

Electrolysis Plant Trace H₂O (Moisture) Measurement by the TDLS200

Industry: Chemical

Product: TDLS

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 TDLS200

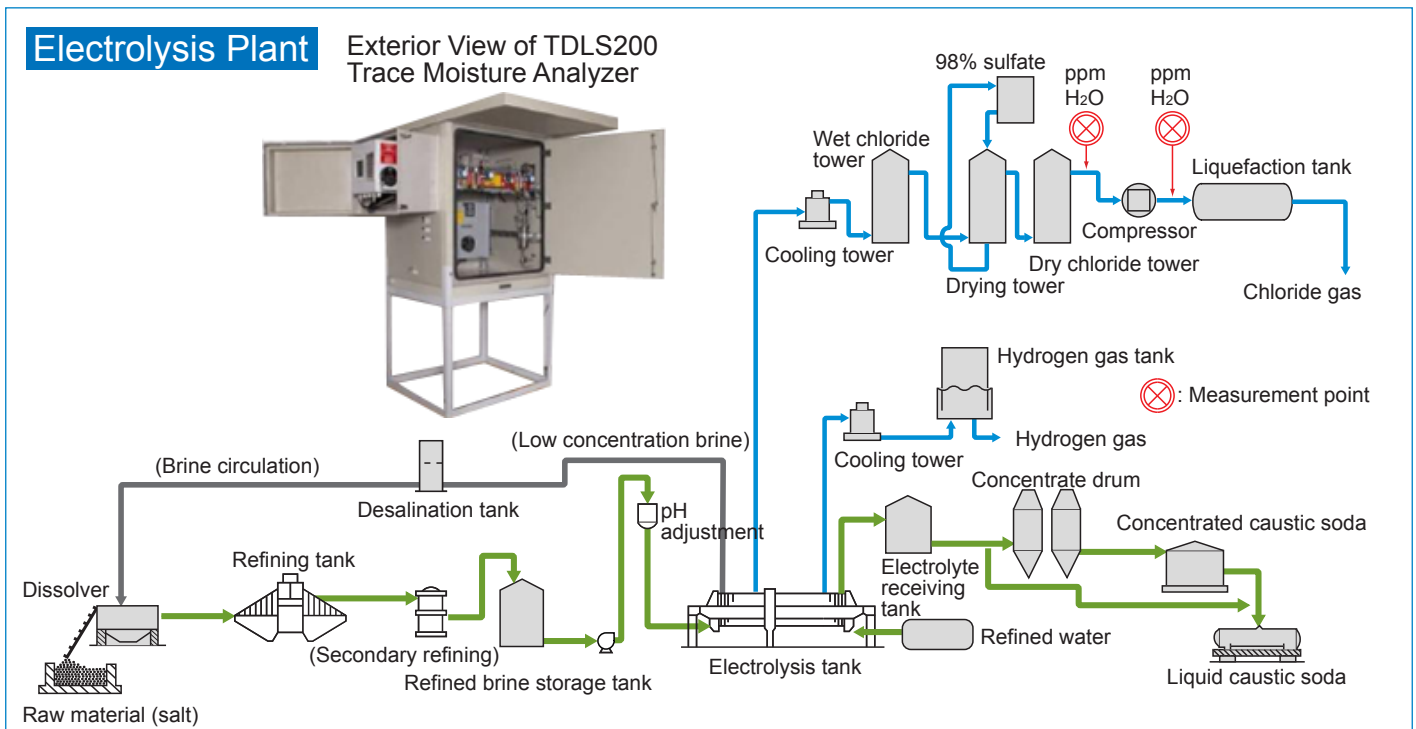
Laser Analyzer is the solution to these problems.

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

Process Overview

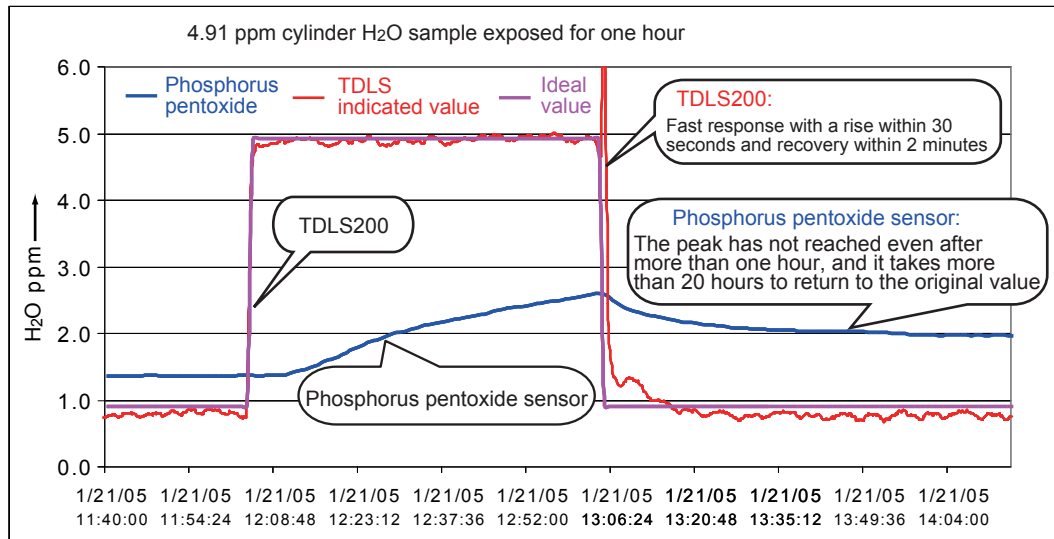
Chlorine gas generated in the brine electrolysis plant is dehumidified in the wet chlorine tower and sent to the drying tower where the chlorine gas is dried using sulfuric acid solution. The dried chloride gas is sent to the dry chloride tower where the gas is dehumidified, and finally, the dry chloride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



Solution Details

Unlike analyzers using a phosphorus pentoxide (P_2O_5) sensor, the TDLS responds fast to changes in the trace moisture of the sample.

Field Data Responsiveness Comparison between the TDLS200 and Moisture Analyzer Using P_2O_5 Sensor

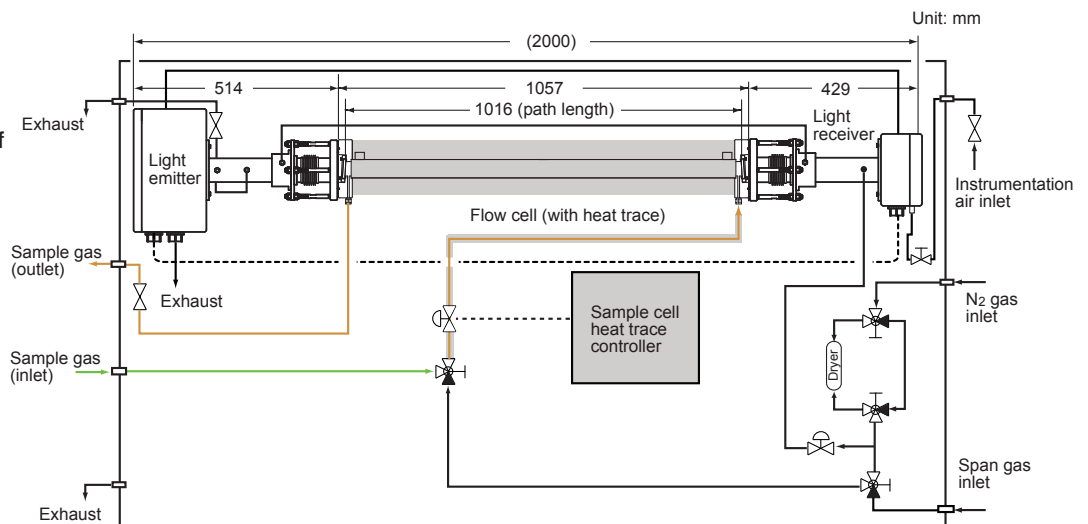


Configuration Example of TDLS200 Laser Analyzer Trace Moisture Measurement

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

- TDLS200
- Available on a special order basis.

Notes

- Power supply: 100 - 240 V AC, 50/60 Hz
- Purge gas: Instrumentation air 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