
MTG vs. Servo

When first introduced to the market about 40 years ago, the **Servo-gauge** was a big technological advancement over mechanical tank gauges. The ability to monitor level with higher accuracy with remote indication was unheard of.

However, technology has changed over the last 40 years. Current tank gauging specifications require no moving parts, improved accuracy and multiple data points (level, temperature, density and free water). Even net volume, by both level and mass, is available now in real time from a single tank gauge, i.e. no waiting on laboratory analysis.

MTG provides all possible information of the product in the tank including level, volume, mass, water interface, percentage of water, density and density distribution over the tank height, multiple and average temperatures. MTG is successfully used for emulsified products. In addition, MTG can measure pressure of the vapor space (gas blanket) and the temperature of the vapor space. All measurements are done in real time and simultaneously.

Servo-gauge provides level and very limited capabilities for density and water interface (measurements are not done in real time or simultaneously, density accuracy is at least 5 times worse than the density accuracy with MTG). Additional equipment is necessary for temperature or accurate density and mass measurement.

MTG has no moving parts and very rigid stainless steel construction with self diagnostics and self calibration. Virtually no maintenance is required with the MTG.

Servo-gauge includes critical moving parts such as servomotor and drum with bearing – all subject to wear and routine maintenance.

MTG is fully self calibrating and very easily configurable. Electronics boards are fully interchangeable. Electrical standard and protocol allows remote diagnostics and configuration.

Some **Servo-gauges** are capable of performing remote calibration procedures by operator command, others do not. Dedicated electrical standards and protocols prohibit diagnostic functionality.

MTG requires only one tank entry and may be installed on a wide variety of flanges. MTG requires only 12Vdc – 24Vdc power. Installs in service, No stand pipe or stilling well required.

Servo-gauges require additional tank entries for temperature, accurate density and mass measurements. Most **Servo Gauges** require 110Vac power and separate pair of signal wires and conduit to isolate AC noise. In addition, **Servo Gauges** require multiple electrical connections and conduit for these added instruments usually at lower voltage levels. **Servo Gauges** require the use of a stand pipe or stilling well. The mounting of **Servo-gauges** on smaller gauge wells hinder accuracy.

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	Servo	MTG - Mass Tank Gauge
Maintenance Cost:		
No Moving Parts	No	Yes
Self Calibrating	Yes	Yes
Self Diagnostics	Yes	Yes
Multiple primary sensors	No	Yes
Remote Configuration / Trouble Shooting	No	Yes
Installation Cost:		
Stilling Well	Add, needed for accuracy	Not required, Bottom Referenced
Tank entries required	Multiple with temperature	One - 4" flange
Hot work / taps	Option dependent	Not required
Instruments to install	Servo, Temp. Avg., Options	MTG
Voltage required (Electrical)	110Vac ?	12 - 24Vdc
Wiring connections	Multiple, more with options	Single
Communications / Integration	Bi-phase Mark, Others	MODBUS RTU, Others
User configurable register map	No	Yes
Alternative communications	Not offered in literature	Ethernet, Radio, Satellite, Cellular
Equipment Cost:		
Local display / Interface	Add	Add
* Servo	Base	
** Multi-point Spot Temperature	Add	Included
*** Water Bottom & Entrained Water	No	Included
**** Multiple Density Strata	No	Included
	Servo Total	
* MTG - Mass Tank Gauge		MTG Total
Data provided: (Primary Instrument)		
Mass	Additional Instrument	Yes
Level	Yes	Yes
Multiple Spot Temperatures	Additional Instrument	Yes
Multiple Density Strata	Not in real time, Not accurately	Yes
Free Water (Interface)	Not in real time, Not accurately	Yes
* % of Water in Product	No	Yes
2nd Interface	No	Yes
* % of Water in Emulsion	No	Yes
Vapor Pressure	Additional Instrument	Yes
Vapor Temperature	Additional Instrument	Yes
Leak detection (By Mass)	No	Yes
Alarm - Multiple Level Sensors	No	Yes
Alarm - Mass	No	Yes
Alarm - Multiple Spot Temperatures	Additional Instrument	Yes
Alarm - Multiple Pressure Points	No	Yes
Alarm - Multiple Density Strata	No	Yes
Alarm - Vapor Pressure	No	Yes
Alarm - Vapor Temperature	Additional Instrument	Yes
Real-time Tank Profile	No	Yes
* = Crude Oil Service		