JISKOOT™ QUALITY SYSTEMS

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In-line blending: Enhance your competitiveness

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Increasing legislation and pressure on bunker suppliers to improve quality and be responsible for fuel deliveries is encouraging them to adopt advanced in-line blending equipment. The blenders allow them to meet the tighter regulations; give their customers a guarantee of quality and improve their margins. Jiskoot™ Quality Systems part of Cameron, a major international suppler of blending systems, has seen significant demand growth for blenders and many forward thinking and entrepreneurial suppliers see this as an opportunity to gain commercial advantage and are streamlining their operations to flexibly deliver high quality, certified products.

Correctly designed blenders operated within the limits of fuel compatibility are extremely successful and deliver a significant return on investment for the bunker supplier. In future companies who adopt this technology will become the dominant players in the bunkering market. They will have operations that can more quickly deliver a comprehensive range of products using a wider variety of feedstock than their competitors. Their bunkers will be of a guaranteed quality, will fully comply with the regulations and be produced at the highest margin. In addition, their infrastructure will be optimally structured to meet future market demands. Whilst this may seem to be obvious to those already using this business model, the challenge moving forward is how bunker suppliers can use technology to achieve this competitive position.

The old problems

In-line blending has been around for years in various guises but the older technology never delivered its promise because traditional systems did not accurately measure or control either the volume or the quality of the bunkers at reference conditions and therefore could NEVER produce an accurate blend. Traditionally (10-20+ years ago) in-line blenders were mechanical devices using a single pressure balanced three-way valve to control the component ratio. This technology was developed over 30 years ago and, whilst it was advanced in its day, has a number of shortfalls when deployed to meet the needs of modern bunker operations.

Firstly, this type of blender normally only operates across a small flow range. This limits the flow rates at which a supplier can deliver fuel, and therefore the efficiency of their operation. When operated outside these limits significant errors can occur causing either problems with the quality of the blended product or introducing a significant pressure drop that limits loading rates. This type of blending technology also has significant (2+%) measurement errors at blending ratios of 90:10 and above, exactly where most bunkers are blended. Another major shortfall is that as the blenders achieve ratio control using the pressure differential through the three-way valve. This makes them particularly sensitive to the changes in line pressure, density, viscosity and feedstock quality, which often occur in bunker feedstock lines. In the past these factors have resulted in poor blend accuracy, an increased risk of disputes, and a mistrust of blenders.

The new solutions

Over the last 10 years, advanced control in-line blending technology has been proven to flexibly deliver products, on specification at the lowest cost and is 'laying to rest' many of the fears and doubts caused by older blending technologies that make people nervous about investing in blending technology.

Viscosity trim in-line blender

This can be achieved with a significant reduction in operating costs and a simultaneously auditable guarantee of quality. Advanced blender control systems in conjunction with developments in mixing, analysis (viscosity, density and sulphur) and improved expertise in the integration of measurement and control equipment have enabled a quantum leap in the application of in-line technology for bunker blending.

Today's in-line blenders use a closed loop control design philosophy where all streams of the blender are continuously measured and controlled throughout the blending process. Because they use dynamic control, they do not have the limitations of mechanical blenders. Control can be maintained across a wide range of pressure, viscosity and flow rates giving bunker suppliers the flexibility to deliver at a wide range of rates. The low pressure-drop through the blender ensures product can be delivered at maximum rates when a receiving vessel allows. The control system uses proven fast response control algorithms to ensure the blended product is continually 'on-spec' through-out the whole batch, rather than just at the end (as is the case with older proportional-only type control systems). Blenders feature alarms and 'cutback' functions to maintain the product on specification even in the event of product starvation.

Fuel certification can be provided by the blender control system. The only parameter of interest for a Bunker Delivery Note (BDN) that cannot be accurately calculated (provided feedstock is compatible) based on the ratio of the feedstock is the viscosity and this is a key measurement and control parameter for an advanced control blender. Each feedstock BDN/certificate is used (in real-time) by the blender to both calculate and/or limit key parameters (such as sulphur) to ensure the quality of the blended product.

This data is used by the blender control system to produce a BDN for the batch once complete.

Modern in-line blenders have an accuracy of better than 0.25% and can cost effectively use the new generation of on-line viscosity measurement devices to provide a feedback control signal. This type of control system, which has been made available by the lowering cost of measurement and control technology can now be cost effectively used at terminals, jetties or on board barges. Bunker suppliers can now blend fuels (assuming fuel compatibility) in real-time using a live viscosity measurement to continually trim the blend to a target viscosity at a reference temperature with a high degree of accuracy. This can be a totally automated operation, performed in direct response to any changes that occur in feedstock quality from effects such as tank layering. The control system can include limits and alarms to notify operators of upset conditions and blenders can be totally self-supervisory producing all billing and documentation at the end of the batch to validate delivery.

An advanced control in-line blender must be a key part of a bunker supplier's business strategy to ensure product quality and reduce blending costs. It will provide significant savings by reducing the amount of gasoil used in blends whilst giving a guarantee of batch quality supported by a physical sample and a bill of lading from the blender control system. In-line blending should be an integral part of a bunker supplier's investment to improve profitability, product quality and to comply with current and future legislation and standards. It should go hand in hand with improved sampling methodology and analysis.

What is clear is that the 'ghost' of old, traditional, poorly performing in-line blenders (both by design and installation) can now be put to rest PROVIDED sufficient care is taken to engage with the manufacturer of the blending system to understand the REAL VALUE and RETURN ON INVESTMENT that an advanced control in-line blender can deliver for bunkering operations.

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