Westlake Global Compounds Conquered Tough Production Scheduling Problems with PlanetTogether

Westlake Global Compounds, a division of Westlake Corporation, is a leading integrated compound company. Westlake's rigid and flexible vinyl compounds form the elements of products spanning nearly every industrial and consumer need. They make products that contribute to how the world communicates, eats, drinks, transports themselves, and gets medical care when they need it.

Results

- 90% reduction in on-time delivery standard deviation; from 31 days to under 3 days almost immediately
- Improved OTD 2% in first six months
- 15 minutes to create production schedule; down 96% from 6 hours
- Met objectives with 2 production lines down and only 5 out of 7 up and running

The division's 11 manufacturing plants span North America, Europe, and Asia. Each production facility is responsible for creating a manufacturing production schedule to handle a complex mix of sales orders, raw materials, product SKUs, customer requirements, and manufacturing processes. No two plants are exactly alike, but they all conduct chemical compound manufacturing — some with relatively small production runs and others through long production orders.

Scheduling is a time-intensive, highly complex activity with far-reaching impacts

Schedule adherence has been a long-time concern for Westlake Global Compounds' production schedulers. Even among those with nearly two, three, and almost four decades in manufacturing with Westlake, standard deviation and the knowledge that they could do better was a major frustration.

Each manufacturing facility across Westlake Global Compounds has a production scheduler responsible for creating the manufacturing schedule. It's a time-intensive, highly complex activity with far-reaching impacts or consequences, depending on how the plant performs against the published schedule. Twice a week, each production scheduler would spend at least six hours manually shuffling sales orders and reports from the business system into Excel, then working through complicated spreadsheets to create a production schedule. The exercise included translating sales orders into production orders, then combining, splitting, and shifting around production runs on spreadsheets to fit availability of raw materials, machine capacity, and machine operators. Exporting and distributing the production schedule consumed another two-plus hours.

Despite best efforts and the benefit of many years expertise, even the most proficient production schedulers' hands were tied. At best, they could conduct only basic manual optimization and shoehorn production orders into a schedule based solely on experience and gut instinct; there was never enough time to do more. Standard deviation peaked at 31 days, plants routinely lost entire shifts or days of production when material didn't show up as expected, and plants were constantly shipping truckloads direct to customers at 5x the cost of the company's standard shipping methods.

Company encourages creativity, its people find a solution and get better-than-expected results

Westlake Global Compounds conquered tough production scheduling problems with PlanetTogether, an advanced planning and scheduling (APS) platform, and achieved better-than-expected results.

Westlake Corporation fosters creativity of ideas among its people. When the company's supply chain manager and production schedulers from several key plants wanted to tackle and unlock the potential in production scheduling, compounds division vice president Renee Havrilla enthusiastically backed the effort with project funding along with strategic insight and direction. Then they enlisted the seasoned production schedulers from three particularly tough scheduling plants in Gallman, Madison, and Prairie, Mississippi. Before this effort, the four already had a highly collaborative rapport, shared raw materials, and helped each other with problem-solving. Supply chain disruptions throughout 2020-21 further strengthened that posture.

After much debate and research, the team decided to implement an advanced planning and scheduling platform, and chose PlanetTogether for its proven capability to automatically create optimal production schedules that conform to highly complex scheduling rules and constraints.

> *Before using PlanetTogether, we would manually create schedules based on what the business system showed 'should be.' If material didn't show up as expected, the production schedulers, and therefore the plant, had no way to react. That's a scenario that played out constantly, especially over weekends. Lines or plants running 24/7 would lose entire shifts or days worth of production. We now have almost zero unexpected downtime due to supply chain issues. If raw material doesn't show up, the schedulers can automatically reschedule and optimize days, weeks, and months of production with just a couple of clicks.*
>
> Supply Chain Manager, Westlake Global Compounds

> *We now have almost zero unexpected downtime due to supply chain issues.*
>
> Supply Chain Manager, Westlake Global Compounds

Westlake engaged Toward Zero, an engineering firm that specializes in digital transformation and smart manufacturing, to plan and perform the implementation, and integrate the solution with the existing business system, SAP. The plan was to implement PlanetTogether across Gallman, Madison, and Prairie.

The team zeroed in first on Gallman, MS, since it was the most complex of the three. Toward Zero smart manufacturing engineers leveraged expert knowledge and insight from key personnel to establish and configure the system with the right constraints rules for Westlake Global Compounds generally, and for Gallman specifically. The plan was to get Gallman up and running with PlanetTogether, including integration with SAP, then move on to implementation at Madison and Prairie. Well after project kickoff and requirements gathering, as the Toward Zero smart manufacturing engineers were finishing up the design phase and preparing for system build and installation, there was a fire at the Gallman plant that would ultimately shut down two lines for about 18 months. There were no tragic consequences, but the incident destroyed 45% of that plant's capacity; getting the advanced planning and scheduling system in place became imperative.

Despite the fire, implementation and integration progressed as planned at Gallman; when finished, they could immediately showcase performance improvement. With the first plant up and running on PlanetTogether APS, the team shifted its focus to the remaining two plants in the project. Using Gallman's constraints rules as a global template to shorten next-phase implementations, Toward Zero's smart manufacturing engineers quickly made the necessary adjustments to meet the unique scheduling requirements for each plant.

Westlake Global Compounds' Mississippi plants in Gallman, Madison, and Prairie now rely on PlanetTogether to create an accurate production schedule in minutes, quickly perform schedule optimization to address unexpected changes in conditions and constraints, and easily make the production schedule accessible to anyone who needs to see it on-demand.

Handling unexpected changes with an accurate, optimized schedule

Westlake's Gallman plant slashed on-time delivery standard deviation >90% from 31 days to under 3 days almost immediately using PlanetTogether for automatic scheduling and optimization. Even more astonishing is that Westlake in Gallman did it with only five of its seven production lines up and running. That means it achieved better on-time delivery performance by producing an accurate, optimized schedule, even with less available capacity.

The production scheduler in Gallman says that everyone, including customers, understands the supply chain concerns that plague most manufacturers these days. Every day the company can get closer to, then hit the on-time delivery target means a lot to customers.

Madison and Prairie previously only did scheduling one to fourteen days in advance. Therefore, the most significant improvement for them is the speed of producing a schedule that maximizes capacity and minimizes changeovers: creating a schedule in 6 hours down to 15 minutes, nearly 96% time savings. In The Gallman plant showed similar gains. They can now publish and distribute the production schedule with the touch of a button: previously a two-hour activity, down to just a moment or two of their time. All three plants have democratized the production schedule with 100% transparency and clarity, providing role-based permissions and accessibility at the touch of a button by anyone in the plant, division, or company who needs it.

As project lead, the supply chain manager had a very specific target in mind. They wanted to improve on-time delivery (OTD) 2% in twelve months; using PlanetTogether they improved OTD 2% in less than six months. Part of OTD success is better visibility around raw materials with the PlanetTogether system, and the ability to respond as things happen (or don't happen as they should). "Before using PlanetTogether, we would manually create schedules based on what the business system showed 'should be.' If material didn't show up as expected, the production schedulers, and therefore the plant, had no way to react. That's

a scenario that played out constantly, especially over weekends. Lines or plants running 24/7 would lose entire shifts or days worth of production. We now have almost zero unexpected downtime due to supply chain issues. If raw material doesn't show up, the schedulers can automatically reschedule and optimize days, weeks, and months of production with just a couple of clicks."

Customer service has felt the impact of plants using PlanetTogether. Before, feedback was slow and unreliable when they needed information from the plants about orders. Now the production schedulers can push out a reliable schedule, and customer service can see accurate information. If customer service needs an order sooner or adds in a rush order, the production scheduler can plug the request into the system and let the system optimize everything again. The feedback loop is nearly instantaneous, and collaborative decision-making happens with accurate information about impact.

"It's hard for any company to quantify the value of people having on-demand access to accurate, real-time information, and this case is no different," comments division leader Renee Havrilla. "For us, using PlanetTogether isn't just about enabling our production schedulers to focus their precious time on more strategic, higher-value work. People throughout the organization can now look at the schedule at any given moment, rely on the fact that it's optimal based on what's actually happened in the plant, and make faster, better decisions. There's no way to put a price tag on that, but our division and corporate leadership knows it has a tremendous impact on the business all the way around."

Eager to drive incremental change and performance with a center of excellence

Despite impressive results, the supply chain manager at Westlake Global Compounds says it's just the first step for the three Westlake plants in Mississippi. "We know that if we reduce standard deviation on actual production versus published production schedule, our average revenue per day should increase. Rather than pushing out an entire month of revenue, every step closer to on-time delivery speeds up revenue, which is significant in terms of business results. We want to study the current impact at a more granular level, then assess the potential value for other plants, maybe even other divisions." Other metrics that they want to tackle with schedule optimization are:

- Less downtime (total setup hours, longer runs with fewer changeovers)
- Control operating costs (inventory optimization, shipping costs, labor/overtime)
- Better maintenance schedules

Beyond examining and correlating performance and financial impact, the project team also envisions creating a center of excellence (COE) around production scheduling. They're eager to help drive incremental change and performance throughout Westlake Global Compounds, and perhaps the entire Westlake family of plants. By closely partnering with Westlake's innovative Digital Office, they'll have a proven foundation to foster innovation, standardization, operational best practices, and performance improvement throughout the Westlake plant network. A unified production scheduling COE could enable each plant to tackle its specific goals: boost on-time delivery, reduce inventory or production costs, increase capacity, and other strategic objectives.

ABOUT ON TIME EDGE

Accelerate digital transformation with On Time Edge for an agile, accurate supply chain and manufacturing operations excellence. We deploy and integrate supply chain solutions and smart manufacturing systems, so they work the way they're supposed to and your company gets the ROI you expect.