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Bottlenecks

As descriptive a term as is “Bottleneck,” I think that most everyone understands its meaning in the production environment. I also think that we have a tendency to overlook the opportunities presented to us by bottlenecks because of our preoccupations and prejudices. I’ve observed that supporting operations are often a bottleneck. For instance, work backs up at straightening or hand blast. Reason? Perhaps the “production problem” is viewed as more of a quality, motivation or maintenance problem. “Nobody likes to straighten.” “The blast cabinet keeps plugging up.” Perhaps the solution would require an expenditure of funds normally reserved for furnaces “where the real money is made.”

Well, nothing is “made” until the invoices are presented and paid, and that first requires orders to ship. Anything that delays shipments – your throughput – delays receivables. Further, I have observed on any number of occasions that when a bottleneck was removed, sales began to increase within just a few weeks in response to better delivery performance. Let’s talk a little more about the nature of bottlenecks and some ideas on how to detect them.

While bottlenecks can be chronic or intermittent, we are more apt to fix a chronic bottleneck simply because it is nipping at us continuously. However, it is the intermittent bottlenecks, those that rear up because of “mix,” that insidiously inhibit your ability to grow market share. For example, there would be little to running a load of carburizing containing several hundred shafts overnight, but it could take a couple more days to run them through straightening were that your bottleneck. With that as the delivery standard, it is certain that you will not receive many orders for shafts requiring straightening. So unlike a chronic bottleneck such as tempering capacity, an intermittent bottleneck, by its very nature, is not evident much of the time. Here are a few techniques for finding the intermittent bottleneck:

- If you have a job that only one person can do, then you just might have a bottleneck.
- If you have a job that everyone hates to do, then you just might have a bottleneck.
- If you have a long lead-time part or family of parts, then somewhere among the operations, you just might have a bottleneck.
- If you have a piece of equipment that always seems to run poorly, then you just might have a bottleneck.
- If you have a labor operation that always needs overtime, then you just might have a bottleneck.



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Perhaps the most amusing bottleneck experience I've had was in a very small shop that, for the most part, did carburizing and vacuum hardening. I was filling in for the owner while he was out of the country for several months. I began by helping to build loads. I found that the capacity of the carburizing furnace was about 600 pounds including alloy. So I figured that parts alone shouldn't exceed 450 pounds. I found that average loads were actually about 250 pounds. So, we started building larger loads and immediately achieve 325 pounds for an average. From here, we crept up to the 400 pound range. It was then that the trouble started: I began getting complaints from the off-shifts that the loads were too large and that they had to re-build them. I asked what the problem was ... "The furnace should handle that easily." I was told that the furnace wasn't the problem; it was the elevator. "The loads are too heavy to lift from the quench tank." Sort of like brakes going soft on a car, the new driver finds the problem right away. Needless to say, we refurbished the elevator very promptly. And, yes, incoming work increased noticeably inside a month.

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