MTG: The Basics

What is a MTG?

Multi-function tanks gauge. Initially designed as a single instrument to provide all parameters for volume measurement. (All tank gauged parameters measured or calculated for volume measurement)

It has further been developed into a technology that can be configured to multiple applications and product services. Examples: mixing and blending, leak detection, vapor monitoring (over pressure or vacuum), emissions monitoring, custody transfer (quantitative and qualitative measurement), overfill protection, gauge redundancy, temperature measurement, oil and water monitoring (gun barrel, knock out, and settling tank), and brix (wine industry) etc. What application do you need the MTG for?

What is the physical description of the MTG?

It is a probe that extends from the tank top flange to the bottom of the tank.

Does the MTG have any moving parts?

No. (ie. No moving floats, wire drums, displacers, floats with magnets)

Do you need a gauge well for an MTG?

No. Because the MTG is bottom referenced and is not effective by addition and bottom movement. The MTG can be installed without a gauge well. However, the MTG can fit in most gauge wells 6” or larger and still allow room for the manual reference measurements. This means a point for direct measurements comparison between the automatic tank gauge and reference manual measurements (level, temperature, density, and water) from the same product media for the express purpose of determining gauge calibration and instrument accuracy.

Note: The measurement of multiple parameters from different physical tank locations and product media will cause cumulative measurement errors.

MTG Components.

MTG top to the bottom, transmitter, Optional ambient sensor, mounting flange, seal flange, 2 in stainless steel pipe, multiple sensor sections and bottom footer, other options are available.

What data does the MTG provide.- Volume, level, mass, multi point temp, multi strata density, average product density, total water (free water, emulsified water, entrained water), Vapor pressure, vapor temperature, vapor density, flow rate by volume, flow rate by mass, mass

sensitivity for unauthorized movement (leak detection incorrect line up, theft), stratification of temperature density and water, tank over pressure or vacuum monitoring, Note: calculates and raw sensor values are available as well.

Optional: ambient pressure, ambient temperature, ambient density, tank bottom movement indication, (manual or remote indications)

What is the accuracy of the MTG?

Most manufactures provide you level accuracy. It should be questioned as to whether or not this data is laboratory or field accuracy. However, you don't buy petroleum products by level only. You need to question the accuracy of all measured or calculated parameters (level, mass, temperature, density, water). In some cases we see stated accuracy for level and all other parameters ignored. For example an uncertainty of 1 degree C of average temperature in the tank is equivalent to 3/8th of an inch of level uncertainty for a 40ft tank when doing volumetric conversion from level. There is much more to volume accuracy than just level measurements. MTG provides Volume through traditional Level/Temperature method and also through Mass/Density conversion - both results available simultaneously from standard register map. MTG has superior accuracy for liquid quantity balance and transfers for both Mass and Volume based product accounting.

Accuracies: Volume, Mass, Level, Temperature, Density, and Water.

Note: That inability of automatic measurement against the manual reference (ie, manual reference hand lines, thermometer, and samples) location of physical media will cause errors.