
SPEED TO MARKET

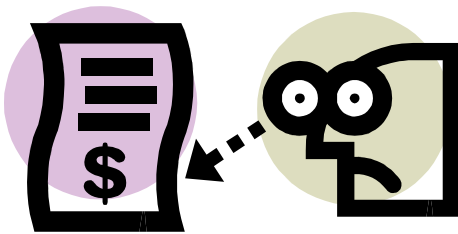
A Newsletter for
Job Shops–Niche Manufacturers–Focused Distribution Systems

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On Time and On Budget The Bottom Line for Job Shops

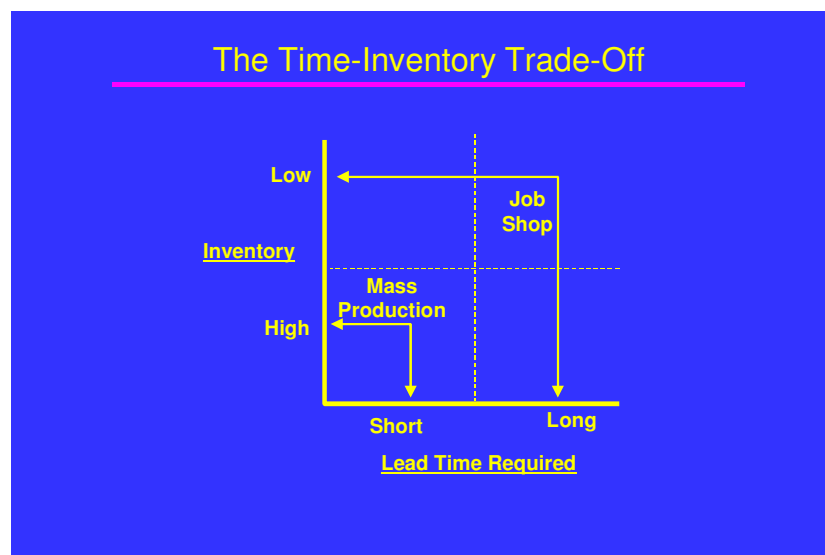


A major difference between traditional mass-production manufacturing and job shops is the time it takes to fill orders. In a mass production system, order-fill time is essentially zero as the product is already made, and it's merely a matter of pick, pack, and ship once an order is received. Performance metrics include the frequency of out-

of-stock occurrences, which can lead to lost sales, and the amount of capital invested in inventory. The best situation is to have a declining inventory investment with a decreasing trend in out-of-stock orders. This is an indication you are managing your inventory effectively.

Job shops and similar custom manufacturing businesses, on the other hand, make to order, which takes time (lead time). Often, lead time includes design or engineering time, as well as the time required to manufacture the product. Performance metrics are the ability to ship to the customer when promised, and to produce the order within the estimated cost. That is, on time and on budget.

The following graph shows the relationship between inventory and lead time in job shops and mass production manufacturing systems.



The Dangers of Failing to Ship on Time: If you are not able to ship on time, your customers will see you as unreliable, and will be reluctant to buy from you. And if you cannot produce within the estimated cost, your profits will erode. In either case, your business is at risk. However, it's important to recognize these are not separate problems. A company that is continually rushing to complete work in order to ship on time (or close to on time) will typically spend premium labor dollars on overtime, which is a profit drain when not planned. Of course, all the stop-and-start production, unnecessary set-ups, and rescheduling other jobs on the floor to accommodate late jobs also add to costs, but these typically go unrecognized and uncounted. Do you have a line item on your income statement that says "The cost of jumping though our behinds to get late work out the door on time?" If you did, you would see the magnitude of this cost, and seriously look for ways to solve the problem of not being able to ship on time.

Quick Cycle and Extended Cycle Businesses: It's important to differentiate between two types of job shops in order to understand the reasons for an inability to ship on time. One type is similar to a traditional machine shop where orders flow through fairly quickly (days) vs. tool shops or specialty machine builders where products are in production for longer periods of time (weeks, months). Let's call these *quick cycle* and *extended cycle* for convenience.

Quick cycle shops often have problems shipping on time due to the feast or famine nature of demand, a failure to manage capacity, using the wrong concept of scheduling, and the failure to recognize a job shop as a service business. Normal production problems such as rework, tool issues, unplanned set-ups, and absenteeism combine to keep the floor in a state of constant flux, which works against scheduling. (For more on this, see [A Primer of Job Shop Scheduling](#))

In extended cycle businesses, the inability to ship on time typically has less to do with the issues associated with quick cycle businesses, and more to do with a lack of project management systems and skills. Die making, for example, is an extended process with many steps over a period of several weeks, and the need for coordinated decision making with customers. It requires a structured approach to make sure the process steps are completed as scheduled (from confirming specifications through tryout in the customer's facility). It also requires recognizing an off-schedule condition, and the ability to get back on track right away. Otherwise, a small delay at the beginning of the process has a tendency to grow into a large delay at the end.

Case Example of a Need for a Project Management System: We had the experience of working with a company that customized trucks for the utility industry. Each truck was built to the customer's specifications right down to the color and markings. The problem was that almost a hundred trucks were in various stages of completion on the floor, virtually all were late, mostly for the lack of a minor part like a switch or hydraulic coupling. We mounted a full court press to acquire missing parts and get trucks completed and out the door (and get cash in the door). Then we designed and installed a project management system to ensure the same thing did not happen again in the future. Otherwise it would be like bailing a boat without fixing the leaks, and in no time at all they would be right back in the same situation.

Summary: If you cannot ship on time and on budget, your business is at risk, and the problem needs to be fixed immediately. In quick cycle businesses, this involves scheduling and capacity management; in extended cycle businesses, the issue is likely a lack of project management systems and skills (although you could also have scheduling and capacity management problems in machining). However, the net result is the same...unreliable, unprofitable businesses that customers avoid. We can help—call Delta Dynamics at 248-333-0482 or email us at ddilink@aol.com before your situation gets worse.

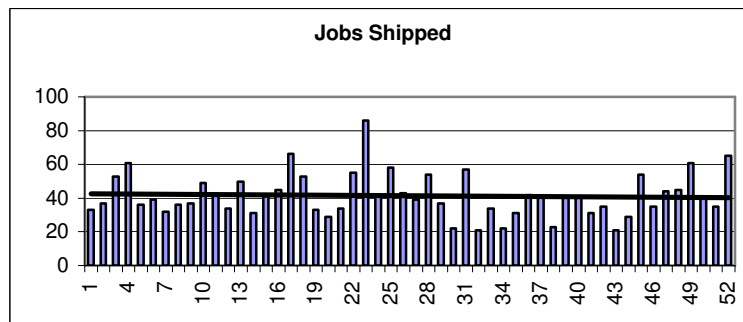
Constructing A Basic Scheduling System For a Small Job Shop



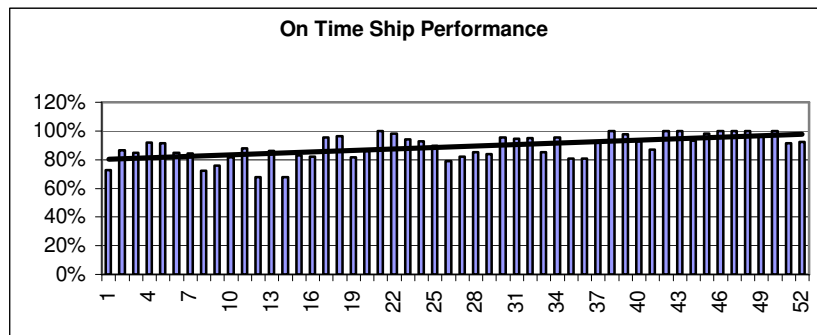
As we have discussed repeatedly in these *Speed to Market Newsletters*, scheduling in a job shop can be difficult and frustrating. We analyzed this problem in a several shops and found it stems from a combination of factors—the dynamic nature of the larger system in which a job shop operates, the feast or famine nature of demand, a lack of capacity planning, using the wrong concept of scheduling, organizational issues, fragmented systems, and more. Most scheduling systems are unable to handle the constant changes and adjustments that must be made to provide an acceptable level of customer service, short lead times, and competitive prices. It's clear that the inability to ship on time increases costs, and jeopardizes the future of any business, so it's a problem that must be addressed.

This may be one of those problems you cannot eliminate completely, but you can make it much less severe and less disruptive. We took this approach (amelioration), and designed the scheduling system for a small shop outlined in this article. This system has been installed and tested in a quick cycle shop with dramatic results. The following graphs (from the company's weekly performance report) illustrate what happened after this system was installed.

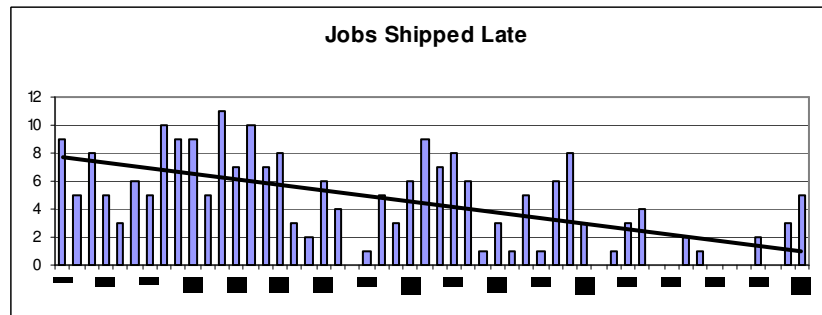
This graph shows the number of jobs shipped per week over the course of a year. The total is 2,156. This was achieved in a declining auto-supplier market where similar shops were going upside down at an alarming rate, so it's a significant achievement.



This graph shows on time ship performance, which improved from an average of around 80% to an almost perfect 100%.



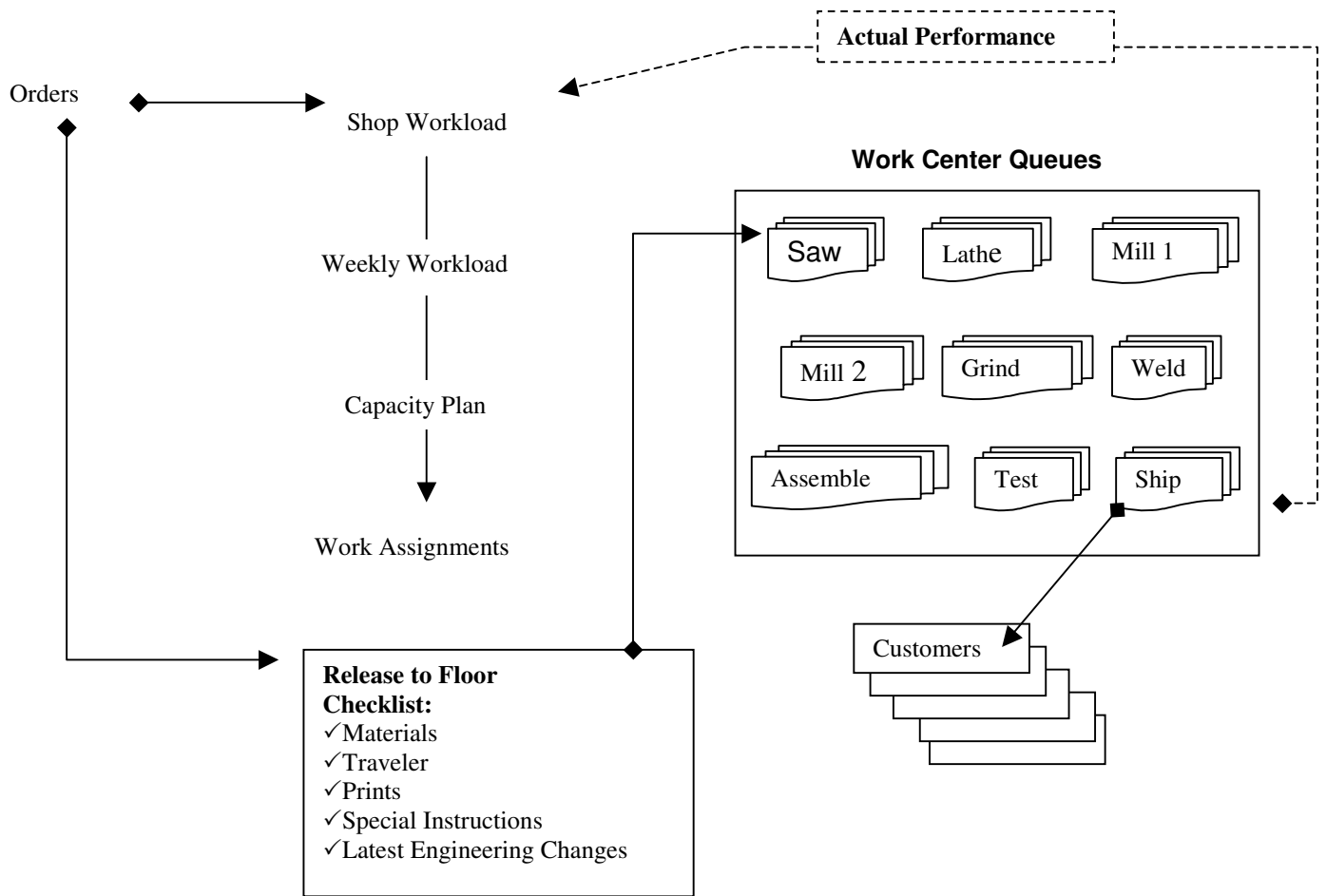
The next graph, *Jobs Shipped Late*, shows a corresponding decrease from about 8 per week (out of an average of 40 jobs shipped or 20% late) at the beginning of the year, to an occasional late shipment or two in the final weeks of the year.



Scheduling System for a Small Shop. An outline of the scheduling system we created is illustrated on the next page. It incorporates the following features and benefits, all of which are necessary for a well-managed shop:

- Maintains an accurate picture of the workload (backlog) on the shop in total and by work center;
- Enables you to prioritize work by ship date, and group these into production “buckets;”
- You can choose the size of these buckets based on the characteristics of your shop;
- It enables you to manage capacity more effectively;
- Gives employees a forward look so they can plan their time more effectively (vs. getting last minute assignments that can be disruptive to family obligations);
- Enables the shop floor supervisor to change the lineup behind each work center at a moment’s notice to reflect changes in priorities, and control work on the floor with greater precision;
- Specifies work assignments;
- Incorporates a method for comparing actual performance to estimates necessary for continuous improvement.

Delta Dynamics' Scheduling System for a Small Shop



Implementation Options:

We developed this product so it can be delivered in two ways. One is a do-it-yourself version that comes with complete instructions for setting it up, and using it. We supply this version with four coaching sessions as a package for \$5500.

The other version is delivered and implemented on-site, and is customized to fit the specifics of your company. We will analyze your situation, determine the best way to configure the system to meet your needs (including capacity management), train your people to input data and interpret output, and tie it to any existing system you are currently using (e.g., JobBoss, Vantage, etc.). The fee for this is \$12,500 plus travel and lodging expenses for a team of two people for a week. If you order within the next 30 days, we will include an added bonus—the installation of a *Weekly Performance Report* with key metrics to fit your business.

For more information, call Vincent Bozzone at 248-333-0482.

News and Notes

Upcoming Events

National Tooling and Machining Association West Michigan Chapter Presents

Lean for Tool Shops
Learn how lean manufacturing can be used to improve performance and
profitability in tool shops.
with Vincent Bozzone
December 5, 2006

[For more information](#)



Report on the Export Development Canada and PriceWaterhouseCoopers Annual Automotive Tool, Die & Mold Seminar in Windsor and Toronto

If you missed this very informative seminar, you can download a copy of
the presentations at http://www.edc.ca/english/events_11705.htm

- **The Automotive Manufacturing Sector in Canada-Future Prospects and Implications for the Machine, Tool, Die and Mold Sector**
Dennis DesRosiers and Andrew King, DesRosiers Automotive Consultants
- **Picking the Right Customers: How to Sell On Something Other Than Price**
Kim Korth and Phil Biggs, IRN Inc.
- **Mergers & Acquisitions in Automotive: Recent Trends**
Damian Peluso, PriceWaterhouseCoopers
- **Lean for Tool Shops**
Vincent Bozzone, Delta Dynamics, Inc.

Many thanks to all of you who ordered the [Primer of Job Shop Scheduling](#), and for supporting the continuing publication of the *Speed to Market Newsletters*.