

# THE GOOD BOTTLENECK

Have you ever wondered why managing production in a truss plant can be like chasing your tail?

I have managed a wide range of factories and yet I am constantly surprised at how unique the work is in the truss industry.

The type of production found in most truss plants includes some of the more difficult issues found in manufacturing.

These include:

**Made to order** - A plant where you cannot build stock of finished goods. There is no way of getting ahead or smoothing production. You are entirely driven "day to day" by the jobs you win.

**High product variability** - At the pressing end of the stream almost everything you make is "unique".

Setup times dominate the flow time and although flexible equipment can provide big benefits, most plants have to work with presses that have less than ideal setup times.

It is like a 'jobbing shop' running at flow assembly line type volumes.

Up stream of the Press there is more variety which allows most plants to "Batch".

This has its own set of problems, mostly notably difficult material handling. Scheduling, lifting and space problems are often the result.

**Uneven Demand** - Lead times are short and when it comes to different types of demand, you experience them all - Cyclical, Seasonal and Lumpy. In laymen's terms it is "feast or famine and never fun".

**Floating Bottlenecks** - Most truss plants have attempted to balance the capacity of all their equipment.

I won't go into the statistics involved, but this inevitably results in less total output than your slowest (not average) machine.

When you try to address the situation by looking for the bottleneck, it is a different machine from day to day and job to job.

**Neither A nor V** - Most industries have mature software systems

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designed to resolve the difficult issues typical for their type of production.

Historically these have fallen into two camps:-

**A-TYPE.** These systems process many components into a single finished product. The classic example is the car industry.

A-type manufacturers use MRP/ERP (Material Requirement Planning) systems based upon a BOM (Bill Of Material) and Routing approach.

They are focused on the control of the raw materials using Purchasing controls, Supplier networks and JIT deliveries. They are less concerned about capacity planning and scheduling.

between both of these systems and as such suffers from the lack of suitable software to help resolve its production management issues.

It is no wonder that anything that can simplify the management of your truss plant can have a big impact on your business.

One of the best things you can do is to create a "managed" bottleneck.

In a truss plant this is done by increasing the capacity of any process supplying your Press, so that the Press becomes the clear bottleneck.

Most thinking on bottlenecks is focused on fixing them as a problem but this approach deliberately creates a "Good Bottleneck" with flow on effects that simplify the way you manage your truss plant.

**THE GOOD BOTTLENECK:**

- is used to measure the total output of the truss plant or truss line.
- does the work by which all other equipment is scheduled.
- is your only production focus until something else limits it.
- is the basis of measuring production effectiveness (press output divided by total labour).
- should never be idle.
- should have the highest capital investment.
- is the starting point for making all improvements.

I have four rules to help turn your collection of "bad bottlenecks" into a single "Good Bottleneck".

**1) Make the press assembly the bottleneck.**

The Press is the meeting point for multiple component streams. It is also where we see the most "product variability" and is the area which requires the highest capital investment in flexibility (low setup times).

A stop at the bottleneck must be considered the same as stopping the whole company.

Action:



**V-TYPE.** These systems process a single raw material into many finished goods. The classic example is the oil industry.

V-type manufacturers use CRP (Capacity Requirement Planning) systems based upon a variety of algorithms. They are focused on utilising capital intensive equipment and require good capacity planning and scheduling systems. Many of these systems optimise bottlenecks.

Truss manufacturing sits very neatly

*Continued overleaf*

**2) Have excess capacity on any process limiting your bottleneck.**

Bottlenecks are inevitable. There will always be some limitation on your output, so it is a fruitless task running around trying to find and eliminate all bottlenecks.

Create your bottleneck by increasing capacity on any process limiting the Press.

This not only means sawing equipment but could be timber supply, labour, skills, detailing, number of trolleys, space etc.

**3) Always have a large stock buffer prior to your bottleneck.**

Use the excess capacity prior to your Press to keep a full buffer just before the press.

This could be trolleys or a large buffered in-feed deck.

Only stop up-stream processes when the buffer is full. Conversely there is no value in running upstream processes when the buffer is full.

**4) Start all improvement activities at the bottleneck.**

- continuously measure the time/reasons for all stoppages on your Press.
- continuously measure the output from your Press.
- do not invest time measuring output from any non bottleneck equipment.
- prioritize all your improvement time and investment by the downtime/reasons found on your Press.

For example :- You find that the number one reason for stoppages at the Press is waiting for cut members.

This should then trigger measuring the output at the saw, activity/ investment to correct this until fixed.

Then stop measuring output at the saw and focus entirely back on the Press. Work on the next highest reason for stoppages at the Press.

Managing production is a challenging business, and maximizing truss plant manufacture is as difficult as any other.

Understanding what is happening in your plant is an integral factor in

making the right decisions to maximise efficiency.

To gain this understanding requires accurate data and nail-plate suppliers have software available to help schedule and record activities in the plant which fulfils this need.

An increasing number of plants are adopting this type of software and through regular monitoring and review are able to realise improvements in the efficient management of their bottlenecks.

For those who may wish to explore this area a little further I would recommend the novel 'The Goal' by E. M. Goldratt; a compelling story that challenges the way we look at measuring operational improvements.

By understanding the dynamics of the process and how this relates to the truss and frame industry, it is possible to determine how to create your own 'managed bottleneck'.

It could take you a little out of your comfort zone but it may also reduce some of the day to day stresses of running a truss plant.

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