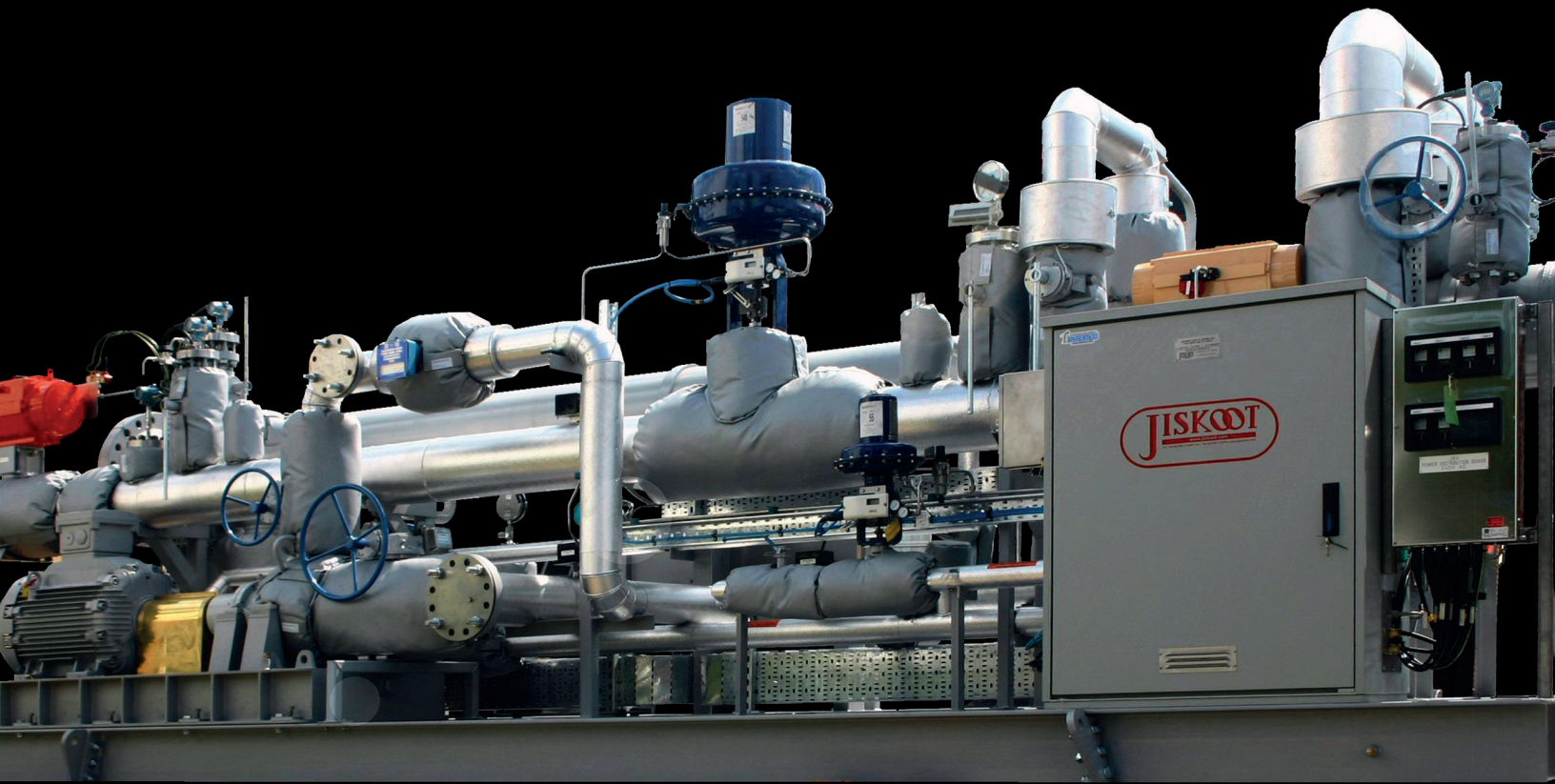


JISKOOT Crude Oil Blending

TECHNOLOGY





In-line crude oil blender

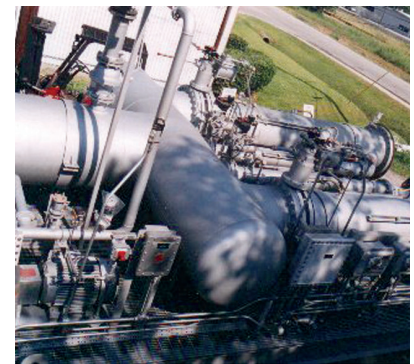
Rising crude prices and availability of lower-cost, high-sulfur, high-viscosity and heavy TAN crudes makes in-line blending one of the most efficient methods to optimize profitability. Blending lower value oil with higher specification crudes to optimize both quality and cost can deliver multimillion dollar returns.

Cameron's JISKOOT specializes in turnkey, high-accuracy in-line blending solutions for heavy, viscous, waxy, high-sulfur and other crude oils. Systems are designed to

deliver optimal return on investment and have a significantly lower capital cost than traditional tank blending infrastructure.

In-line blenders deliver greater operational and crude purchasing flexibility and enable continuous profit optimization. Blenders are designed specifically for your application and supplied as a turnkey package, fully skid-mounted with an integrated control system and a performance guarantee.

In-line blending has moved from simple ratio control systems to quality trim systems that utilize online analyzers to continuously optimize the cost and quality of blended crude. This is achieved using a combination of measured and/or dynamically calculated, flow-weighted, quality parameters (based on the feedstock specification). Quality trim blenders utilize these parameters to automatically optimize blends to correct for any variations in feedstock quality or errors in blending models. Blended crude can be optimized for quality



Crude oil blenders

parameters such as sulfur, density; TAN for refinery, pipeline or terminal operations; or for applications such as pipeline pumping cost reduction (by trimming for optimal pumping viscosity).

Blended crude homogeneity, stability and consistency are key requirements for optimal blending operations. A high-energy, high shear JetMix® system is used to guarantee crude homogeneity and optimize the representivity and repeatability of any online analyzers used by the blender. Blended and feedstock streams can be continuously measured and adjusted to optimize quality and minimize give-away in real time using unique control algorithms.

JISKOOT blenders are guaranteed to deliver a consistent crude dynamically optimized even in the event of changes in feedstock quality, flow rate, loss of power or the unlikely failure of a system component.

Blenders all have an automated failsafe feature to ensure operation in conditions where other systems fail. They are designed with minimal pressure drop to enable optimal throughput in all recipes.

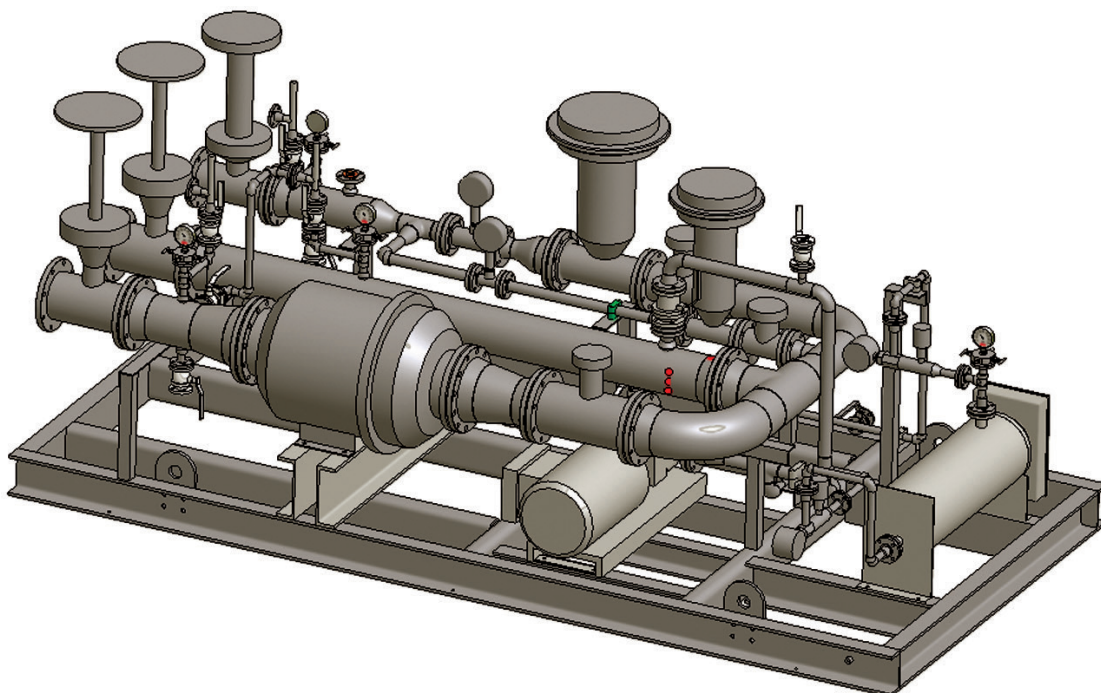
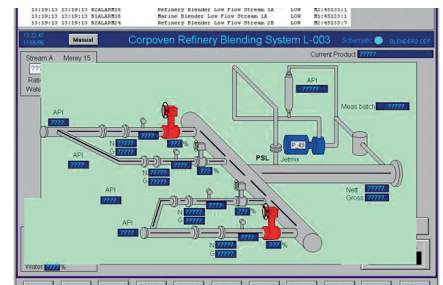
The JISKOOT blender control system uses proven, standard real-time software. Blenders can be operated completely stand-alone, (for remote locations) or fully integrated as part of a plant DCS or OMS system (as required). All blending data can be fully analyzed and reported. The control system features full-automated and manual recipe management and full security.

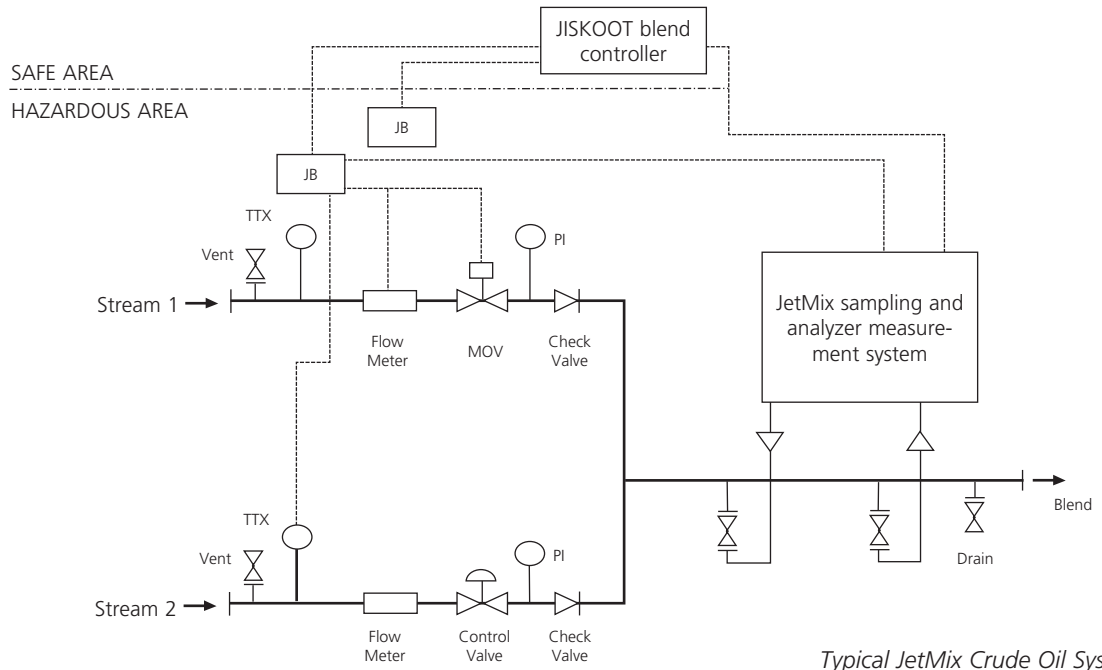
The control system is designed for simplicity and once initiated the blending process, is fully automatic, only informing an operator if an alarm condition occurs.

The performance of a crude oil blending system is so much more than the sum of its parts. It is

determined by the successful selection and integration of all of the flow measurement, flow control, mixing, analysis and system control components.

JISKOOT offers a range of services to suit your budget, from review of existing equipment and system design.





Typical JetMix Crude Oil System

Features

- Blended crude specification is guaranteed at all times during blending
- JetMix system guarantees homogeneity of final blended crude oil
- Cost and quality of final blend is continuously optimized due to the representivity of analyzer measurements
- Blended crude quality can be adjusted or limited by both measured and dynamically flow-weighted calculated quality parameters
- Blended crude oil is on specification at ALL TIMES during the batch
- Failsafe analyzer feedback protection built in to the control system
- Extremely low pressure drop enables blender operation at a wide range of flow rates and recipes
- Proven standard blending control software ensures correct project execution
- Fixed installation features
- JISKOOT expertise ensures selection of the most suitable flow, control, mixing and analysis technology for each blending application
- Single point of performance guarantee from a specialist with over 40 years experience of blender integration and design

JISKOOT offers a complete range of services for crude oil blending and sampling. Please contact us, or our local representative to discuss your needs.



Crude oil blenders

NORTH AND SOUTH AMERICA

14450 JFK Blvd.
Houston, TX 77032
USA
Tel 1 281 582 9500
ms-us@c-a-m.com

EUROPE, AFRICA, CASPIAN AND RUSSIA

JISKOOT Technology Centre
Longfield Road
Tunbridge Wells
Kent, TN2 3EY
United Kingdom
Tel 44 1892 518000
ms-jiskootuksales@c-a-m.com

ASIA PACIFIC

Suite 16.02 Menara AmFirst
No. 1 Jalan 19/3
46300 Petaling Jaya
Selangor Darul Ehsan
Malaysia
Tel 603 7954 0145
ms-kl@c-a-m.com

MIDDLE EAST

Level 9, Al Jazira Club Tower A
P.O. Box 47280, Muroor Road
Abu Dhabi
United Arab Emirates
Tel 971 2 596 8400
ms-me@c-a-m.com

Learn more about measurement at:
www.c-a-m.com/measurement

**HSSE Policy Statement**

At Cameron, we are committed ethically, financially and personally to a working environment where no one gets hurt and nothing gets harmed.