trace H₂O (Moisture) Measurement by the TDLS8000

Introduction

If water is present after the dry chlorine tower in brine electrolysis plants, the downstream compressor is corroded or the product quality is deteriorated. The moisture level is measured before and after the compressor to prevent the corrosion of the compressor and the deterioration of quality. Conventional trace moisture analyzers using a phosphorus pentoxide (P₂O₅) sensor measure process gas with the contacting sensor so there are problems such as the deterioration of the sensor, slow response time, high maintenance, and high running costs. The TDLS8000 Laser Analyzer is the solution to these problems.

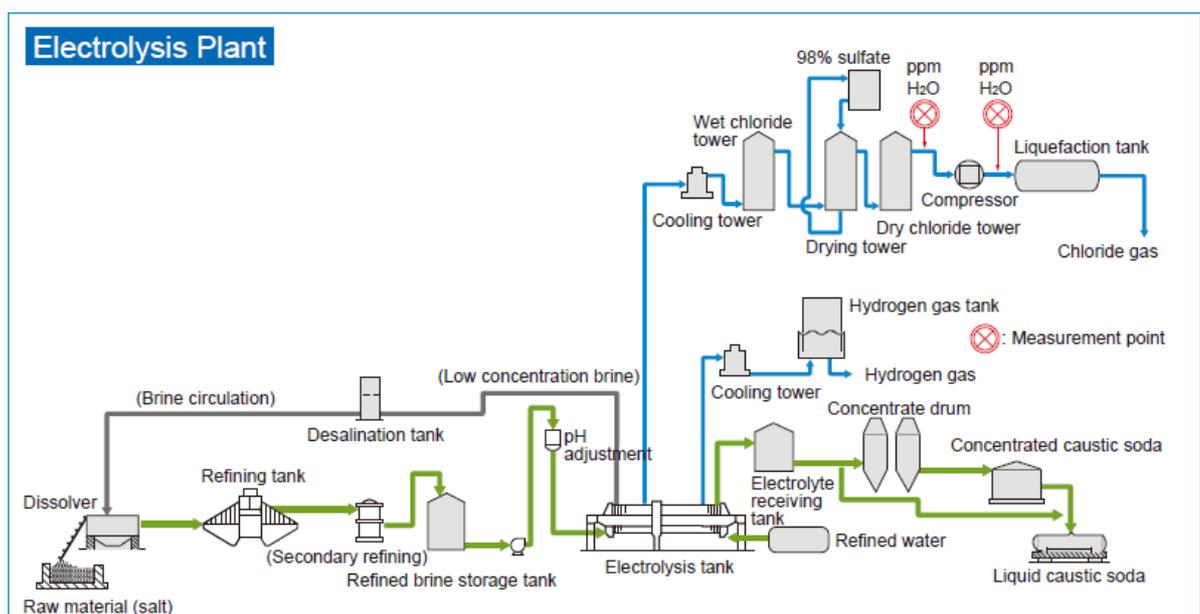
Process Overview

Chlorine gas generated in the brine electrolysis plant is dehumidified in the wet chlorine tower and sent to the drying tower where the chlorine gas is dried using sulfuric acid solution. The dried chloride gas is sent to the dry chloride tower where the gas is dehumidified, and finally, the dry chloride gas is compressed by the compressor and liquefied, and then shipped as a product.

Expected Benefits

- Reliable measurement with less deterioration by non-contact measurement
- Ability to measure even corrosive gasses with less deterioration reduces the maintenance and running costs
- Fast response to and stable measurement of changes in H₂O concentration

Electrolysis Plant

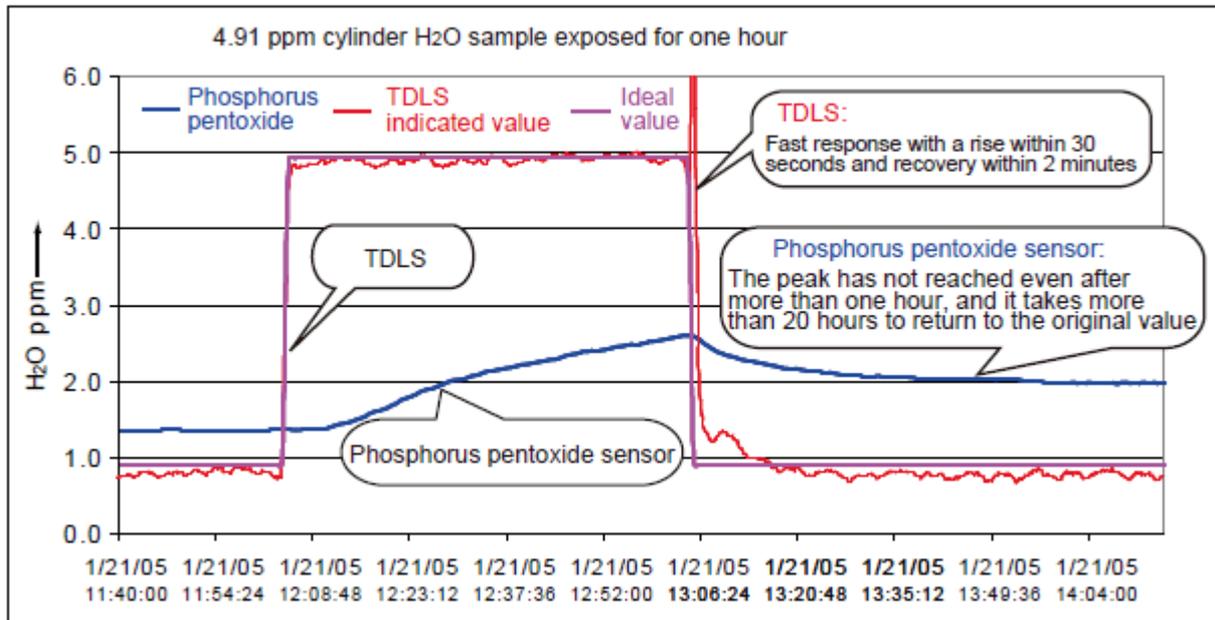


Solution Details

Unlike analyzers using a phosphorus pentoxide (P₂O₅) sensor, the TDLS responds fast to changes in the trace moisture of the sample.

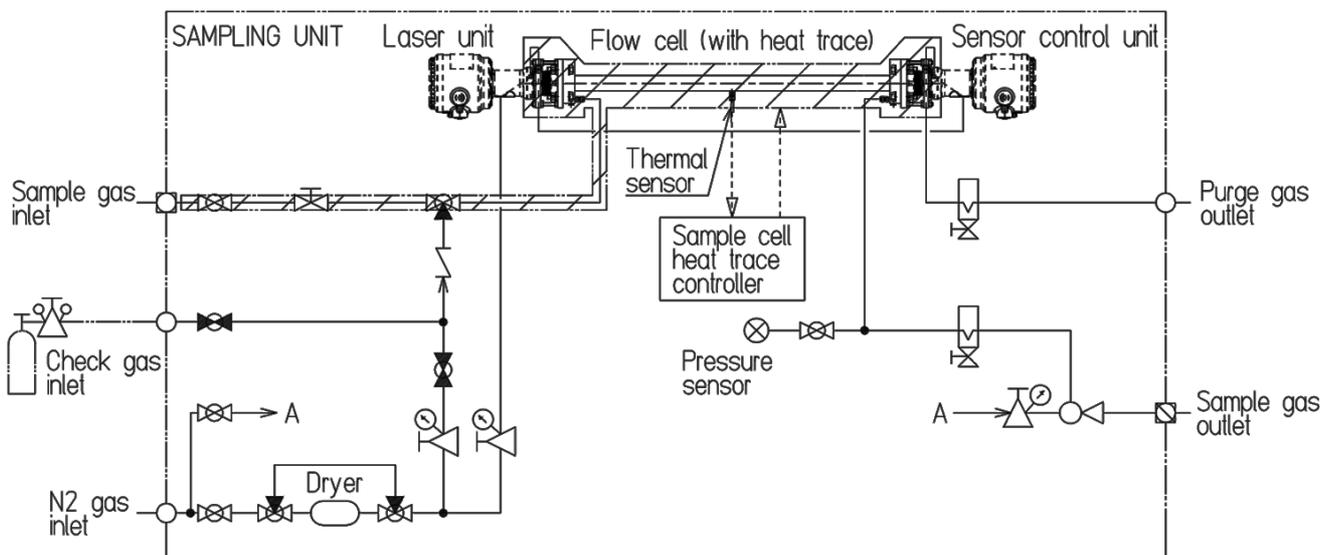
Field Data

Responsiveness Comparison between the TDLS and Moisture Analyzer Using P₂O₅ Sensor



Configuration Example of TDLS8000 Laser Analyzer Trace Moisture Measurement

A sampling system is used to introduce a process gas into the flow cell to measure it.



Features

- A proprietary sampling method enables a high-sensitivity measurement (in the minimum range of 0-30 ppm)
- In-situ calibration is possible without removing the system
- The sampling system minimizes the effect of moisture in the purge gas

TDLS Analyzer

- TDLS8000
Available on a special order basis.

Notes

- Power supply: 100 - 240 V AC, 50/60 Hz
- Purge gas: Instrumentation and N₂
Inside the sampling board and the light emitter and light receiver boxes
Purge: Instrumentation air 10 L/min
Laser light transmission region purge: N₂ flow rate 5 L/min

Trademarks

Co-innovating tomorrow, OpreX and all product names of Yokogawa Electric Corporation in this bulletin are either trademarks or registered trademarks of Yokogawa Electric Corporation. All other company brand or product names in this bulletin are trademarks or registered trademarks of their respective holders.

YOKOGAWA ELECTRIC CORPORATION

World Headquarters

9-32, Nakacho 2-chome, Musashino-shi, Tokyo 180-8750, JAPAN

<http://www.yokogawa.com/an/>



YOKOGAWA CORPORATION OF AMERICA

YOKOGAWA EUROPE B.V.

YOKOGAWA ENGINEERING ASIA PTE. LTD.

YOKOGAWA CHINA CO., LTD.

YOKOGAWA MIDDLE EAST & AFRICA B.S.C.(c)

<http://www.yokogawa.com/us/>

<http://www.yokogawa.com/eu/>

<http://www.yokogawa.com/sg/>

<http://www.yokogawa.com/cn/>

<http://www.yokogawa.com/bh/>

Subject to change without notice.

All Rights Reserved, Copyright © 2010, Yokogawa Electric Corporation