White Paper /
e9 Pro Performance Metal Treatment

Four Years Later: Meters Still Running without Retreatment or Repair

REFINERY ELIMINATES COMPLAINTS, REDUCES COST AND IMPROVES PERFORMANCE

BY: *e9 Treatments, Inc.*
Todd Mathias, *President*
Brandon Dupnick, *Refinery Loss Control Manager*

The loading facility at this refinery distributes five different blends of fuel to trucks, 24 hours per day, 365 days per year. It distributes jet fuel, two different grades of diesel, and two different grades of gasoline.

In Mid-October, as winter approaches, the facility changes the bio diesel that it blends into the fuel from an animal-based bio-fuel to a plant-based land seed oil. This change, along with the lower temperatures in winter, deposits a film on the turbine meters the refinery uses to determine the precise volume of fuel loaded on to trucks for distribution.

About the Refinery

The refinery is one of 16 refineries and more than 5,000 retail venues owned by one of North America's largest independent refiners. Located in the Texas panhandle, this particular refinery employs over 450 employees and achieves a total throughput of approximately 200,000 barrels of fuel per day.

> *Per Dupnik, "The meters seem to be running excellent to be honest. Since the coating they have only minor shifts which I blame on the time of year. But looking at the yearly trends they are holding strong."*

The Challenge

The loading facility at the refinery distributes five different blends of fuel to trucks, 24 hours per day, 365 days per year. It distributes jet fuel, two different grades of diesel, and two different grades of gasoline. In Mid-October, as winter approaches, the facility changes the bio diesel that it blends into the fuel from an animal-based biofuel to a plant-based land seed oil. This change, along with the lower temperatures in winter, deposits a film on the turbine meters the refinery uses to determine the precise volume of fuel loaded on to trucks for distribution.

The presence of these deposits on the turbine meters significantly affects the meter factor, causing the facility inadvertently to "short" their fuel distribution. In turn, the delivery trucks "short" their deliveries to retail stores. The accumulated shortage can be as much as 1 to 2% per load. When the trucking companies discover these shortages, they request a correction to their billing. This reconciliation process requires the refinery to reprove and recalibrate the meters to ensure accurate fuel delivery measurements. Once staff confirm a shortage, billing is reconciled. In addition to the reconciliation, the cost of proving and recalibrating a single meter can be as high as $14,000.

Success with e9 Pro Performance

Loss Control Manager, Brandon Dupnik met with e9 Treatments personnel to discuss possible solutions. "We would normally expect a 1% or greater change in the meter factor over the winter," said Dupnik. "We would get complaints from drivers about shorting them on their loads. And would have to reprove the meters. If we found that we had shorted the drivers, we would have to credit them back. It was a terrible process and expense."

> *Meters were caked with a thick layer of film – diesel flow wouldn't cut it. Trucking companies complained they were getting shorted and were demanding reconciliation."*
> *—Brandon Dupnik, Refinery Loss Control Manager*

On December 18, the refinery put four, 3" Brooks' turbine meters through the proving process. One of the meters was brand new. Three where several years old. The refinery proved each meter in line and compared the measured meter factor to normal meter factors taken during summer conditions. Refinery personnel pulled each meter out of line and removed the meter components from the housings. Technicians removed the film deposits caused by the biofuel using a two-step process. First, they used a spray of brake cleaner and compressed air. Second, technicians repeated the cleaning processes using an off the shelf grease cutting agent. Each piece was hand dried.

Following cleaning, technicians treated the parts with e9 Pro Performance Metal Treatment. The treatment process took less than 5 minutes. Following treatment, technicians reassembled the treated meter components in the housings and reinstalled the meters into the original lines. Each meter was re-proved.

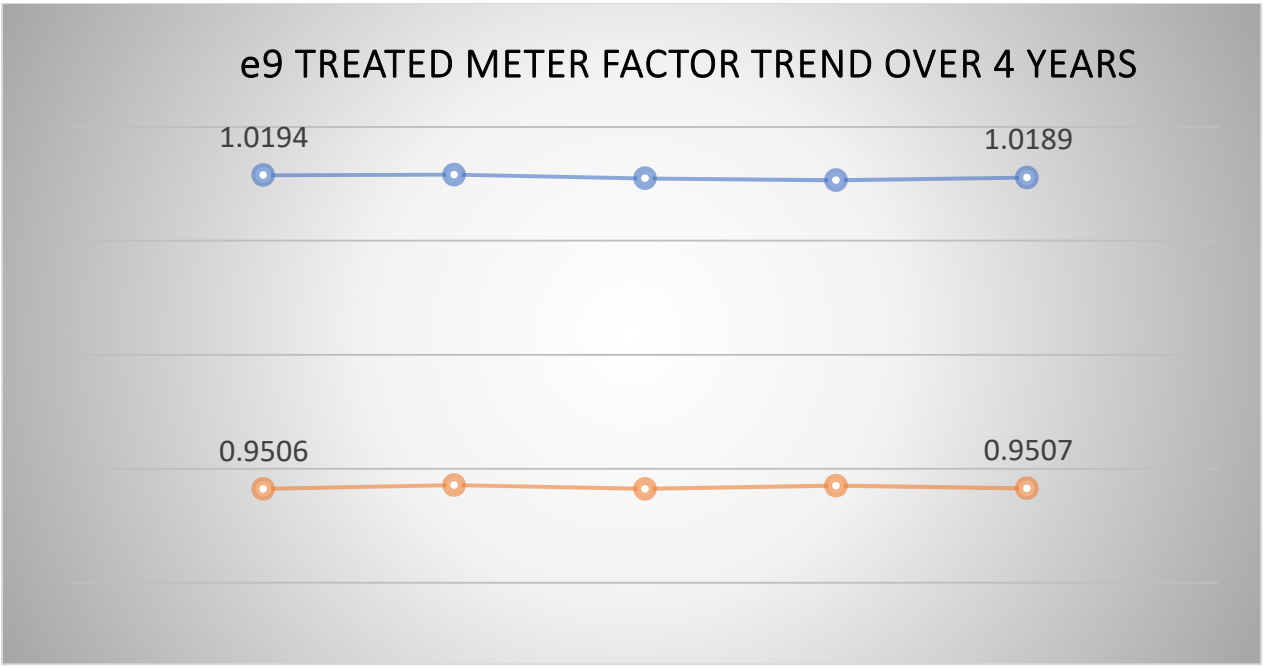
Approximately a month later, toward the end of January, the prover returned to the site to test the meters again. During the month in service, there were no complaints from truck haulers about under filling their tanks. All of the meters were still in compliance. The meters showed the very slightest decrease in the meter factor. Normally, under the coldest conditions of the year, the refinery would expect a decrease in the meter factor of 1% or greater. These meters showed a decrease of less than 0.15%

The refinery brought the prover back at the end of March. By now, the weather was beginning to warm. Still there were no complaints about under filling tanks. The meters where again run through the prover.

This time, the meter factor increased across all of the treated meters--showing that the meters where ***actually running in a better state after the winter*** than when they were in December.

Five Years Later

Five years later, e9 Treatments' personnel inquired about the meters, anticipating they would need retreatment. But, that wasn't the case. The meters were still running fine without the need for maintenance.



The Results: No Complaints, Fewer Expensive Provers

With hundreds of trucks coming through the refinery's loading station every day, any disruption to the flow of traffic for maintenance affects the whole supply chain. More importantly, when customers complain about shortages and file claims due to declining confidence in the flow measurement, the entire refinery's brand suffers.

The loading station underwent an entire winter season without a single complaint due to faulty meter readings. e9 treated turbine meters not only managed any build up from the conversion of biodiesel material, the e9 treated meters actually maintained better than expected performance. The loading station returned to a traditional schedule of proving once per quarter. When internal provers are not available, this is a savings of $14,000 per month in outside proving cost.

> *"We believe the e9 solution solved a problem that we have had for several years. We intend to use e9 in other applications and at other facilities to help us with similar problems," said Dupnik.*

Contact e9Treatments at InsideSales@e9Treatments.com or 210-542-1051 to learn how we can help extend equipment performance and reduce maintenance in your operation.

159 Enterprise Parkway
Boerne, Texas 78006
www.e9Treatments.com

About e9 Treatments

*e9 Treatments (**www.e9Treatments.com**) is a leader in providing cutting-edge solutions to material anti-fouling in harsh upstream and midstream oil & gas environments. With well over 100,000 devices treated, we offer a history of success treating metals to repel organic and inorganic materials in rugged environments.*