

SIMTO M-Blend

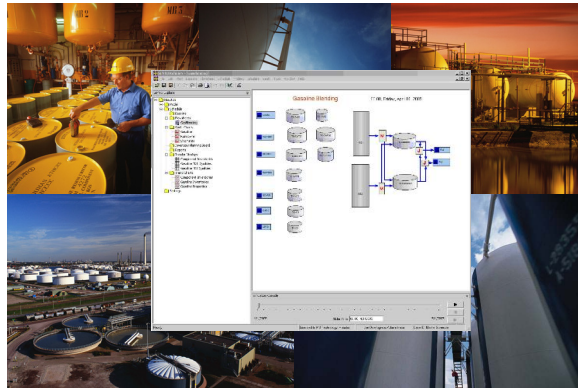
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SIMTO M-Blend (Multi Blend Optimization) is a solution for product blending, which is a common activity in the process industry and has strong economic and operational impacts. A plant, whether it is a refinery or a petrochemical complex or a blending facility, needs to meet the market's demands and maximize the plant's profits, while utilizing its available materials and equipment to blend feedstocks or products. For example,

- A crude mix needs to make the right product slate and still conforms to the metallurgical limits and capacities of processing units.
- Gasoline blending involves many blend stocks and additives, stringent quality specifications, and regulatory requirements. Blend stocks vary in quality and quantity from day to day because of variations in the crude mix and unit operation. Quality specifications and regulatory requirements vary by product grades, seasons, and even local markets.
- A naphtha blend for an ethylene plant needs to have the right aromatic and paraffinic compositions while the contents of poisoning elements remain below their acceptable limits to protect catalysts.



A solution to this wide range of blending applications must be comprehensive and yet flexible and user-friendly and work well with other systems. SIMTO M-Blend meets these requirements. It optimizes a blending schedule with a wide range of products from gasoline, naphtha, diesel to crude oil and asphalt to petrochemical products. It generates optimal blend recipes, while considering component rundown rates and qualities, logistic limitations, and shipment requirements. The optimized solution provides options to help a plant minimize cost and quality giveaway. The program's accurate property blending ensures that the blend products meet their quality specifications and regulatory requirements. The program is also flexible and user-friendly to adapt to the fast-changing paces of the production process and the market. Along with other support systems, SIMTO M-Blend works to provide a plant options to continuously improve its performance for its customers and stakeholders.

Benefits

SIMTO M-Blend helps a plant achieve its goal of satisfying customers' demands and maximizing profits. Some key benefits are:

- Minimizing costs by minimizing quality giveaway and utilizing inventory optimally. Effective usage of inventory includes reduction or elimination of re-blending and timely inventory management through accurate prediction of required materials.

- Providing standard and customizable blending library such as RFG, CARB, and Distillate and solving nonlinear blending optimization problem.
- Improving customer services and relations with on-schedule deliveries of products meeting the required specifications and volumes.
- Maximizing profits by solving the blend optimization problem for multiple products and periods within a schedule time frame and constraints of the manufacturing process.
- Avoiding the problem of single blend optimization that produces the locally optimal recipe for a blend at the risk of inventory shortages, shipment delays, and even losses of sale for subsequent blend products.
- Blending properties and managing specifications of multiple products from reformulated gasoline (RFG), naphtha, diesel to crude oil and asphalt and petrochemical products.
- Increasing plant capacity with flexible usage of available materials, quick adaptation to local markets and seasonal product requirements, and effective transition between grades (e.g., balancing blend down and draw down of winter-grade and summer-grade gasoline).
- Complying with regulations by tracking material usage (e.g., anti-dumping law) and monitoring regulated properties (e.g. VOC and NOx).

M3 Technology designed SIMTO M-Blend with features to achieve these benefits.

Features

SIMTO M-Blend delivers these benefits with a comprehensive, flexible, versatile, user-friendly, and integration-friendly solution to the blend optimization problem.

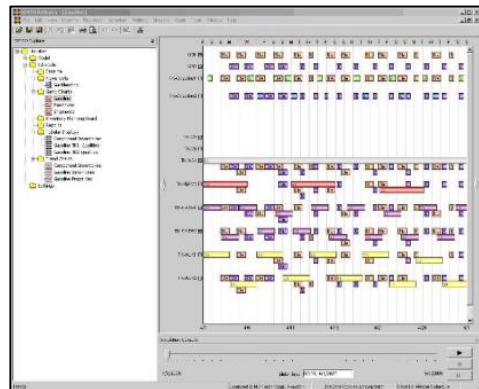
Comprehensive Solution

SIMTO M-Blend solves the blend optimization problems involving multiple products and multiple periods in today's supply-chain environment. This optimizer finds the optimal recipes that meet the specifications of individual blends across the schedule horizon, while minimizing the cost and quality giveaway and honoring the constraints of materials, logistics, and shipments.

The material constraints come from internal material balances and from external requirements. Material utilization has to be within the available quantities. Compositions of materials may have minimum or maximum limits. Materials for the same services can be grouped into pools that may also have minimum and maximum limits.

Logistic constraints involve tanks and processing units. Tankage considerations ensure that tanks service the right materials, follow the proper switching sequences, do not overflow or underflow, and are transferred within pumping capabilities. Product blending needs to adapt to changes in not only tanks but also processing units. The blending schedule has to account for varying qualities and quantities of materials because units have finite production rates and some units may be out of operation.

Shipment constraints are due to customers' orders. Products meeting specifications will be shipped at the right volumes and on schedule. Depending on situations, high penalty factors may be imposed on stringent requirements to make sure that they are met.



SIMTO M-Blend stores information of blending activities in an SQL Server database for ease of access and integrity of data. The database also facilitates tracking the usage of regulated blend stocks (e.g., tracking current blends with baseline for 1990 conventional gasoline according to anti-dumping laws).

M-Blend can be used stand-alone or integrated with SIMTO Scheduling system. Crude supply schedule, processing unit schedule, dock schedule, and shipment schedule work seamlessly with blending schedule. All systems communicate among one another through SIMTO Web Services. SIMTO Integration Depot serves as an interface between the SIMTO Product Family and other systems.

Like all other SIMTO products, M-Blend is an enterprise solution with a multi-tier architecture allowing multi-user and multi-site operation and is smoothly integrated with corporation network security systems.

