

APPLICATIONS BULLETIN

(Revised 1/20/06)

ABIL.8

AN INTERFACE LEVEL ANALYZER FOR A SUCTION TYPE CLARIFIER

The following should serve as a general overview on the use of the Royce Series 2500 Interface Level Analyzers (ILA) on suction type clarifiers. It is not all-inclusive, but addresses unique profiling characteristics found on this special type of clarifier. Address specific operational and installation questions to Royce Technologies.

Royce specifically designed the Series 2500 ILA to give an "average" sludge blanket or interface level. There are several programmable timing functions that, when properly set, work to accomplish this averaging. This eliminates wide swings in the blanket level readings from any cause, including rake passage and upset (billowing sludge). The primary averaging program parameters are "Update Rate" and "Averaging Cycles".

Suction type clarifiers come in two basic designs. The most common is the circular clarifier with vacuum tubes mounted on the bottom. The second most common is a traveling bridge clarifier, either circular or rectangular. It is extremely important to understand what is happening under the surface, inside of the clarifier.

The suction arm travels the bottom of the clarifier, continuously withdrawing sludge from the bottom. Many plants operate the withdrawal rate so that the arm is effectively removing most of the solids immediately behind the suction arm as it passes. It is important to be able to visually grasp this concept because when taking manual readings, they should be taken only from the bridge with the arm at, or past 90 degrees to the clarifier bridge. If suction is only on one side of the suction arm, then take a minimum of two readings. Take one reading with the suction arm at 90 degrees and one at 270 degrees from the bridge. These two numbers must be averaged to give an average blanket depth.

The Royce ILA is constantly taking readings at an average of four times per second. Depending on the Operator's settings of the "Update Rate" and "Averaging Cycles", it processes this data to supply information on two separate displays on the analyzers from panel. The graphical, or profiling display represents the settling characteristics taking place under the sensor. This enables operating personnel to "view" what is taking place at any given moment in the tank, under the sensor. This profile is averaged at either 7 ½, 15, 30 or 60 second intervals. The numeric display shows the average depth of the interface chosen by the Operator as the most critical interface to be monitored and/or controlled.

The only correct way to manually obtain a complete and accurate picture of sludge depth in suction clarifiers is to take multiple readings as the arm travels the bottom. Royce suggests a minimum of eight readings taken with the arm at 45 degree increments as it travels. It will give the best picture of actual tank conditions and therefore the best correlation to the Royce ILA.

These procedures and comprehension of tank operations will give operations personnel a better picture of what is taking place in these tanks. It will further build confidence in the Royce Series 2500 Interface Level Analyzers.



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