

CASE STUDY

How Contata's Shrinkage Calculations & Diluent Allocation Module Saves Up to 43%



OVERVIEW

The client is one of the world's top oil and gas producers with a global presence in both pipeline and terminal businesses.

CHALLENGES

Our client was concerned about estimating the diluent needed for the month.

Allocating the diluent among shippers and calculating the shrinkage caused by diluent blending are needed for forecasting as the blending of condensate to crude oil is necessary at times for operations. Especially during the winter season, the high density and viscosity of crude oil make it difficult to pump the product through the pipeline.

Blending with diluents can alter the density of crude oil, making it more easily transportable. When blending diluents with crude, the combined volume will be less than the sum of its components. The loss in volume is referred to as shrinkage and is attributed to the smaller molecules of the diluent filling the gaps between the heavier molecules.

INDUSTRY

- Oil & Gas

SERVICES

- Upstream
- Midstream

TECHNOLOGY

- .NET
- WCF
- WPF
- Proprietary DB
- DevExpress



SOLUTION

Contata conducted a thorough analysis of this problem and designed a module that utilizes the approach of API 2509C and MPMS 12.3, incorporating shrinkage calculations into our order-to-cash solution.

API 2509C provides background, theory, calculation examples, and tables to correct volumetric shrinkage resulting from blending volatile hydrocarbons with crude oil. The tables are populated with density differentials under standard conditions. The application calculates diluent allocation and shrinkage by shipper, well, and stream, and has the capability to retrieve, at any time, the calculated diluent allocation/shrinkage, along with the corresponding values entered or gathered for the calculations (e.g., Targeted/Cut-Off WAD, Finished Blend WAD, Diluent WAD, Raw Crude WAD).

Weighted Average Density (WAD) is calculated using the following formula:

$WAD = \text{Total Mass} / \text{Total Volume (NSV)}$

$\text{Ticket Volume (NSV)} * \text{Ticket Density} = \text{Ticket Density Mass}$

$\text{Total Mass} = \text{Sum of all Ticket Density Mass}$

$\text{Total Volume} = \text{Sum of Ticket Volume (NSV)}$

BENEFITS

- Reduced shrinkage loss to save up to 43%
- The client now had better visibility into the diluent to be used for blending.
- Made transportation easier and flexible
- Improved accuracy in operations

About Contata

Contata Solutions is a trusted leader in technology and digital innovation. Through our work in data engineering, data analytics, machine learning, marketing automation and app development, we deliver solutions that address complex problems in ways that are simple, insightful and impactful.

Our promise and value proposition to our customers is simple: we leverage our deep technical expertise and global presence to bring software products and data-driven decision capabilities to life.

Founded in 2000, Contata is a privately-held company headquartered in Minneapolis that serves clients globally from offices in the United States and India.