GANG-NAIL GUIDELINES No.111

ANOTHER MITEK ADVANTAGE

# FLEXIBILITY OF SINGLE BLADE LINEAR FEED SAWS - PART 2

In GN Guideline 110 I listed some of the key advantages that single-blade linear feed saws bring to the truss industry.

One of these is the flexibility to cut components truss-by-truss, but in a moment we will see that exercising the flexibility of 'truss-by-truss' cutting is just one way to achieve an acceptable part-rate from a linear saw.

A 'Linear feed' saw could be described as a fully-automated version of a traditional radial arm pull-saw cutting station.

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They self-feed timber stock 'linearly' through the saw and use a single CNC controlled blade on multiple axes to perform both leading and trailing end cuts, often cutting and ejecting several truss components from a single stock length.

The table above is an extract from the production report of a real truss job on a linear feed saw.

It provides the average time taken in seconds to produce a truss member, or 'part', with 2, 3, or 4 cuts per part, broken down by part length. In this example the members are not stacked, and there are no compound mitre cuts.

**Average Part Production Time (sec) by Qty of Cuts by Length**

| Qty Cuts | <0.9m | 0.9m - <1.8m | 1.8m - <2.7m | >2.7 |
|---|---|---|---|---|
| 2 | 00:11 | 00:10 | 00:12 | 00:14 |
| 3 | 00:13 | 00:13 | 00:15 | 00:18 |
| 4 | 00:20 | 00:19 | 00:20 | 00:24 |

## EFFECT OF NUMBER OF CUTS PER PART ON SAW OUTPUT

Firstly let's look at the number of cuts per part and its effect on the saw output. The second data column in this table shows that members at a length of between 0.9-1.8 metres took an average of 10 seconds to produce.

The same length members with 3 cuts took an average of 13 seconds, and with 4 cuts took 19 seconds.

The lesson is obvious: as with any other single blade saw, the more cuts per part the longer it takes to make it. This is in contrast with a multi-blade component cutting saw which distributes its set-up time across a batch of identical parts.

## EFFECT OF PART LENGTH ON SAW OUTPUT

Not surprisingly the figures also show that, for parts with the same number of cuts, greater length parts take more time to produce. Apart from the added time it takes to feed the member through the saw, long members are less likely to be nested with other members for optimised cutting, and therefore more likely to incur a time penalty during the initial feed of a new stock length into the saw.

The sensitivity to length and number of cuts will vary across different models of saw, but the message from the figures alone is that linear saws achieve maximum productivity when cutting short members with fewer end cuts.

Is the difference significant? The answer is yes! The extra output available when cutting at an average of 13 sec/part compared to 24 sec/part is 210 parts per hour!

So do we draw the conclusion that linear feed saws are best left to large truss plants who can afford to split their jobs across multiple saws and direct only short 2 or 3 cut parts on their linear saw? Of course the answer is 'No!'

All the benefits of truss-by-truss cutting and the other features of the saw are not eroded by this information.

We've simply identified an important characteristic of this saw type which, for owners and potential buyers alike, adds to the mix of considerations when selecting a saw, and assists with how best to operate the plant to achieve a realistic part-rate target.

## MAXIMISING LINEAR FEED SAW OUTPUT

In practical terms, one of the best ways to maximise the part-rate on a linear feed saw is to maximise the use of the saw's optimisation features.

This is a trade-off between several competing interests: the type of members the saw is cutting, wanting to optimise from a large selection of short and long members, ie. as many trusses ahead of the current one as possible, the prospect of having a full time catcher scrambling to completely re-sort the job as it leaves the saw, the premium cost when cutting from longer timber stock lengths, and the benefits of reduced waste.

Linear feed saws provide a range of options for organising and maximising cutting output for Truss Plant managers. Understanding their flexibility is the key to determining how best to improve their performance in your plant. TTN