



**QualiTrax**<sup>TM</sup>

Rapid Fuel Quality Testing

**Authentix**<sup>®</sup>  
The Authority in Authentication



## NATIONAL FUEL SUPPLY CHAIN INTEGRITY AT RISK

There are many risk factors that can affect the quality of fuel as it moves through the supply chain. Whether intentional or accidental, poor quality or adulterated fuel can have severe adverse impacts on revenue, regulatory compliance, the environment and consumer trust.

Because the fuel supply chain is so complex, it is difficult to identify fuel quality and authenticity problems in order to isolate and reduce the levels of substandard fuels, creating an increasing need to frequently monitor the quality of domestic or imported fuel entering the market.

Traditional fuel quality monitoring methods entail the need to repeatedly collect fuel samples at various points in the supply chain and then transport the samples to certified laboratories for ASTM testing. This process is costly and laborious and often takes several days to confirm results.

A number of 'off the shelf' spectrometers offered on the market can provide an indication or idea of fuel quality but do not provide the needed accuracy or precision that can replace laboratory results. However, Authentix has developed new and novel methodologies utilizing machine learning (ML) and artificial intelligence (AI) along with field-based testing devices, greatly reducing time and cost associated with lab-based testing requirements.

## TRANSFORMING FUEL QUALITY

QualiTrax™ is a proprietary field-based fuel quality monitoring solution available to any fuel company or government agency to increase the speed of commerce and decision-making by reducing the time and cost of ASTM equivalent fuel quality testing and inspection.

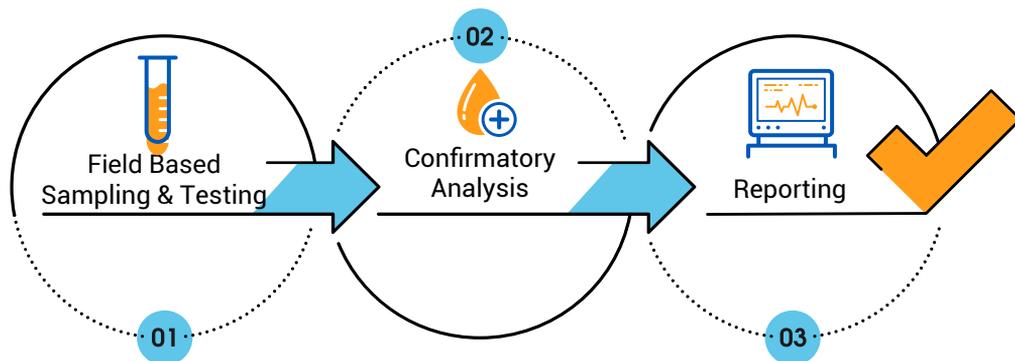
The QualiTrax solution uses mobile, field-based equipment and sophisticated chemometric machine learning to provide near instant quality testing and a more rapid, efficient and affordable alternative to traditional testing programs.

Authentix has long been a global leader in advanced portable fuel analysis tools for many different applications and over 25 years of successfully deploying and continuously supporting programs that utilize advanced compositional modeling. We provide unrivaled service excellence for clients to maximize return on investment, quickly capture actionable intelligence, and remaining agile to changing market demands. QualiTrax is simple to deploy and integrates easily into existing workflows.

We use a unique approach to field quality testing based on a progressive, growing library of sampling to form ASTM equivalent quality measurements for any region and fuel supply chain. Because of the richness of the large and growing database of compositional samples stored and measured, the accuracy and reliability of field-based results can replace the majority of lab based samples required.

## QUALITRAX™ WORKFLOW

The QualiTrax™ solution allows for comprehensive, end-to-end fuel quality control throughout the supply chain through deployment of the following process.

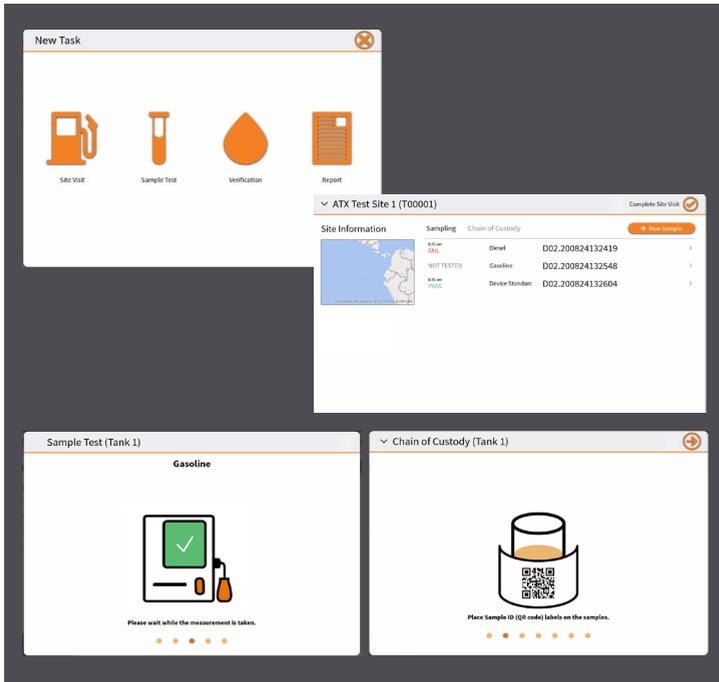


### SAMPLING & TESTING

Fuel samples can be taken from virtually any field location including import vessels, refineries, barges, terminals, depots and retail sites and then tested using the portable Authentix Fuel Analyzer LQX 1000.

We can also set custom standards for detection and determination if a sample requires follow-up testing, which can include formal ASTM confirmatory testing in a laboratory. This process greatly reduces the number of samples needing laboratory testing.

Trained sampling teams utilize the Authentix Field Sample Manager, a mobile forms and data collection software, to capture supplementary information such as sample ID, fuel type and price, station name, brand owner, GPS location and time and date of sampling event.



Authentix Field Sample Manager application encrypts and securely transmits all data to AXIS®.

## ANALYSIS

The LQX 1000 is our state of the art screening tool used to identify whether fuel is in or out of specification requirements, limiting the need for additional ASTM laboratory analysis. If a sample passes (determined to be in specification), the test is recorded as normal and no further action is taken. Those samples identified as out of specification, are transported to a centralized laboratory for further ASTM tests. Additionally, the LQX 1000 includes the capability to run specific tests that meet ASTM standards for certain parameters – providing confirmatory results right in the field.

## REPORTING

The data and results obtained from testing and analysis using the Field Sample Manager are then integrated into AXIS®, our cloud-based information system, with near real time updates to maintain and manage without delay. Our ability to capture variable data points from multiple sources enables a holistic, single window for complete supply chain visibility and actionable insights.



AXIS® configurable reports and dashboards enable program review, revision and optimization.



## QUALITRAX™ CAN ANSWER MANY FREQUENT QUESTIONS RELATED TO FUEL QUALITY SUCH AS:



### Compositional Matching

- Has this captive material's relational composition changed at different measurement locations in the same supply chain?
- Does the material's profile match a known or predicted profile based on the product type and supply source?



### Material Identification

- Is the sample unleaded low or high octane gasoline?
- Is the sample diesel?
- Is the sample a fuel oil?
- Is the sample aviation fuel?



### Adulteration

- Qualitative - Is this gasoline adulterated?
- Descriptive - What adulterant was added?
- Quantitative - What level or % quantity does the adulterant represent of the total sample?



### Property Prediction

- What is the octane rating of this gasoline?
- Does this diesel sample's sulphur content exceed 15%?
- Does the fuel at this retail location match the proper terminal location source?

### The QualiTrax™ Advantage over traditional fuel quality testing:

- Faster
- More affordable
- More efficient
- Rapid deployment
- Cloud-based reporting platform

## ABOUT AUTHENTIX

As the authority in authentication solutions, Authentix thrives in supply chain complexity. Authentix provides advanced authentication solutions for governments, central banks and commercial companies, ensuring local economies grow, banknote security remains intact and commercial products have robust market opportunities. The Authentix partnership approach and proven sector expertise inspires proactive innovation, helping customers mitigate risks to promote revenue growth and gain competitive advantage. Headquartered in Addison, Texas USA, Authentix, Inc. has offices in North America, Europe, Middle East, and Africa serving clients worldwide.

**We help you thrive in  
complex supply chains.**

### **CORPORATE HEADQUARTERS**

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