

## Optical Measurement for Refined Fuel Product Properties

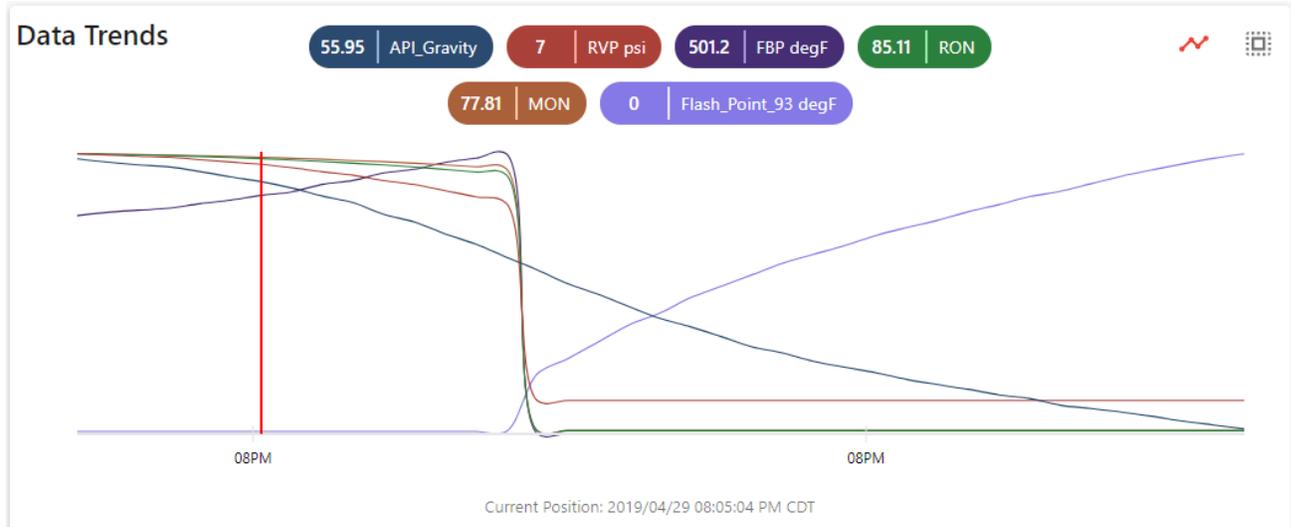


Figure 1 – Refined fuel pipeline transition between gasoline and diesel fuel. A single measurement point provides API Gravity, RVP, FBP, RON, MON and Flash Point every fifteen seconds. The JP3 Verax provided over sixty measurements and allowed the operator to make the most effective batch cut possible.

### Transmix and Downgrade Losses are Avoidable

Transmix and product downgrades are a major source of losses and costs to shippers, pipeline operators, and terminals. Transmix is produced when the pipeline batch interface consists of two products that do not allow any cross contamination between “on-spec” products. A common example is the interface between diesel fuel and gasoline. A product downgrade occurs when the interface is between common products with differing specifications which are sold at different prices. In the case of transmix, the entire interface must be captured in a transmix tank, transported to a reprocessing facility and reprocessed, all at considerable expense and loss of pipeline throughput. In the case of downgrades, the interface is downgraded to the lower spec product and sold at the lower price. To minimize these losses, operators must tightly manage batch sizes, batch planning, batch sequencing, and product delivery scheduling. All of this comes at a cost to flexibility and efficient operation.

Historical batch cut procedures were largely driven by the lack of available technology to provide real-time, product specific measurement of the actual interface within the pipeline. Batch timing, manual sampling, and off-line analysis have all proven to be ineffective in providing operations the data needed to minimize losses through optimal batch cuts. In order to maintain

product quality with no possibility for off-spec products, operations has accepted the practice of “over protecting” product quality by making batch cuts much earlier or much later than required to meet product and pipeline specifications. Companies have reported losses due to transmix costs as high as \$50,000 per interface. It is not uncommon to reduce transmix by 25-75% using better measurement technology.

### JP3 Offers the Solution

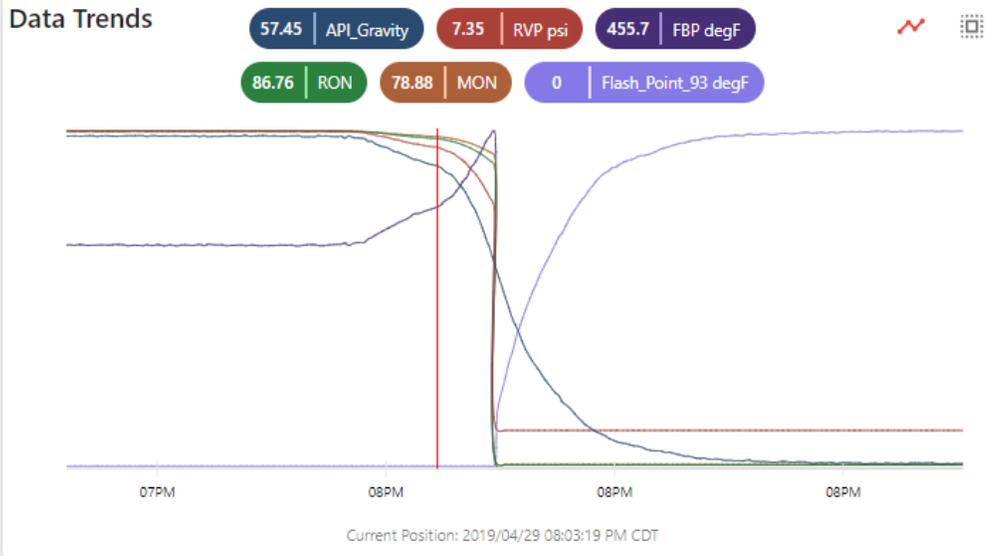
JP3 NIR measurement at the pipe and in real-time allows the use of product specific property measurements to significantly reduce the cost of batch interface management. JP3 solutions measure key properties of regular gasoline, premium gasoline, diesel fuels, jet fuel, and common pipeline diluents. Common measurements include: Vapor Pressure, Flash Point, RON, MON, API Gravity, and Final Boiling Point. Other compositionally driven measurements can be easily included. All measurements are correlated to the appropriate GPA, ASTM or API standard methods. Measurements are provided every fifteen seconds and can be easily integrated with local systems via ethernet connection. In addition, the JP3 Viper software interface provides additional information which can be extremely useful to operations, including a live process map, historical trending, and raw spectral information.

Results Table

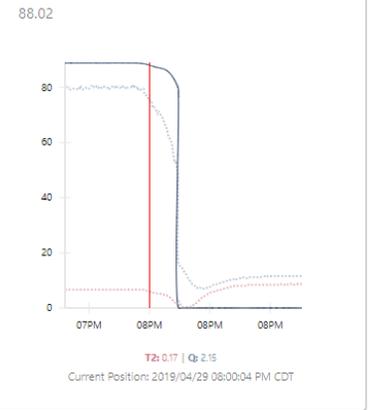
API_Gravity	57.45
RVP	7.35 psi
FBP	455.7 degF
RON	86.76
MON	78.88
Flash_Point_93	0 degF

Last Updated: 2019/04/30 12:19:26 PM CDT

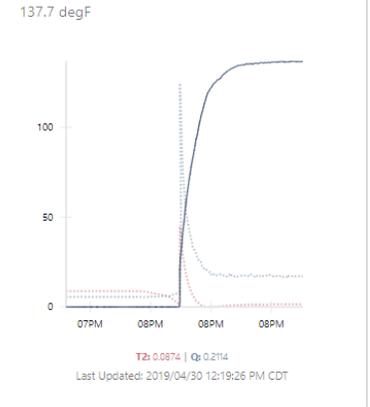
Data Trends



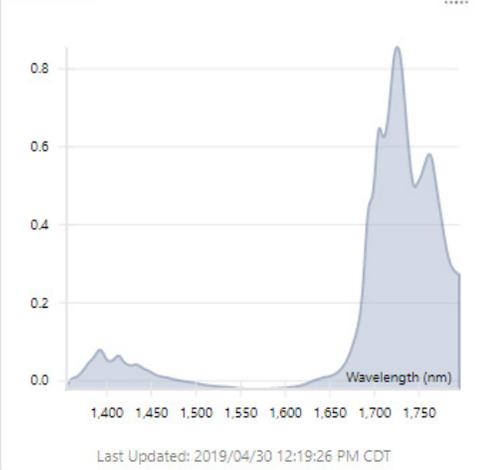
RON



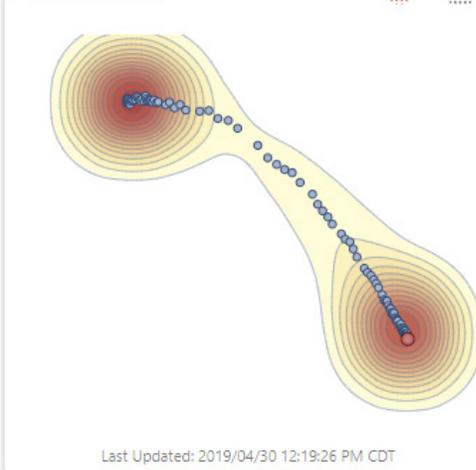
Flash\_Point\_93



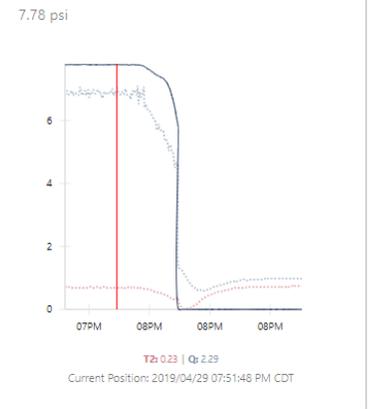
Spectra



Process Map



RVP



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