

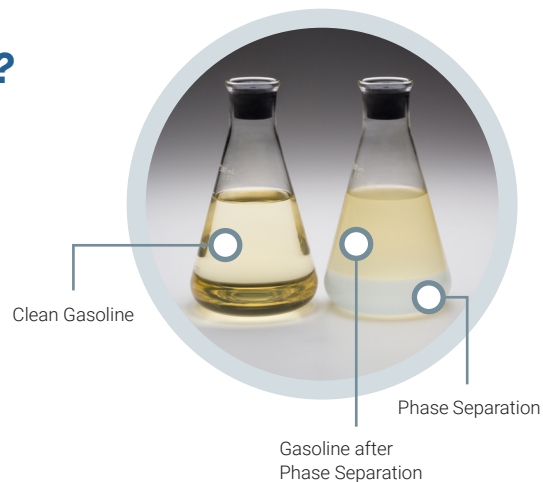


PHASE SEPARATION FLOAT SYSTEMS

WATER IS THE ENEMY

► WHEN DOES PHASE SEPARATION OCCUR?

When water enters a tank filled with a gasoline / ethanol mixture, the ethanol absorbs the water, causing the ethanol to separate from the gasoline and sink toward the bottom of the tank mixed with water. This ethanol / water mixture (phase separation) has a lighter density than pure water, causing it to go undetected with a traditional water float.



► WHY IS PHASE SEPARATION A PROBLEM?



Phase separation sinks to the bottom of your tank and, if undetected, can be pumped into your customers' vehicles, causing stall-outs at your site and costly repairs for which you may be liable.



The corrosive nature of phase separation can result in the need for expensive tank repairs and remediation. The costs of purging your system, replacing dispenser filters, and disposing of contaminated fuel can easily run more than \$10,000.



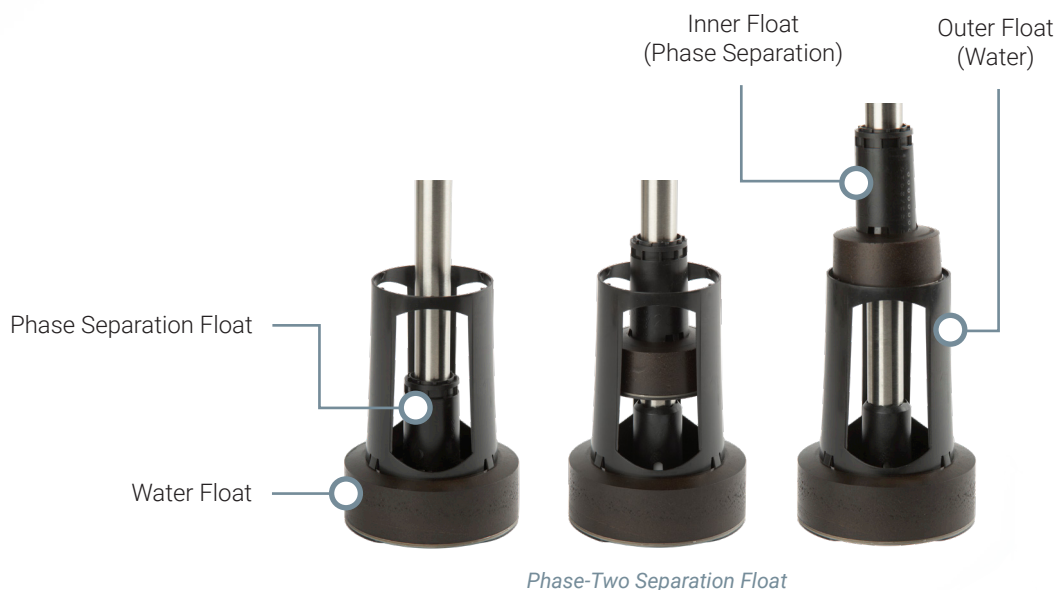
Ethanol boosts octane levels, but when ethanol mixes with water to create phase separation, the remaining gasoline is depleted of ethanol, lowering its octane level and making it ineligible for legal sale.



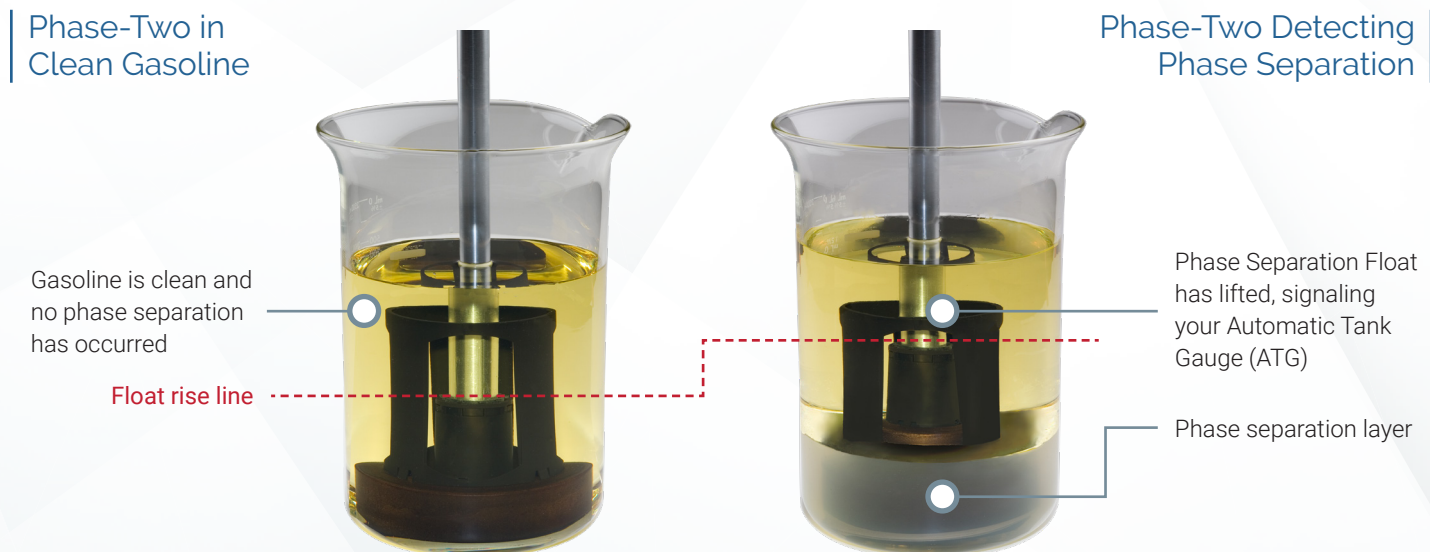
► PHASE-TWO™ SEPARATION FLOAT SYSTEM

Ethanol Usage is on the Rise, and Subsequently so is Phase Separation

Today, over 90% of U.S. gas stations are blending their gasoline with ethanol. Industry standard water floats operate under a principle of density. They are tuned to detect water at the bottom of a tank. However, the density of phase separation is lower than water, and thus traditional water floats will not reliably detect phase separation. Veeder-Root's Phase-Two Separation Float System uses multiple densities to detect both water and phase separation, making sure you are always protected.



► HOW DOES 4" PHASE-TWO DETECT PHASE SEPARATION?

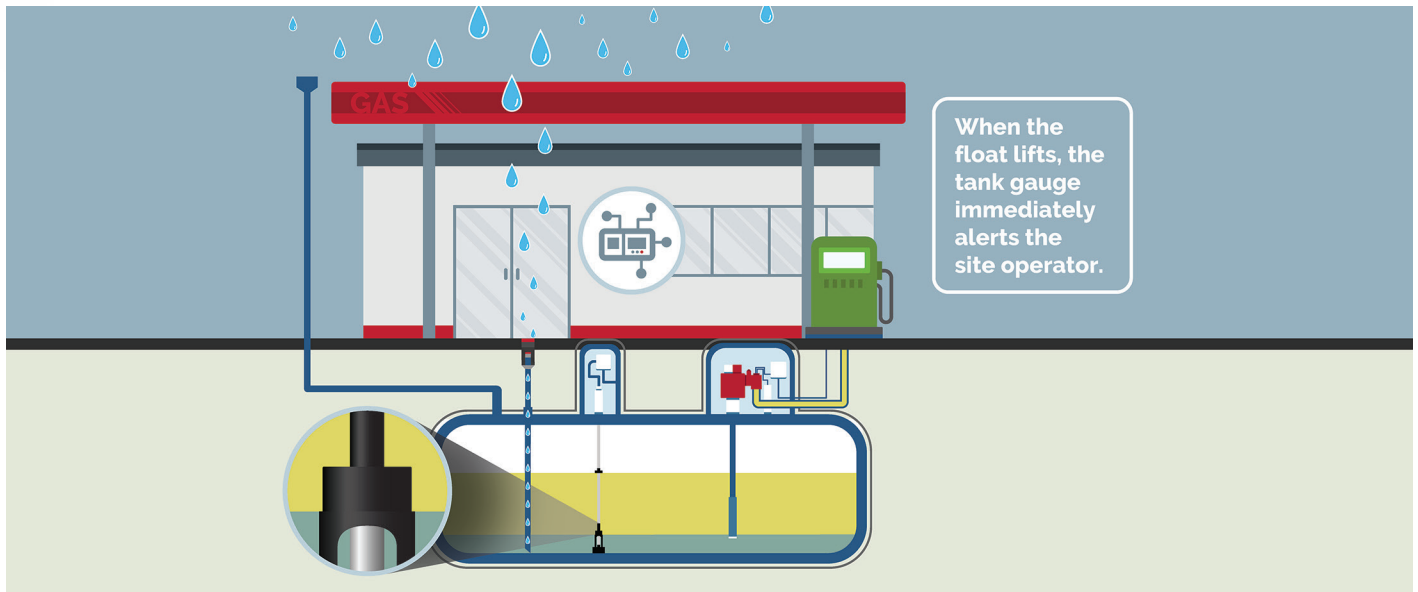


► DETECT PHASE SEPARATION BEFORE IT IMPACTS YOUR BUSINESS

Stage 1: Early Detection

No customers or fuel lines have been affected. The phase separation may be resolved with a normal delivery of fuel. The site operator will need to pump out phase separation from the bottom of the tank and check octane levels of the remaining fuel.

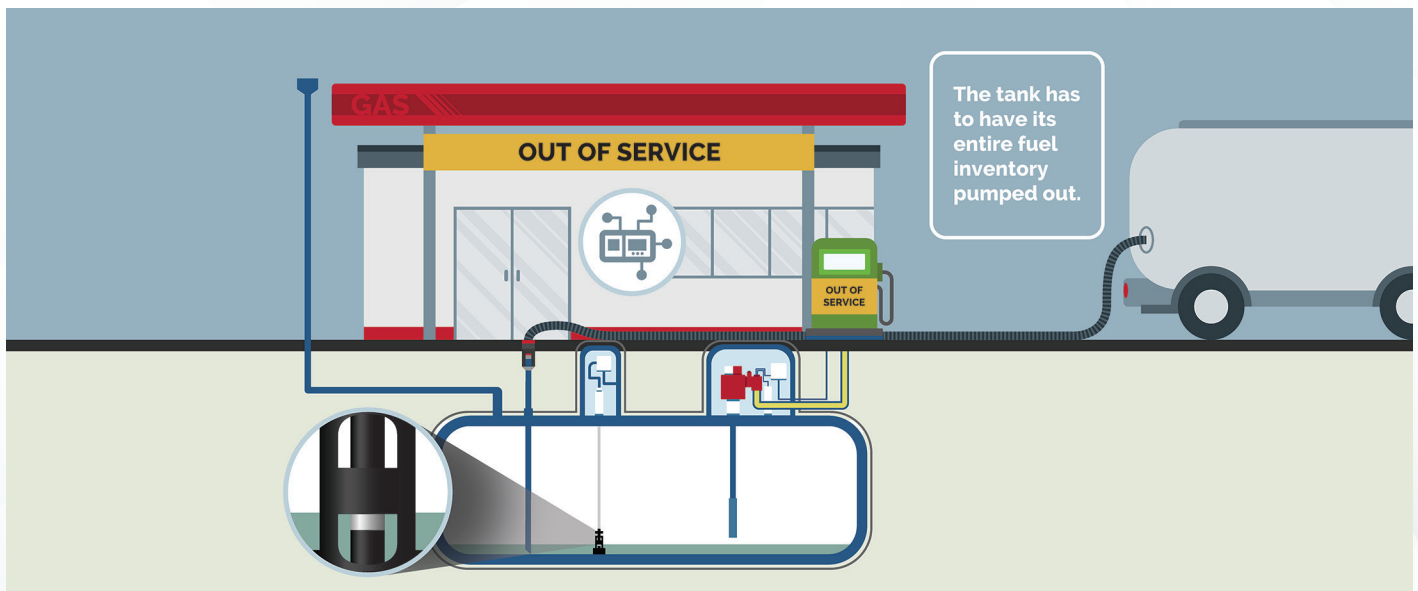
Cost: Lost gallons of fuel, service, and lost business.



Stage 2: Clogged Filters

If phase separation has clogged the dispenser fuel filters, the remaining fuel is ethanol depleted and may be out of specification. The site operator may need to purge lines and change filters or possibly pump out the entire tank of fuel. The tank will be down for a few hours.

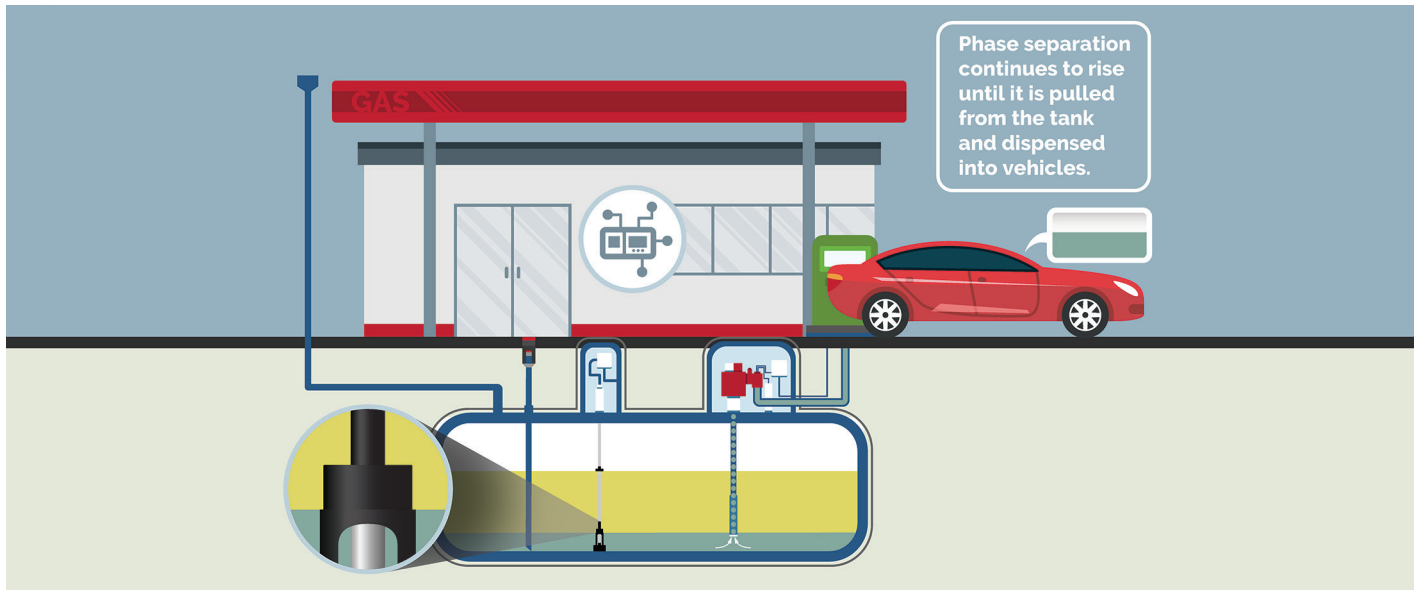
Cost: Lost tank of fuel, service and repairs, and lost business.



Stage 3: Stalled Vehicle

Vehicles stall out at the station, resulting in legal liabilities and a damaged reputation. The site operator will need to purge lines, change filters, and pump out the entire tank of fuel. They will also need to repair damaged vehicles and begin damage control for their brand.

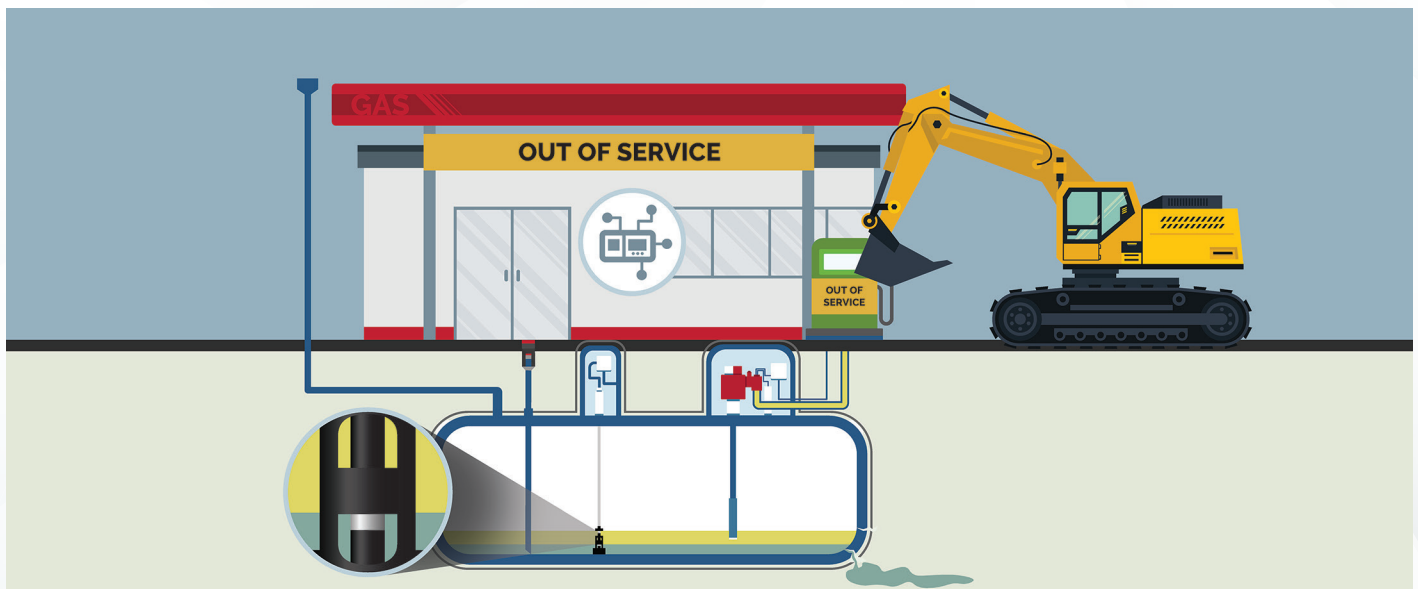
Cost: Lost tank of fuel, service and repairs, lost business, and damage to reputation.



Stage 4: Corroded Tanks

Tanks and piping not rated for E100 (pure ethanol fuel) start leaking with prolonged phase separation exposure. Now the site operator will need to extract underground tanks and piping, as well as clean up leaking gas.

Cost: Potential shutdown, fines and Notice of Violations, lost tank of fuel, service and repairs, lost business, and damage to reputation.



► TRADITIONAL DETECTION METHODS



METHOD TYPE	STICKING TANK WITH PASTE	DISPENSER FUEL FILTER	AUTOMATIC TANK GAUGE WITH WATER FLOAT
DESCRIPTION	<ul style="list-style-type: none"> Put paste on a long stick and insert into tank If paste changes color, it could be an indication of a potential problem 	<ul style="list-style-type: none"> Use dispenser filter specially designed for phase separation 	<ul style="list-style-type: none"> Water float sensor on electronic probe detects level of water in tank
DRAWBACKS	<ul style="list-style-type: none"> Difficult to interpret results Difficult to follow consistent procedure Do not stick tank regularly Requires site shutdown 	<ul style="list-style-type: none"> Lack of use / awareness Does not work instantly and does not close completely (2gpm), allowing some phase separation to pass Filters clog over time slowing down flow Only detects phase separation at dispenser, not in tank, still leaves 6" (15.24cm) of phase separation in tank 	<ul style="list-style-type: none"> Density of phase separation may be too low to raise water float, making phase separation undetectable



THE FIRST TRUE SOLUTION FOR PHASE SEPARATION MONITORING

The Veeder-Root Phase Separation Floats provide you with early detection and continuous monitoring of in-tank phase separation and delivers alarms to your Veeder-Root ATG to help prevent the pumping of phase separation product into your fueling system.

► THE EARLIEST DETECTION OF PHASE SEPARATION AVAILABLE

The Veeder-Root Phase Separation Floats offer the earliest possible detection of phase separation, saving money and reputations. The Phase Separation Floats interact with multiple densities to detect water and phase separation in any gasoline storage tank containing up to 15% ethanol (E15), making sure you are protected under all circumstances.

The Phase Separation Float Kits replace the traditional gasoline float kit and is compatible with existing Veeder-Root ATGs. The float kits also work in pure gasoline with better performance for water detection than existing float kits by having a lower minimum detectable water height, allowing site operators to quickly respond to a potential problem.

If you currently have a TLS-450PLUS or TLS4 Series Automatic Tank Gauge, the Phase Separation functionality comes standard in the console with version 5.B or higher software. Additional equipment required includes a MAG Plus Probe with Phase-Two Water Detector. If you currently have a TLS-350 or TLS-300 ATG, and a software version lower than 30.B, there are two Phase Separation equipment options available:



1. Upgrade ECPU board, install MAG Plus Probe, and update your software to version 30.B or higher.
2. Upgrade to a TLS-450PLUS or TLS4 Series platform.

FLOAT KIT OPTIONS		
Part Number	Description	Certification
0886100-000	4" Phase-Two Float Kit with 5' (1.52m) Cable	UL
0886100-010	4" Phase-Two Float Kit with 10' (3.05m) Cable	UL
0886102-100	2" Phase Separation Water Detector Float Kit with 5' (1.52m) Cable	UL

4" Phase-Two
Float on Probe

2" Phase
Separation Float
on Probe



4" Phase-Two Float Kit
with 5' Cable



2" Phase Separation
Float Kit with 5' Cable

► FEATURES & BENEFITS

- **Handles multiple densities** — Floats are able to detect both water and phase separation
- **Delivers alarms and alerts** — Provides continuous monitoring of in-tank phase separation and delivers alarms to your Veeder-Root ATG
- **Protects from every angle** — Offers you the assurance that your equipment is secure, and your inventory and reputation are safe
- **Improves minimum water detection** — Detects water in any gasoline storage tank containing up to 15% ethanol (E15)
- **Provides early detection** — Provides you with the earliest detection of phase separation available and continuous monitoring to your ATG
- **Offers simple replacement** — The Phase Separation Float Kits replace the traditional gasoline float kits

4" PHASE-TWO SEPARATION SPECIFICATIONS

Fuel Compatibility	All gasoline blends up to E15
Probe Compatibility	MAG Plus Probes (Series 8463); Not compatible with Standard MAG Probes
Console Compatibility	TLS-450PLUS, TLS4 Series, and legacy consoles
Console Programming	Device / Probe / Float / 4" Phase Separation
Minimum Fuel Detection	7.0" (17.78cm)
Minimum Water Detection	0.38" (0.97cm)
Accuracy in Water	±0.10" (±0.25cm)
Accuracy in Phase Separation	±0.75" (±1.91cm)
Minimum Tank Opening	4" (10.16cm)
Software Version	Version 5.B or higher for TLS-450PLUS/ TLS4 Series; version 30.B or higher for TLS-350/TLS-300
Operating Temperature	5°F (-15°C) to 113°F (45°C)
Storage Temperature	-40°F (-40°C) to 122°F (50°C)

2" PHASE SEPARATION SPECIFICATIONS

Fuel Compatibility	All gasoline blends up to E15
Probe Compatibility	MAG Plus Probes (Series 8463); Not compatible with Standard MAG Probes
Console Compatibility	TLS-450PLUS and TLS4 Series
Console Programming	Device / Probe / Float / 2" Phase Separation
Minimum Fuel Detection	7.0" (17.78cm)
Minimum Water Detection	0.86" (2.18cm)
Accuracy in Water	±0.50" (±1.27cm)
Accuracy in Phase Separation	±0.75" (±1.91cm)
Minimum Tank Opening	2" (5.08cm)
Software Version	Version 9.W or higher for TLS-450PLUS/ TLS4 Series
Operating Temperature	5°F (-15°C) to 113°F (45°C)
Storage Temperature	-40°F (-40°C) to 122°F (50°C)

