About Tenon :

- Located Taupo - North Island NZ
- Cutting Pruned Radiata Pine
- Clear wood, Mouldings grades

Export to USA Random width & Mouldings & Better
Existing Carriage

- Edwards 3 Knee with Slabber
- Full Independent Knee Servo Hydraulics
- 30 GPM Moog Servo valve
- Closed Loop, Pressure compensated pump and Accumulator
- Suitable Scissor Dogs for full Taper sawing

Objective:

- Faster Scan & Set on the fly
- Risk Management
- Upgrade Controls & Optimizing system to “Industry Standard”
- Reduce load and Set times
- More ergonomic operator station
- Become Partners to grow our businesses
Agree on Performance Criteria!

- Meet Scanner Acceptance tests
- Faster Scan & Set on the fly
- 14 day Consecutive trouble free production

Challenges:

- “Scan on the fly and beat the operator”
- To Tenon half a second is a lifetime!
- Physical installation of Scanner
- Very Fast Set speeds
- Very Fast winch speed
- Finding the right Scanner
- Operator buy In!
- Be better than the existing system
- Commission in a 24/7 mill
Scanner Considerations:

- **Log Dimensions**: 3.6 to 5.8 m length (Debarked)
  - dia 300 to 950mm
  - majority 350 to 700mm

- **Feed Speed**

- **Solution time**: 200 to 600 milliseconds
  - Achieved actual less than 100 m/ sec

- **Scan and set time range**: 0.6 to 1.0 Sec

Scanner Considerations Cont....

- **Physical Space and Scanner placement**
- **Vibration**
- **Lighting**
- **Laser concentration at 125mm spacing**
  - 12 to 14m/ sec between profiles on the fly
- **Filter out unwanted data**
  - (Reflections, Crosstalk, spikes etc)
Determine Log Specification

What are out of spec logs?
- Excessive Sweep
- Excessive flare
- Excessive Bow & Sweep
- Cat face

Note: Out of spec may still be scanned but proving the system should be done with logs that are within an agreed range.

Log Breakdown for re scanning
- Consider how far the Carriage returns
Mount Scanner into Existing Housing
Setworks Considerations:

- PLC Communications - Ethernet
- Scan & Set with in 500m/sec, average actual around 300 m/sec
- Set & Retract speeds differ under load if there is insufficient flow & pressure
- Carriage position & Encoder interface to Scanner
- Be “In Control not out of Control”
THINKING ERGONOMICS
& OPERATOR BUY IN!
Acceptance Tests Required

1. Operation Equipment
2. Performance test:
   - Log process time, Scan set time,
   - Positioning Mechanically Repeatability,
   - Disaster recovery
3. Solution testing:
   - Demonstrate scanning accuracy MOF and BOF
4. Volume calculation, Scale
5. Management reports, Data Acquisition
6. Training, Project Documentation.
7. Outstanding work to be completed:
8. Consecutive fourteen day trouble free production run
Result:

- Stable operating system
- Initial Set more accurate due to more data (Snapshot) resulting in less adjustment required on the fly.
- Consistent load and Set times always beating the operator
- Solution time 200 to 600 milliseconds
  Achieved actual less than 100 m/sec
- Scan and set time range was 0.6 to 1.0 Sec
  Average result was 300m/sec
- Valves were increased to 59 US gpm

Result Cont ......

Machine flow
As soon as the dogs touch the log the operator is moving toward the slabber.
This is achieved with an infinitely variable dog down timer, generated from a pre-scan of every face. Having this tuned correctly can mean a difference of 40 logs a shift.

Confidence
A solution is generated and set every scan.
Time lost because of hesitation and indecision is never regained.
Result Cont ……
Reduction of waste cuts.
Detection of waste cuts based on volume rather than slabber cut depth. 5 to 10 logs per shift.

Pre-selection
Face and sizes can be pre-selected while in the cut for 180 or 90 deg turns.
High accuracy safeties to prevent machine damage and downtime.
Dog, loader and setlocks. Time to set verse distance to slabber at current carriage velocity.

Every face is scanned and every operator cut is recorded for accurate conversion statistics
Future Enhancements:

- Millwide Network Integration
- Single or multiple rear scanner heads for more accurate volume, maybe?
- Box Pith for better Cant placement

Closing thought ...
Is technology becoming more compact or is global warming a reality?.
THANKYOU