

Scheduling for performance

Tesoro is using a new software suite from M3 Technology to profitably manage scheduling across its refining system



Mark Georgen, Tesoro

Mark Georgen of Tesoro led a presentation yesterday at the Plant Automation, Fundamentals I session. He talked about how refiners can increase profits by improving the utilization of current assets through scheduling for performance. Tesoro has implemented software from M3 Technologies to aid in achieving this ideal across its refining system, including at its Anacortes refinery on the Puget Sound in Washington (pictured). The software, called SIMTO, has a variety of efficient and high-powered applications that helps Tesoro manage its refineries in a more profitable manner. *Hydrocarbon Processing* caught up with Mr. Georgen before his presentation for an engaging Q&A session, the results of which are reproduced below.

How has SIMTO's forecasting power improved operations at your refineries? How did it change your inventory system from its previous organization?

Refinery optimization is the development of a plan that maximizes profitability while operating the facility in a safe and environmentally responsible manner. Operating plan and crude oil purchase decisions are generally made through the use of a linear programming (LP) model. In a high refining margin environment, the LP will maximize profit by filling the crude unit to capacity while at the same time maximizing throughput on downstream conversion units. LP plans are done on a monthly average basis or for at most two or three time periods during the month. The forecasting power of SIMTO provides the ability to achieve the same high level of optimization on a day by day basis. Before SIMTO, spreadsheets were used to schedule crude receipts, crude runs, product blending and shipments. They did little more than forecast inventory.



Tesoro's Anacortes refinery on the Puget Sound in Washington uses M3 Technology's SIMTO scheduling software.

SIMTO allows us to develop daily schedules that optimize process constraints that are economically important.

Talk to me a little about the multi-user functionality of the software... are a plant manager, Tesoro vice president and employee on the ground at the refinery able to access the same data, and share data that only they know across levels? How does this improve efficiency?

Anyone with a need for information or a role in scheduling can access SIMTO regardless of location. Many scheduling functions are shared with people at the refinery, regional offices or corporate headquarters. This improves efficiency because some roles interact locally with refinery operations while others interact with traders or marine operations as far away as Singapore. Access is controlled to appropriate individuals and their ability to make changes differs according to their role.

How can the SIMTO software assist with blending decisions and long term scheduling? Shouldn't this be a function of corporate planning and not reliant on a piece of software? Or does the software aid in a company's future planning?

Within SIMTO is a full-featured multi-period blend recipe optimization system known as M-Blend. Blend stocks vary in quality and quantity from day-to-day because of variations in the crude mix and unit operations. M-Blend automatically generates optimal blend recipes, while considering component rundown rates and qualities, logistic limitations and shipment requirements.

Longer term scheduling is more

efficient when done with less detail. Scheduling hydrocarbon movements through specific tanks 90 days out does not add value because of the inevitable changes that occur. By grouping types of crude or products into pools, production and inventories are forecast further out in time without having to work unnecessary details.

Can you offer one concrete example of a problem that the SIMTO software alleviated? Or a circumstance that previously would have been much more troublesome for Tesoro that was easy to manage because of the new software?

At one of our refineries a key profitability driver is maximizing throughput of a delay coker. This particulate unit is limited by coke production rather than feed rate. Residing in SIMTO are full assays for all types of crude run at the refinery. SIMTO accurately forecasts coke production allowing us to operate closer to the coke production limit. This has enabled us to reduce crude cost by buying more heavier, less expensive crude oil.

Is the SIMTO software a radical step forward? How different is it from the way you managed your inventory, blending and schedules from five years ago? Ten years ago?

SIMTO is a radical improvement over scheduling with spreadsheets. Besides forecasting inventory, we are getting accurate predictions of intermediate stream production and qualities. This information enables us run our assets closer to key constraints that drive profitability without compromising safety, the environment or reliability. ■