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WAM Helps Refiners See the Whole Picture

Hart Energy's *Refinery Tracker* caught up with Jack Weiss, CEO and co-founder of WAM Systems, Inc. to hear more about the



company's focus on integrated supply chain planning in the global refining industry Weiss, together with Mark Zod, CTO and John Kamal, COO, founded the company to offer the process industries advanced supply chain planning and optimization solutions.

In recent years, WAM's enterprise-level planning suite has caught the attention of some of the world's largest refining organizations, including PetroChina, Indian Oil, Saudi Aramco and Sasol Oil. With an eye toward a more holistic view of the supply chain driving a more balanced operating plan, these refining organizations are leading a wave of interest in connecting refineries, terminals and distribution together into a collaborative planning team.

Refinery Tracker notes that the growing array of new refineries around the globe have an opportunity to apply the latest planning and optimization technology at the grassroots level, while operators of existing refineries have a need and an opportunity to tighten costs, expand margins and improve asset utilization. Solutions like WAM's are addressing this need.

While refining organizations have long since established optimization and planning technologies inside the refinery gates, opportunities for enterprise-wide visibility and collaboration across the end-to-end value chain have many in the industry now embracing the idea of a holistic, integrated solution. By broadening their vision to include supply/demand balancing at every node across the global value chain network from in-bound crude to refining to primary distribution,

petroleum producers can shrink cash to cash cycle time and drive even higher margins.

Refinery Tracker: How did you get started in the industry? What led you to start WAM Systems?

Jack Weiss, WAM Systems: I started my career with two engineering degrees working at – what was then – Exxon Chemical Americas, supporting simulation and optimization work. While there, I did some really interesting work in production scheduling and planning and built systems that were very well received and which were rolled out to a number of chemical plants. It quickly became clear to me that this type of system could benefit the larger industry. And with that early success, I was able to secure funding around the production scheduling work in order to start WAM Systems and develop the idea. So, it all really started with my work at Exxon and came together at that point. And now I've been 20 plus years running WAM.

Refinery Tracker: What industries does WAM Systems support?

Weiss: We have a range of solutions across a number of industries, although refining and chemicals are the two primary areas we are working in. Our client base is represented by about 50% chemicals, 25% refining and about 25% from other process manufacturing, pharmaceutical and some process-oriented consumer products manufacturers.

Refinery Tracker: How does WAM Systems support the refining industry?

Weiss: I'd say at a very high level that WAM supports the refining industry by providing visibility and efficiency outside the refinery fence – visibility and planning across all refineries, depots and terminals. Whereas many companies have achieved all of the efficiency that they can inside their refineries, only a select few seem to have achieved this outside the

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refineries – looking at the organization as a whole. Our solution connects to a company's existing data systems and creates an integrated platform for supply chain planning.

At a low level, for example, we connect to the existing systems that the refineries use to create their optimized monthly schedules, and we then provide more detailed analysis, editing and management of the data. At a high level, we provide an enterprise-wide view of their supply chain showing all inventory movements, inventory positions, supply balance, etc.

So really, we're extending their existing refinery tools with enhanced detail and collaborative planning that drives toward a more balanced enterprise level supply chain plan.

Refinery Tracker: *How does the existing technology landscape speak to the needs of the refining industry? How does WAM fit into this landscape?*

Weiss: I think that the way the refining industry has grown began with oil companies being early adapters of linear programming and mixed integer linear programming for in-plant optimization. In fact Aspen Technologies, Honeywell and others have – for a long time – offered these models for in-plant optimization. It's a very mature industry supporting these kinds of models, and most – I would almost not hesitate to say all – refiners have those kinds of solutions in place. Haverly is another company that specializes in in-plant refinery optimization.

What we find right now – where refiners are feeling a lot of pain – is that, while they have all these fairly sophisticated models for planning in a single refinery, they don't have solutions, and they don't have best practices around optimizing a global manufacturing organization where you have multiple refineries and a complex distribution network. How does one allocate demand optimally across the refineries, and then how does one optimize the distribution of the finished refined products to terminals and customers and the gas station network?

The success we've found in supporting the industry comes from the simple fact that existing platforms don't

deliver the required level of integrated planning and visibility.

If you think of the types of systems that might be found in a refinery, you'd include an LP optimizer to create the refinery schedule, and certainly an ERP (enterprise resource planning) system to manage orders, transactions, etc. We provide planning solutions that sit on top of – or alongside – those systems and act as an enhanced layer of optimization, visualization, collaboration that contributes to the overall efficiency of a company's operating plans.

The ERP systems in place are great at managing transactions. They manage the individual events necessary to operate a supply chain. An individual event being: "ship something / make something / build something / pay something". It's all about history, as well as what's happening right now. ERP's are all about "what do I have to do today," related to shipping something, making something, etc. What an ERP system doesn't help you do very well is planning and staging assets for the future – for tomorrow, for next month, next year. That where we fit in. Our system focuses on the forward planning aspects of managing your supply chain.

And in terms of LP optimizers, refineries use them to create a monthly refinery plan that optimizes the use of crudes with an eye toward supporting customer demand. Our system goes beyond this layer in two ways. First, it allows companies to disaggregate the optimized plan to be able to view much more detail, down to a daily level showing discrete movements and inventory levels throughout the supply chain. And second, it supports integrating the optimized refinery plans, forecasts, etc. into a single planning database – pulling information from all locations throughout the company into a single plan that can be built collaboratively.

In that sense, we're really a new part of the technology landscape, providing a layer of enhanced planning and visibility where none exists today.

Refinery Tracker: *As the global business environment has changed, how has the supply chain planning approach evolved in response?*

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Weiss: If you look at planning for a chemical or refining organization at 30,000 feet, they are not that different. In the old days, one used to produce what you produce well, and then try to find a home for it. Try to find somebody to sell it to.

Today, that's really old news. Over the last 15 years, companies have established best practices. The best competitors are really operating something that's called a "demand driven supply chain." Rather than making something just because you produce it well and then trying to find someone to sell it to, why not try to figure out what your customers want then produce that. That sounds trivial or common sense, but it is not the way that people manufactured 20 or 30 years ago.

Companies are starting to work more closely with their customers to do a good job of demand planning and do a good job at sales forecasting. They're asking themselves: what do my customers want to buy from me? When do they want it? And at what prices do they want it? They'll then use that information to develop a demand plan, which essentially says now that I know what my customers want, how do I want to shape what they want into something that is the most profitable mix for me given my capacity constraints.

Then coming up with a distribution plan, a production plan and a sourcing or purchasing plan that are all synchronized or logically consistent with that demand plan. If you look at all that holistic business planning, which is again optimizing across the demand, distribution, the manufacture, and the purchase, then that whole area equals the whole plan. We can call it a "business plan." And there are two aspects of that: we can call it a "volume plan," which is just making sure you have a feasible supply/demand balance going forward, and a "financially-optimized volume plan," which is Nirvana, which is what everybody wants. It's not just making sure that your volume, your pounds or your tons or your barrels match up, but also having a financially optimized business plan.

Our software is designed to support all aspects of that plan. We have demand planning, distribution planning, manufacturing (or production) planning, distribution and sourcing planning, etc. It's sold in a modular fashion but think of it as a single, integrated holistic solution.

So people say "right now, where I am feeling the most pain is in production planning, or production scheduling, or sales forecasting." To that, we can respond by selling modules that address their most pressing issues and work closely with them to expand in the future into other modules and ultimately have a comprehensive solution to all of their problems.

Refinery Tracker: *The WAM Systems website (www.wamsystems.com) shows expertise in performance planning and implementation of best practices. How does WAM help refiners with these areas?*

Weiss: Best practices and Key Performance Indicator (KPI) management are part of our offering, but our unique solution looks forward. All the products out there for KPI management are all looking in the rear view mirror – they ask, what have we done and what has been our historical performance? Whereas our solution adds predictive KPIs, forward facing.

Whether a refiner is managing historical KPI's on another system or ours, since we track forward for the planning system, we also capture and track history. We can be the KPI engine also. We are able to bring together the historical and predicted KPIs, so the refiners can have that information at their fingertips to drive the plan. We are always importing the historical information as a basis for developing the plan, but our planning tools are used to create the forward KPI's that can be used to predict revenues, predict profitability, predict performance, and predict customer service levels. We call that predictive analytics.

Tracking KPI historical data in and of itself is not rocket science. It's just database management. But getting the data may be difficult. And of course developing best practices around how to improve your KPI is worth their weight in gold.

Refinery Tracker: *What does WAM Systems offer to the downstream logistics side of the refining and fuels business?*

Weiss: When you think about downstream logistics, the industry typically cuts it into primary to secondary distribution segments.

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Primary distribution is the movement of goods from refineries to the terminals. Secondary distribution is the movement from terminals to the gas station network, the retail network. They are regarded as two independent operations. What links the two is the inventory in the tanks between.

The mathematics and strategies around optimizing the downstream logistics of primary and secondary levels are very different. In secondary, you are looking at optimizing the routes of trucks on streets. You might have 50,000 gas stations. Whereas the primary distribution is with large flows, it could be pipeline, it could be marine vessel. It could be truck or rail.

If you look at the vendors out there offering solutions to the downstream logistics area, many have one or the other segment covered. WAM Systems has developed a solution that spans both primary and secondary.

Refinery Tracker: *Is WAM in the terminals and pipeline space?*

Weiss: Yes, we are. We have a project right now with ARAMCO where they are going to be using our software for their refined finished product pipeline movements around Saudi Arabia.

Refinery Tracker: *How does WAM Systems reach the refining marketplace?*

Weiss: We have a strategic partnership with Honeywell, so many of these deals we are doing in refining are in partnership with Honeywell's advanced process controls team known as HPS Honeywell Process Solutions. For example we are partnering with Honeywell at Aramco. We just started an engagement with Pertamina in Indonesia, and we partnered with Honeywell for an engagement at India Oil Company. Partnering with Honeywell gives us access to a global sales force and they bring us into some of their strategic accounts in global locations. But Honeywell also offers some very good plant optimization systems to which we have integrated. So with Honeywell, we are able to sell a total solution between the two of us.

Refinery Tracker: *How receptive has the refining industry been for WAM Systems solutions?*

Weiss: We have been working with the chemical industry for 25 years. Though we have been working with the refining industry less, this is where we see our major growth opportunities.

So what is interesting for us is we've gotten early traction with this specific problem. We're helping large refining companies with multiple refineries, which already have in-plant refinery optimization, but do not have cross-plant optimization or cross-plant distribution optimization tied in with that.

For example, at Sasol in South Africa, at Indian Oil Company in India, we are essentially building a supervisory global planning model that integrates data from each one of their individual refinery data models into a single global planning model that allows you to optimize across the refineries and across the distribution network.

For more information about WAM Supply Chain, please visit www.wamsupplychain.com.



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