

Shop Floor Scheduling

ARE YOU DRIVING A FERRARI OR A FORD PINTO?

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Increasingly short lead times, constant customer changes, and shop floors that always seem to be in flux, getting on-time delivery rates where they need to be presents an ongoing struggle for most manufacturers. Often this leads to losing business to competitors with more reliable on-time delivery rates. If this is you, you're not alone.

Many manufacturers consistently achieve on-time delivery rates of 98% and higher. You can too, once you get the right systems and processes in place. Low on-time delivery rates typically result from problems in all areas of the business. Almost invariably, however, the #1 factor in low on-time rates is inefficient scheduling, which is not surprising considering scheduling is the engine that drives everything through the shop floor.

Like an Indy 500 race car operating on all cylinders, efficient scheduling lets you put the pedal to the metal (operate at full capacity) on the straightaways while easily handling the corners (inserting hot jobs) when a change in direction is needed. Get scheduling right and your shop floor hums like a finely-tuned racing machine. Get it wrong and you'll spend too much time in the pits trying to figure out what is wrong with the engine.

ULTIMATELY, THE QUESTION COMES DOWN TO THIS: IF SCHEDULING SETS THE PACE FOR EVERYTHING THAT MOVES THROUGH THE SHOP FLOOR, ARE YOU DRIVING A FERRARI OR A FORD PINTO?

First, Take Your Foot off the Brake

Inefficient scheduling (driving a Pinto) typically results from a combination of ineffective processes and a lack of capabilities required for today's fast-paced manufacturing environment. These include:

- **Outdated manual processes.** Planning your workflow on paper, white boards, multiple spreadsheets, or a combination thereof puts you behind the 8-ball from the get-go. Manual schedules take inordinate amounts of time to create. They rarely get updated in a timely manner, and they're often inaccurate.
- **Don't know your true capacity.** When you can't determine the true capacity of your machines, workcenters and personnel, all you can do is guess. Guessing can be fun with party games and lotteries. When it comes to shop floor workflow, guessing causes bottlenecks, downtime and poor utilization of manpower and resources.
- **Non-existent "what if?" planning.** The inability to easily engage in "what if" scheduling scenarios makes it difficult to adjust your schedule on the fly. When you can't see how inserting a hot job into the schedule will affect everything else, you accept customer due dates hoping (rather than knowing) you can make them.
- **Unrealistic lead times.** Building incorrect lead times into the schedule is a sure recipe for missed due dates. For example, if your ERP system doesn't allow you to build in time for outside processing and shipping, jobs will often end up overdue even when all other production steps complete on time.
- **Allowing hot jobs to drive the schedule.** These days, the ability to respond to short lead times and "gotta have it now" rush jobs is critical, especially with your biggest customers. However, inserting hot jobs into the schedule is notorious for making other jobs late. When every project seems to be a hot job, scheduling becomes a chaotic process that puts the job rather than the planning team in control of what gets worked on and when.

When these situations prevail on your shop floor, unacceptable on-time delivery rates aren't the only problem. Quality problems increase in the rush to get jobs out the door on time. Late fees and expedited shipping drive up job costs and reduce margins. When deliveries continually arrive a day late and a dollar short, customers eventually start looking for a supplier that can get the parts to them on time.



WHEN DELIVERIES CONTINUALLY ARRIVE A DAY LATE AND A DOLLAR SHORT, CUSTOMERS EVENTUALLY START LOOKING FOR A SUPPLIER THAT CAN GET THE PARTS TO THEM ON TIME.

It's More Fun (and Efficient) to Drive a Ferrari

Correcting these issues starts with having an ERP system that includes a robust planning and schedule module that lets you make decisions based on real-time rather than historical data. Having these features at your fingertips enables you to:

- Correctly estimate lead times
- Know your true capacity for machines, workcenters and personnel
- See the status of all jobs moving thorough the shop – in real time
- Instantly see how inserting a job into the schedule will affect other jobs
- Easily conduct short- and long-term “what if” scenario planning to improve forecasting
- Identify and rectify production bottlenecks as they occur
- Minimize hot and past-due jobs

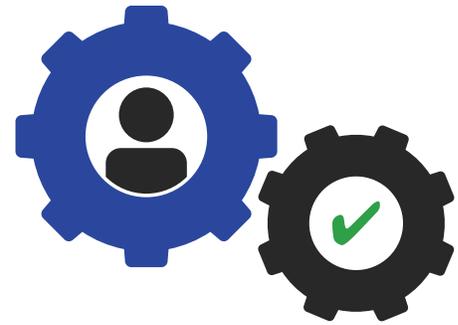
“We can easily see where we have available time on our machines in case we need to move up a job or push others out,” says Dave Dahl, Plant Manager for **Alexandria Pro-Fab**. “Any time we make a change to the schedule, the system immediately shows how it will affect every other job. Our on-time delivery rates now average 97.6% – 100% for our biggest customer who buys \$16 million of product each year.”



**CORRECTING THESE ISSUES
STARTS WITH HAVING AN
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A ROBUST PLANNING AND
SCHEDULE MODULE THAT LETS
YOU MAKE DECISIONS BASED
ON REAL-TIME DATA.**

Put the Pedal All the Way to the Metal

Getting scheduling under control is the first step in achieving near-perfect on-time delivery rates. By itself, however, it's probably not enough to get you there. Manufacturers that consistently achieve on-time rates of 98% and higher use a combination of ERP tools and best practices to remove inefficient processes, fix production bottlenecks in the moment, and improve on-time delivery rates to unprecedented levels within the company. These include:



MANUFACTURERS THAT CONSISTENTLY ACHIEVE ON-TIME RATES OF 98% AND HIGHER USE A COMBINATION OF ERP TOOLS AND BEST PRACTICES.

TAKE CONTROL OF YOUR INVENTORY.

Poor inventory management comes in a close second to scheduling as a leading cause of late jobs. When parts don't arrive on time, or they're the wrong kind, jobs get shut down until the proper parts arrive. A strong inventory management module provides the real-time data you need to ensure the right materials get to the right jobs at the right time. In addition to integrating your materials ordering system with inventory and usage, key features include automatic reorder set points, mobile lot-bin tracking, vendor performance dashboards, and more.

TRACK YOUR DATA IN REAL TIME.

The ability to see everything that is happening with every job – in real time, from one single screen – can make a huge difference between jobs shipped on time and jobs shipped late. With a mouse click or a swipe you can see when each job is due, where it is and who's working on it, and whether it's on time or behind schedule.

SIMPLIFY YOUR QUOTING PROCESS.

Creating lists of common options and order requests – through a Product Configurator – speeds up the order entry process by allowing customers to electronically choose predefined options and pricing for their parts. It also eliminates the human error that so often occurs with manual ordering and causes jobs to ship late due to rework.

BUILD AND COMPARE BILL OF MATERIALS (BOMS) IN MINUTES.

Building large, complex BOMs can take days or weeks to build and are often full of mistakes. CAD Interface and CAD/CAM BOM Management software lets you build them in minutes, while eliminating the need for engineers to manually compare customer CAD/CAM BOMs against those already in your ERP system. Easily identifying additions, subtractions or other modifications to the BOM lets you make changes before the BOM hits the shop floor.

MAKE REAL-TIME DECISIONS WITH CUSTOM DASHBOARDS.

Making decisions in the moment that impact your ability to complete jobs on time requires having all the data you need in one location. Today's sophisticated ERP Dashboards let you work all day from a single screen, without constantly having to switch modules or toggle back and forth to get the information you need. Customizable Dashboards let you format the data the way you want to see it and create filters that display only the records requiring your immediate attention.

EASILY TRACK KEY INDICATORS.

If on-time delivery isn't one of the most important metrics in your manufacturing business, it should be. Key Performance Indicators make it easy to identify, build and track performance metrics in areas where your company is lagging. By creating a culture of proactive decision-making, you get ahead of the problems that are causing missed due dates rather than always trying to catch up with them.

ALWAYS WORK OFF THE CORRECT REV.

Another big driver of rework and missed due dates comes from getting halfway through a job before someone discovers you're working off the wrong document revision. With today's sophisticated Document Control software, these headaches become a thing of the past by storing documents in digital format and attaching them to the appropriate job, transaction or order. To eliminate manual error, documents can be imported directly from the customer into your ERP system and sent straight to each workcenter so machinists always have the latest customer-approved rev.

SIMPLIFY YOUR ORDER ENTRY PROCESS.

If you're still manually keying in purchase orders, sales orders, shipping notices and other job documentation, it's time to link an EDI system to your company's ERP software. This will allow you to automate the process of sending and receiving documents while eliminating the errors that occur with manual data entry. Routers, work orders and BOMs get built correctly, and you can instantly send them to the shop floor to get jobs moving without delay.

"Our ERP system displays real-time job status by allowing operators to update each work order when they complete their portion of the production process," says Ray Suprenant, owner of **Davico Mfg.** "The 'Current Work in Progress' screen identifies employees that significantly exceed standard so we can check for bottlenecks and quickly resolve them. Our on-time delivery rates, which we track daily, now average 98% – including same-day shipping orders."



MAKING DECISIONS IN THE
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TIME REQUIRES HAVING ALL THE
DATA YOU NEED IN ONE LOCATION.

When scheduling becomes an accurate, effortless process, everything else goes more smoothly.

Shop floor personnel know what to expect and when. Jobs move through the shop floor on time and within budget. Past due jobs become the rare exception rather than standard operating procedure. All of which comes together to improve on-time delivery rates and customer satisfaction. Instead of seeking a more reliable supplier, customers will start recommending your business because they can count on you to deliver their parts on time.



YOUR CUSTOMERS WILL APPRECIATE IT, AND YOU'LL DISCOVER THE JOY OF DRIVING YOUR SHOP FLOOR WITH A FERRARI RATHER THAN A PINTO.



ABOUT THE AUTHOR

Mike Melzer serves as VP of Operations for Global Shop Solutions, and is a 20-year veteran of the company. As a graduate from The Colorado School of Mines, Melzer is an unparalleled leader, coaching the industry's top talent to ensure the continued success of Global Shop Solutions customers.

If you're tired of settling for unacceptable on-time delivery rates, call Global Shop Solutions at 1.800.364.5958. Or, **set up an appointment online.**

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