

Level Measurement Solutions for the Petrochemical Industries - Cost Effective alternatives to Displacers

“Variable” performance of Displacers and routine maintenance of Displacers limit accurate and efficient level measurement in Refineries and Petrochemical plants.

Archimedes’s had the right idea for “short-span” level measurements, but today there are more reliable and cost effective answers.

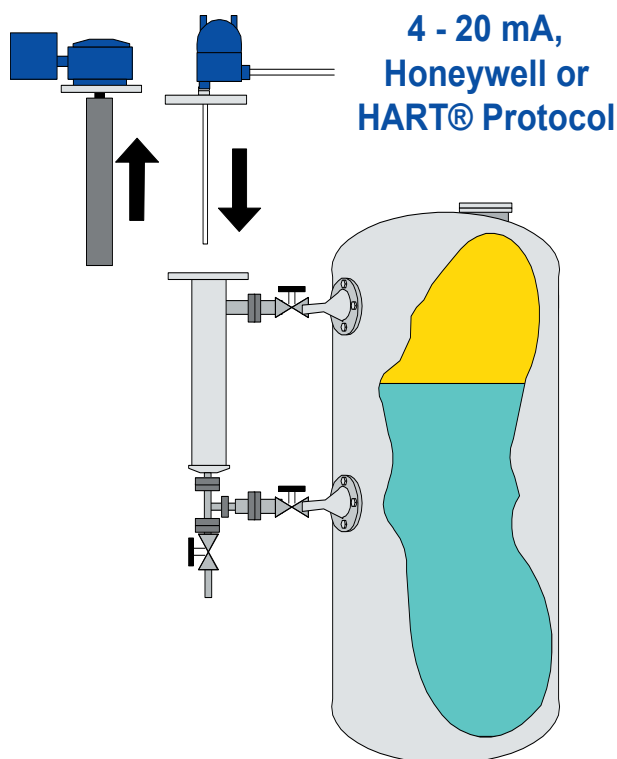
To keep displacers operating at peak performance, periodic maintenance is a must. They are susceptible to build-up on the displacer body requiring frequent “blowdown”. The blowdown procedures can consume up to two man-days, and considerable supplies. Because a displacer is a purely mechanical device, rebuilds of components that wear out are a fact of life - adding to the total cost of ownership and detracting from reliability. The problem with using displacers and Differential Pressure devices for level on single liquids is widely acknowledged to be its dependence on a constant specific gravity of the process liquid. When used on an Interface level measurement, the problem is aggravated because the output is proportional to the DIFFERENCE in the specific gravity of the two interfacing liquids. If the difference in the two specific gravities of the interfacing liquids is 0.1, the calibration of the displacer would be ten times as sensitive to changes in specific gravity, whether due to temperature or composition variations in the liquids.

Radio Frequency (RF) based level sensing has been one of the best technologies for indication and control for total level or interface level applications. The very nature of most interface level applications (conductive vs. insulating liquids), whether normal or inverted, plays to the technological strengths of RF technology. If there is a “clean” and defined separation between the conductive and non-conductive phase, RF produces an accurate indication of the interface’s location on the sensing element. If the interface develops an emulsion or “rag” layer that separates the upper and lower phases, RF technology will indicate that the interface is at the point in the rag layer where the emulsion reverses from an oil-external to water-external configuration. AMETEK Drexelbrook RF level transmitters are available in analog only (4-20mA) output, 4-20mA - HART digital, or 4-20mA - Honeywell digital outputs. The HART and Honeywell instruments are calibrated via common handheld communicators or PC based proprietary software designed for calibration and communication. In many cases there is no need to vary level.

Drexelbrook RF transmitters measure total liquid level or interface level independent of density, temperature, or pressure variations. The RF technology requires no moving parts and no periodic maintenance or attention. In addition, the RF Admittance measurement is virtually unaffected by process material build-up on the sensing element.

Beside RF technology being the best level measurement technology for interface measurement, Drexelbrook is also able to supply the entire cage/chamber assembly, or retrofit the level sensor with a mating head flange for a number of popular displacer chambers. The solution is as easy as unbolting the head flange and removing the displacer assembly and the electrical or pneumatic transmitter. This hardware is then replaced with an RF sensing element that is designed to be compatible with the process measurement. The fluorocarbon-insulated sensors reduce or eliminate the need for exotic metals or special heat treatment.

The ultimate solution for displacer's that are plagued by density changes due to "off spec" product, or temperature induced specific gravity changes, is Drexelbrook's True Level. The True Level is a dual measurement (in one easy to install sensing element) that continuously self compensates for variations in electrical properties that can result from drastic temperature or composition changes. The only requirement is product homogeneity, so the composition and level sections of the sensing element are exposed to the same electrical characteristics. The True Level is available in 4-20mA - HART protocol. All Drexelbrook RF level transmitters are available in 2-wire Intrinsically Safe configuration for installations in Class 1, Div. 1 hazardous



**Easily Retrofit from Displacer
to RF Level Technology**

U.S.A. Sales: 800-553-9092 • 24-Hour Service: 800-527-6297 • International Support: 215-674-1234 • Fax: 215-674-2731

AMETEK®
DREXELBROOK

205 Keith Valley Road
Horsham PA 19044 U.S.A.

E-mail - drexelbrook.info@ametek.com

Web - www.drexelbrook.com

AMETEK Nihon Drexelbrook
2 Chome • 12-7 Minami Gyotoku
Ichikawa City • Chiba 27201 Japan
Phone: 81-473-56-6513
Fax: 81-473-56-6535
E-mail: nd@nihon-drexelbrook.co.jp

AMETEK Singapore Pte. Ltd.
10 Ang Mo Kio Street 65
#05-12 Techpoint • 569059 Singapore
Phone: 65-6484-2388
Fax: 65-6481-6588
E-mail: aspl@ametek.com.sg

AMETEK Precision Instruments Europe
Rudolf-Diesel-Strasse 16
D-40670 Meerbusch Germany
Phone: 49-2159-9136-0
Fax: 49-2159-9136-39
Web: www.ametek.de