

## INTRODUCTION TO PHASE SEPARATION AND DENSITY MEASUREMENT

Why install density measurements and phase separation detection on biofuel tanks?

### WHAT IS PHASE SEPARATION?

Phase separation occurs when water enters a tank that contains an ethanol/gasoline blended fuel. Ethanol absorbs water, so when gasoline becomes saturated a layer of ethanol and water, known as phase separation, can form. Depending on the fuel blend, up to 100% of the ethanol can be pulled out of the gasoline and settle with the water at the bottom of the tank. Since the density of this layer is less than water, typical water floats may not detect its presence.

### WHY IS IT A PROBLEM?

If the water/ethanol phase is not discovered in time, phase separated product may be pumped into a customer's vehicle instead of fuel. This can cause engine stalling and result in costly damage to customer vehicles.

Phase separation will also affect the octane rating and other properties of the blended fuel, which can result in the station needing to dispose of the entire load at a considerable expense. The corrosive properties of phase separation can damage piping and dispensing equipment, adding even more repair costs for the station owner. Significant environmental harm can occur as a result of failing piping and components.

### WHAT CAN I DO ABOUT IT?

Weather conditions, temperature, water and ethanol content can all affect the process of separation. It is hard to track these conditions, so having the right tools can prevent any negative results. The INCON™ brand Water and Phase Separation Float Kit from Franklin Fueling Systems provides a reliable way to accurately detect the presence of water or phase separated fuel with a single float. Early detection allows the station owner to potentially save several thousands of dollars in repair and fuel replacement costs.

The Water and Phase Separation Float Kit is easy to install and easy to retrofit at existing installations, compatible with the Franklin Fueling Systems T5 series and TS-550 evo fuel management systems as well as the Colibri automatic tank gauge. With this easy upgrade, detection of water and phase separation is highly improved, reducing risk for station owners, customers and the environment.

### WHAT IS DENSITY MEASUREMENT?

Density measurement is based on the distance between the calibrated product and density floats. As the density of the fuel changes, the gap between the floats will increase or decrease in proportion to the change. The tank gauge receives this information from the probe and uses it to calculate and display the current density of the fuel.

### WHY IS IT IMPORTANT?

Density Measurement can be useful to help a site determine the quality of the product deliveries that they receive and whether or not they've been altered in any way. Thieves may try to outsmart a fuel management system by adding a replacement fuel or adulterate as they remove the good fuel. Density floats monitor the quality of fuel to ensure that volume, density and mass remain the same, so you know that your fuel has not been tampered with.

INCON™ brand Density Measurement Float Kits from Franklin Fueling Systems are compatible with the Franklin Fueling Systems T5 series and TS-550 evo fuel management systems as well as the Colibri automatic tank gauge. Programmable high and low density alarm points allow the user to determine the range of acceptable density fluctuations. The same TSP-LL2 magnetostrictive probe that provides inventory management and leak detection capabilities can also supply product density and mass without the addition of extra probes or sensors.



Phase Separation Float Kit and Probe



Density Float Kit and Probe

## JASON GRANT (Associate Product Manager, Fuel Management Systems)

As a member of the Franklin Fueling Systems team for 10+ years, I have developed an in-depth knowledge of the Fuel Management Systems product line. I have 20+ years of experience with the manufacture, installation, maintenance, and support of electronic equipment across several industries. In my current role as Associate Product Manager, Fuel Management System I will be focused on supporting and growing the product line, as well as developing and introducing new and innovative products.



### Do you have a question for a Product Manager?

If you have a question for one of our product managers, please submit your question to [info@franklinfueling.com](mailto:info@franklinfueling.com).