

Revised April 10, 2002. work_authorization.doc Author: Dean Ziegler, CPIM

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Gating Operation Work Authorization

What is Gating Operation Work Authorization?

Authorization to begin work at the first work center of a process.

Typical time buckets

Shifts or days. Maybe even hours.

Typical time horizon

As little as one shift, or as long as two weeks.

Possible Types of Gating Operation Work Authorization

Near-term Production Schedule(s)

The near-term horizon of the Master Production Schedule might double as the Near-term Production Schedule that is printed (or otherwise communicated) to authorize the gating operation to begin work on specific jobs, releases, orders, or repetitive schedules.

The Master Scheduler might also maintain separate “master schedules” for somewhat independent operations, such as Final Assembly, Shipping, or the gating operation of a process that is made somewhat independent due to time or inventory buffers.

Customer Orders

Sometimes the Customer Sales Order itself can serve as authorization to begin production.

A dispatch list derived from MRP

Because an MRP dispatch list will always suggest release of work based upon “estimated average” lead times, new-comers to MRP often don’t grasp the concept that the “estimated” lead time input into the MRP system will in fact become the “best case” lead time.

It is not uncommon for a firm to input “conservative” lead time estimates into their new system, thereby causing greatly increased actual lead times, which in turn cause estimates to be further lengthened to reflect the new lead times being experienced, and so on until someone finally grasps the concept that the “estimated lead times” input into the MRP system are the primary determinant of what actual lead times will truly be.

None of the other gating methods are affected by this phenomenon – only MRP dispatch lists.

A dispatch list derived from a Finite Scheduling System

FSC systems use expected lead times based on actual shop load, and consider things like sequence-dependent set-ups, and bottleneck optimization.

Project Scheduling software

Programs like Microsoft Project are good for scheduling long projects involving mostly labor and few repetitive operations.

Milestones must usually be manually synchronized with the Master Production Schedule.

Input/output Control

Considers planned vs. actual input and output and the resulting planned and actual backlog at selected (usually constrained) “control point” work centers.

If backlog is too large at a control point work center, then flooding the floor with more product will only result in longer lead times for jobs already in process.

Drum Buffer Rope

A special form of input/output control advocated by the Theory of Constraints body of knowledge.

Does not require a computer.

A (usually constrained) work center is selected to serve as the “drum” that sets the pace for all other operations.

A “buffer” of inventory is kept in front of this resource so that it is never starved. (And other techniques might be employed to optimize throughput through this constrained resource – which thereby optimizes throughput for the entire process.)

A signal is devised to serve as the “rope” between the drum operation and the gating operation – to release work only as fast as the drum operation can produce.

How to improve any gating dispatch system

Real-time shop floor data collection

To provide information on actual scrap, actual yields, items held up in MRB, last-minute change orders, labor variances, etc.

Integration with a Manufacturing Execution System

To also consider absentee workers, cross-trained skills, actual backlogs and priorities of upstream and downstream work centers, temperature, humidity, and other environmental factors, etc.

Non-gating Operation Work Authorization

What is Non-gating Operation Work Authorization?

Authorization to begin work at a work center that is not the first work center of a process.

Possible Types of Non-gating Operation Work Authorization

Kanbans or FIFO

The simplest form non-gating operation work authorization is “FIFO” – where stuff shows up in a work center staging area, and gets worked on in FIFO order.

Kanbans can also be used for operations with uncomplicated routings needing only first-come-first-served prioritization.

Work order / traveler

The work order / traveler accompanies the actual product being worked on – and contains routing instructions.

Dispatch lists generated by MRP or a Finite Scheduling System

An option for job shops with convoluted routings.

These dispatch lists might rank what the work center should do next in priority order – based on some form of prioritization system.

What prioritization system?

If not using kanbans or simple FIFO, then your software might support more complex prioritization schemes.

Studies have concluded that the highest levels of customer service usually result from a policy of working on the job with the shortest operation time first.

Of course, this results in long jobs becoming unacceptably long, so the suggestion is to periodically alternate the “shortest operation first” prioritization algorithm with FIFO.

What should workers do when they run out of authorized work?

It is management’s responsibility to answer this question, and make certain that every worker is very clear about what to do when there is no authorized work.

Possibilities

- Help other work centers perform authorized work
- Do self-study for new skills or cross-training
- Clean up their work area
- Perform maintenance
- Come up with creative ideas for continuous improvement (kaizen)
- Go home

The one thing they should never do is begin working on unauthorized work in order to “look busy”. The items they make may have an engineering change the next day, or the materials they use may be required for tomorrow’s authorized work.