



## FluiBlend™ Crude Oil Blending – Technical Data Sheet

FluiBlend™ uses a range of FluiMix™ Products to provide a blending system that will outperform traditional tank blending, ratio or trim control technology to deliver significant ROI. Typical payback periods are significantly less than 6 months based on blending a 50/50 at 200,000 bpd from API 34 and API 22 crude.

**Improved Blending Accuracy** – The FluiBlend™ technology ensures that the critical blend measurement whether sulfur, gravity or viscosity is as accurate as possible. The improvement in accuracy is made possible by a number of design features of the FluiBlend™.

**FluiDense™ - Blending on API Gravity.** All Crude Oils have their own unique density/temperature relationship which will by definition vary from blend to blend and as feed stocks change. Traditional blenders use temperature compensation techniques that rely on standard calibration curves based on crude oils that are completely different to the blend being processed. These pre-calibrated curves will therefore introduce significant error, particularly if the feed stock sources vary from blend to blend. FluiDense™ measures density at multiple temperatures developing the true density/temperature relationship for the actual blend being processed at the time. In effect, FluiDense™ automatically self-recalibrates in real time so that any temperature compensation effects are minimized. FluiBlend™ will effectively control the gravity at the desired reference temperature.

**FluiMix - Flow Conditioning** - FluiMix™ ensures that the flow conditioning meets API 8.2 and ISO 3171 sampling standards. This ensures that any measurement is made in fully representative flow no matter what the flow rate of the blend. Any water that is not captured in the measurement can add error up to 0.4%. FluiMix™ is guaranteed to be within 0.025% of the true water content.

**FluiSulf™ - Blending on Sulfur** – Blending on sulfur to optimize price performance can be significantly improved using FluiSulf™ measurement technology. All sulfur measurements rely on accurate density and minimal trace water content. FluiSulf™ not only uses FluiDense to ensure density accuracy, but also includes bespoke technology that reduces the effect of trace water content on any sulfur measurement equipment. Impressive ROI and minimum payback periods of 3 months<sup>1</sup> can be generated by improved blending accuracy.

**FluiVisc™ - Blending on Viscosity** – Traditional viscosity blenders rely on inaccurate temperature correlations and viscosity measurement accuracy that is at best +/- 1% of full-scan. Both of these issues create significant error. FluiVisc™ will control the viscosity of the blend within +/-1% of the desired viscosity at the reference temperature minimizing the potential for errors from poor temperature compensation.

### Optimising Crude Production

Optimization of Crude at Bottom of Specification with Occidental Production and P52	API Density @ 15 C	Occidental	P52	Blend Cost
Top End of Specification	34.75	2.50%	97.50%	\$99.88
Bottom End of Specification	33.25	17.50%	82.50%	\$99.13
Profit Improvement Blending Bottom of Specification				\$0.75

**Blending 200,000 BPD**

**Savings at least @ \$0.75/Barrel**

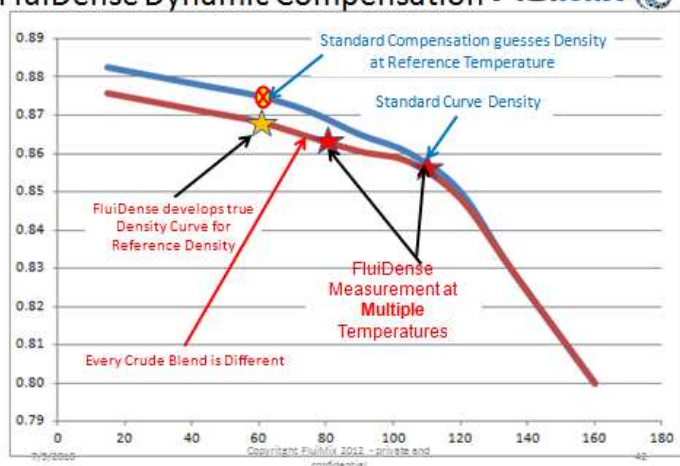
**More than 30 M USD per annum**

7/5/2010

Copyright FluiMix 2010 - private and confidential

38

### FluiDense Dynamic Compensation

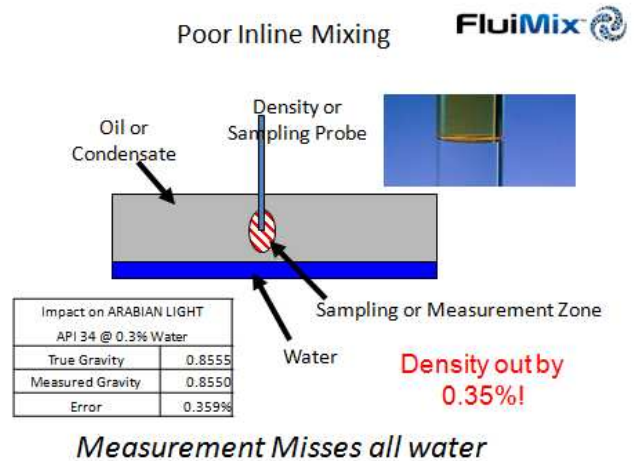


<sup>1</sup> Based on Blending Sweet/Sour Crude – 14% Differential, 200,000 Barrel Batches, Crude @ 70 USD/Barrel

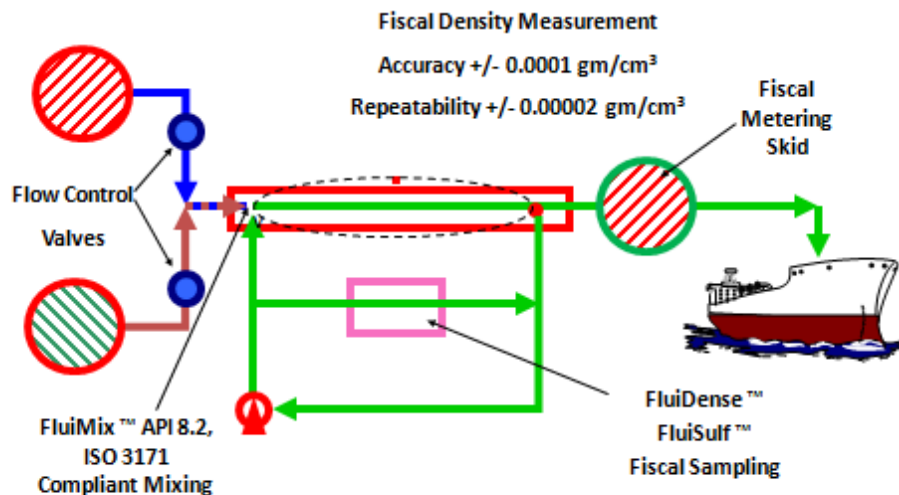
FluiVisc™ also measures viscosity at multiple temperatures automatically self-recalibrating in real time so that if any finer temperature compensation is required, it reflects the blend being processed. In Bunker Blending this can produce savings<sup>2</sup> of \$15 to \$20 per tonne in reduced give away. Typical ROI can be significant with payback periods calculated to be within months.

### Other Operational Benefits are:

- FluiBlend™ systems do not require a blend tank and can release valuable Storage Capacity or reduce capital expenditure significantly (typically \$5 – 10 M per blend tank).
- FluiBlend™ systems can be retrofitted to an existing trim control system to significantly improve performance.
- FluiBlend™ systems can be fitted so that a blending facility can blend on sulfur, or gravity or viscosity and can be programmed to blend on a combination of these parameters.
- FluiBlend™ will ensure that the blend is always within specification



## FluiMix™ for Crude Oil Blending



7/5/2010

copyright FluiMix Ltd 2012 - private and confidential

26

<sup>2</sup> Based on Crude @ 70 USD/Barrel, a blend rate of 1 M Barrels per year of Bunker Fuel