

Can Continuous Wet-stock Inventory Reconciliation (CR) Help to Tame the Fuel Profitability Monster?

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In today's retail fuel industry, numerous factors can impact efficiency and profitability. Concerns such as theft, delivery shortages, inaccurate meter calibration, equipment tampering, and equipment failure are all legitimate worries for operators. Most fuel retailers prefer to be promptly informed about these issues rather than discovering them at the end of the day, week, or month. However, many lack the necessary technology or accounting processes to receive timely alerts regarding loss-related issues, if they receive any alerts at all. Consequently, numerous fuel retailers resign themselves to the belief that "loss is inevitable" in the fuel business, resulting in significant annual write-offs due to "fuel shrinkage."

Fortunately, current hardware and software solutions, complemented by expert third-party assistance, offer avenues to attain a more accurate and comprehensive understanding of retail fuel operations. Modern monitoring solutions can scrutinize even the smallest fluctuations in inventory, unusual driver behavior, dispenser inactivity, and other patterns. These insights are invaluable as they can help identify compliance issues and mitigate profit reductions. At its most basic level, in an ideal scenario, there exists an equilibrium between the fuel delivered to a fuel station's tanks, the amount dispensed, and

what remains in the tanks by day's end. Any deviations from this balance typically yield adverse effects on the financial outcome. Regrettably, numerous risks are constantly present in the operations of a functioning convenience store or travel center. For fuel operators managing dozens or even hundreds of locations, the cumulative financial impact can swiftly reach into thousands or even millions of dollars. Each risk poses the potential for undiscovered or challenging-to-detect financial losses for the business.

The potential sources of loss on an Underground Storage Tank (UST) can be numerous. A few of the more-common sources include:

Leaks or Breaches: Corrosion, mechanical damage, or faulty components can lead to leaks or breaches in the tank walls or fittings.

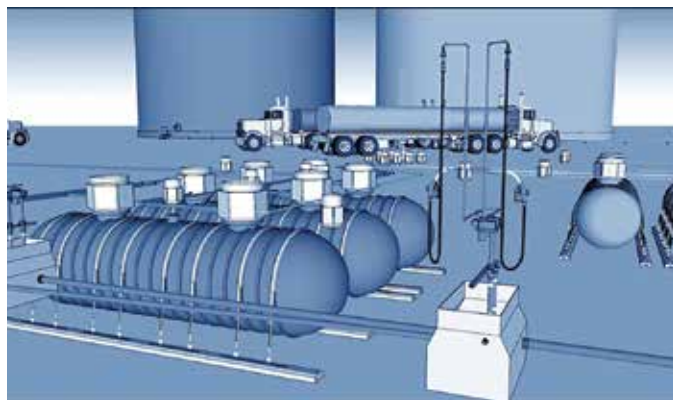
Fuel Delivery Shortages: Fuel operators rely on tank monitors or ATGs to track fuel deliveries, but these readings often overlook crucial factors such as fuel sold during the drop, temperature differentials affecting volume, transporter errors, terrain slopes hindering complete emptying, metering variances, ▶

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and potential theft in route from terminal to location. A single instance of a 500 gallon delivery shortage can cost an operator \$1500 in today's dollars.

Theft Concerns: Conventional accounting systems may detect shortages or theft, but often after days or weeks. Theft can happen at dispensers, during delivery, or directly from the USTs. Identifying the source of loss becomes challenging, leading to costly and time-consuming investigations. Creative thieves have now learned how to manipulate “meter pulsars” in fuel dispensers or obtain override devices to place dispensers in stand-alone or maintenance modes. Losses can be enormous and repetitive if not caught quickly. The theft of 300 gallons in a single instance can cost a retailer over \$900 in losses. Unfortunately, these thefts become repetitive at the operators with no system in place to catch such abuse.

Meter Drift: Dispensing points for each grade require accurate metering devices, typically within 5 cubic inches (98%+ accuracy) to avoid regulatory fines and stop orders. Deviations outside this range, particularly if a dispenser is withholding product, can result in customer shortages and legal consequences. Allowable ranges can be from zero to 5 cubic inches to the positive side for your customers (giving away product). A standard measurement of the volume of fuel is 252 cubic inches per gallon. 5 cubic inches is equivalent to 2% of volume loss. Dispenser meters can often exceed this range, resulting in additional fines or “red tagging” of dispensers from government inspection agencies. A dispenser meter that suffers a meter “blowout” can quickly over-dispense enormous amounts of fuel product for days or months between calibration checks. Some of the more savvy operators feel confident in their annual calibration programs, but a meter discrepancy can begin the day after such inspections and go on until the next check, costing thousands in lost profits. Continuous reconciliation can detect variances in a fuel system, isolate to certain dispensers, and diagnose when meter drift appears to be excessive.



Overfilling: Filling a tank beyond its capacity can cause spillage, which leads to loss of fuel and potential environmental contamination.

Tank Corrosion: Corrosive elements in the soil or water can cause the tank material to degrade over time, leading to leaks or structural failure.

Improper Installation: Poor installation practices can result in inadequate seals, connections, or structural integrity, leading to potential leaks or failures.

Equipment Failure: Malfunctioning components such as valves, gauges, or monitoring systems can lead to loss if not promptly detected and repaired.

Environmental Factors: Natural events such as floods, earthquakes, or ground settlement can damage tanks or associated piping, leading to leaks or failures.

Incorrect tank charting or tank monitor programming: While the impact can be “paper-related,” improper tank charting, tilt, or tank monitor configurations can lead to large daily variances affecting estimated delivery amounts, supply needs, inventory-tracking variances, profit write-offs, and more. These variances can also desensitize accounting departments, allowing for the acceptance of larger and larger discrepancies before prompting investigation. With traditional inventory accounting methods, unless the fuel is bubbling out of the ground, the detection of a fuel loss can be weeks or months after the event occurs. Often, when the loss is suspected, no specific source of the loss is indicated, leading to investigative time and costly testing to diagnose the cause, if one truly existed.

Investigating and diagnosing the true cause of the loss can consume large amounts of accounting, maintenance, and compliance staff time. Examples of reactive testing can include on-site tank and line leak testing, invasive tank inspections, shutdown of the fuel system for static testing, probe pulls and replacement, and more. Not to mention the regulatory paperwork time involved.

Often, the equipment can be found to be operating as required with no source of the suspected loss discovered. After so many similar events, accounting departments may be instructed to set a limit on shortages to bring to the attention of the maintenance or environmental departments. This can lead to those departments overlooking potentially serious events that could lead to environmental damage or serious financial loss. ►

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Continuous reconciliation (CR) has the capability to catch many of the losses noted above. While no leak or loss can be prevented, learning of the loss, and taking corrective action can dramatically lower the ultimate cost. CR can be especially ideal for any fuel operator wanting to remove the variances and losses from their wet-stock inventory management program. CR can provide an optimal solution for older and/or higher volume sites equipped with automatic tank gauging systems (ATG) and advanced dispenser pump controllers. CR can also provide the operator with both tank and line leak detection and help to ensure their system is sound and above detectable loss limits.

With CR in place, after the completion of every fueling transaction, simultaneous observations of elapsed sales and associated tank system product heights and temperatures are recorded. Continuous reconciliation can identify operational problems as they occur with pinpoint accuracy. More-robust CR solutions can be certified to provide the EPA leak detection monitoring for complex manifold tank systems up to 100,000 gallons in capacity and 2.7 million gallons of monthly throughput. Often, many of the automatic tank gauges in use today for tank and pipe leak detection are certified only up to 10% of this capacity. CR solution providers can also provide expert analyst monitoring to fuel operators to alert them to fuel system anomalies and assist with troubleshooting. Expert assistance can help to minimize the impact of fuel losses, no matter the source, as well as reduce downtime when investigations and repairs take place.

In today's modern fuel stations, they are often equipped with high-tech sensors and interstitial monitoring on tanks and lines. Keep in mind that their primary purpose is to assist with prompt-leak detection, not necessarily other forms of loss detection. Catastrophic leaks should be detected if the equipment remains fully operational and proactive action is taken when alarms take place. However, sensors and interstitial monitoring will not alert the operator to the most-common sources of fuel profitability loss around delivery shortages, pulsar manipulation, meter drift, and other anomalies. Sensor and sump monitoring are extremely valuable to detect fuel system equipment failure, but not the other costly sources of fuel loss.

Often, fuel retailers rely upon back-office accounting systems, Statistical Inventory Reconciliation (SIR), or 1%+ 130-gallon reporting to curb their fuel-related inventory losses. Many operators feel that having these systems in place can minimize the losses that occur. However, a site selling 100,000 gallons a month can have an allowable loss of 1,130 gallons of inventory

and still meet the 1% +130-gallon loss threshold for monthly reporting.

While large losses can be detected using traditional accounting, SIR, and 1%+130 reporting, the source of the loss may remain unknown, leading to an avalanche of possible paths to research and costly reactions, including 3rd-party tank and line leak testing, meter calibrations, dispenser replacements, and repair downtime at the fueling location.

In summary, the many sources of fuel loss can quickly drain your profits and lead to time-consuming investigation costs. This can distract company personnel and lessen the time they can address other serious issues. With continuous reconciliation in place, a fuel operator can quickly lower losses and take more profitability to the bottom line. The hard and soft benefits of continuous reconciliation for both older and new fuel locations can well exceed the ROI on many other services. ★



Tony Caputo has worked in the fuel, convenience, and grocery industry for over thirty years, holding a variety of corporate and division leadership positions at The Kroger Co., Kroger SPG & Convenience Group, and EG America. He has extensive background and experience in marketing, merchandising, risk management, fuel management, environmental compliance, and operations. In prior roles, Tony was pivotal in the startup and implementation of The Kroger Co.'s 1,600 location fuel program, including the introduction of the Shell affiliate program and leadership of their national fuel merchandising and on-site marketing programs. Transitioning to EG America, Tony oversaw EG's US corporate risk and environmental programs for 1,100 convenience locations.

Tony joined the Warren Rogers' team in 2020 and supports the growth of Warren Rogers and lending insight into the continued development of their advanced wet-stock management tools. Tony enjoys helping fuel operators better understand ways to improve their overall efficiency in the forecourt and assist corporate staff in streamlining their compliance, maintenance, and supply roles.

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