

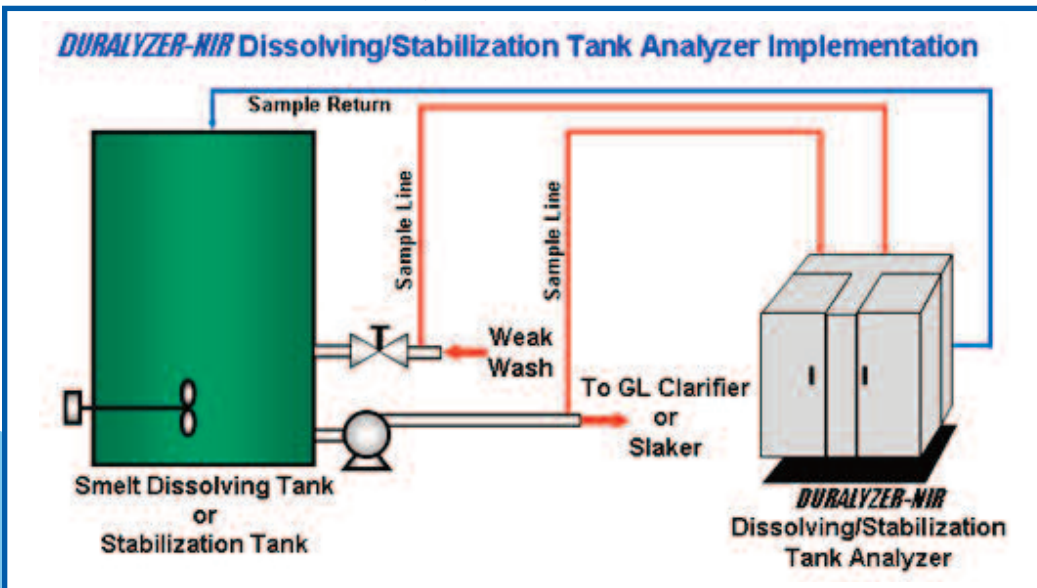
# DISSOLVING TANK ANALYZER

*The DURALYZER-NIR Online Green Liquor Analyzer for Dissolving Tank*

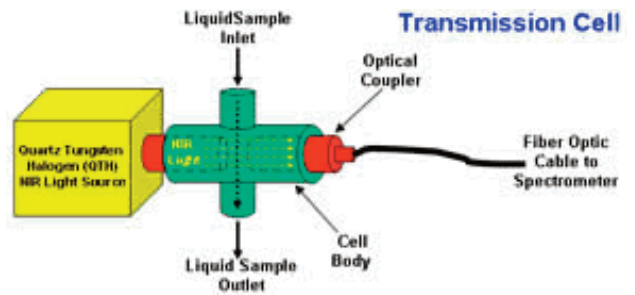
**THE DISSOLVE LIQUOR ANALYZER** is reliable and accurate liquor analysis at the dissolving tank and stabilization tank locations for controlling the quality of the green liquor that is pumped to the causticizing process. Stabilizing the green liquor composition as much as possible at these locations ensure that variations in the green liquor are minimized before reaching the recaustizing area. Stabilization of the green liquor at the dissolving tank is also important for controlling the settling characteristics of the liquor and minimizing scale buildup in piping and process equipment. It is desirable to maintain green liquor TTA in as tight a range as possible; too high a TTA can lead to scaling issues, too low a TTA leads to reactivity issues at the slaker. With an online dissolving/stabilization tank analyzer, the green liquor composition can be controlled in real time to meet target TTA or  $\text{Na}_2\text{CO}_3$  levels. In addition to the green liquor analysis provided by this analyzer, weak wash TTA is also provided allowing for a feed forward-feedback control arrangement. The DURALYZER-NIR dissolving/stabilization tank analyzer provides the required green liquor AA and TTA measurements in a timely, accurate and reliable manner for green liquor composition control. Additionally, green liquor EA, TDS, TDD and RE are also available from the same analyzer as well as the weak wash TTA measurement.

**THE UNIQUE DESIGN** of this system minimizes maintenance and system cost by eliminating the large number of moving parts associated with autotitrator technology and eliminating the high pressure washing system used with refractometer approaches. Unlike single point measurements such as refractometer, conductivity meter and density

meter, the spectrometer approach provides a complete component analysis such as an autotitrator system without the maintenance and cost associated with autotitrator systems.



**THE TRANSMISSION CELL** provides a means for NIR radiation to interact with the process sample while isolating the light source, fiber optic cable and spectrometer from the process. A typical transmission cell is composed of a body with appropriate sample inlet and outlet connections and a pair of optical couplers to deliver light to the sample and collect light after interaction with the sample. The optical couplers house a set of lenses to focus the radiation onto the tip of the fiber optic cable. The ends of the couplers in contact with the process sample have windows, usually sapphire, to provide a transparent optical path for the entering and exiting light as well as providing isolation from the process sample. Sapphire is usually the material of choice for the coupler windows due to its combination of hardness, chemical and heat resistance and transparency over a broad range of wavelengths.



### APPLICATION TECHNOLOGY

Reliable and accurate green liquor analysis for the dissolve tank process is important for optimizing TTA or Na<sub>2</sub>CO<sub>3</sub> levels. The graphic presentation on the front page shows how the DURALYZER-NIR dissolving/stabilization tank analyzer can be implemented for controlling the composition of the green liquor exiting these tanks. The standard analyzer configuration comes with three sample lines. A control signal based on green liquor TTA or Na<sub>2</sub>CO<sub>3</sub> levels can then be used to adjust weak wash flow to maintain target TTA or Na<sub>2</sub>CO<sub>3</sub> levels. The combination green liquor analysis and weak wash analysis from the analyzer can be used for stabilization tanks to get tight control over the green liquor composition using a feedforward-feedback control system. Dissolving tank analysis is unique among the liquor analysis applications due to the rapid step changes that can occur from smelt rush conditions. In addition, scaling at this location can also be a serious issue, quickly fouling other sensor solutions to a degree that makes them inoperable. The DURALYZER-NIR analyzer solves both of these issues. Green liquor analysis results can be provided in as short a time as a three minute cycle. Special Teflon lined sample taps ensure that the tap locations do not scale up to a degree that would interfere with collecting a valid process sample.



#### UTILITY REQUIREMENTS:

- **Electrical:** 110-120 VAC/60 Hz, 30 Amp
- **Air:** Instrument air 70-120 psi  
3/8" stainless steel tubing
- **Sample Lines:** 1/2" stainless tubing
- **Drain:** 1" pipe back to process
- **Water:** Mill water 40-80 psi, 3/4" tubing
- **I/O:** 4-20mA for each component  
Optional MODBUS/TCP

#### SCHEDULED MAINTENANCE REQUIREMENTS:

- **Maintenance Kit: Available**
- **Light Source: Annual Bulb Replacement**
- **Lens cleaning Acid: Every 6 mos**

**Manufacturer:** [www.rehodges.com](http://www.rehodges.com)  
R.E. Hodges, LLC Auburn, Alabama

