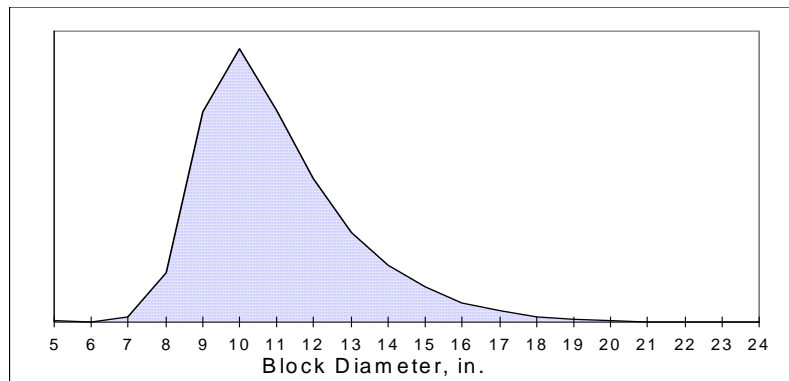


BLOCK CONDITIONING

INTRODUCTION:

Blocks are heated either in hot water vats or steam chests to soften the wood prior to the peeling process. Block conditioning with hot water vats is a semi-batch process while use of steam chests is a batch process. For the hot water vats, blocks without diameter segregation are loaded at one end of the vat and removed from the opposite end. Usually there are multiple vats and the blocks are pulled from a particular vat for 15 minutes and loaded at the same time. After 15 minutes, blocks are pulled from the next vat and so on. Figure 5 shows the diameter distribution for incoming blocks from a mill.

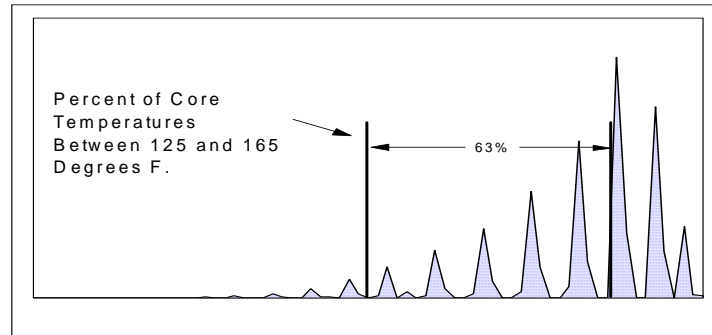
FIGURE 5 - DISTRIBUTION OF INCOMING LOGS



THE CONTROL PROBLEM:

Blocks peeled at the desired temperature will provide an optimum veneer surface smoothness needed for proper bonding of adhesives. However, it is impossible to maintain temperature control of the majority of the veneer because the blocks are not segregated by diameter. Figure 6 shows the result of a simulation of the block heating process before control. Results show that 63% of the blocks fell within the mill's desirable core temperature range.

FIGURE 6 - RESULTS OF SIMULATION STUDY OF BLOCK HEATING BEFORE CONTROL

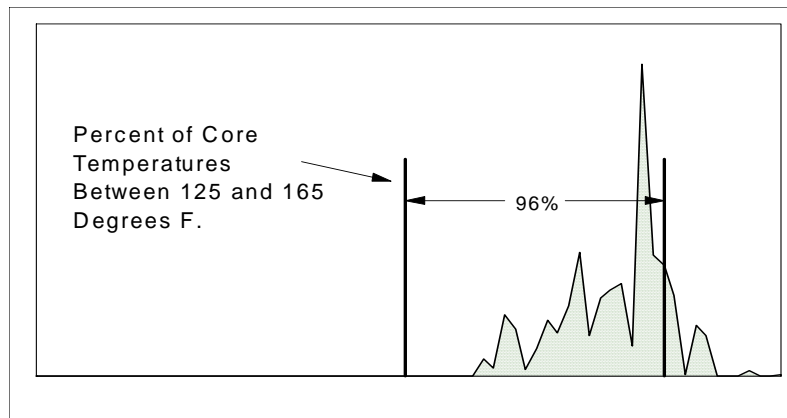


Block diameters larger than the average in the vat or chest will have more cold veneer; those smaller in diameter than the average will tend to produce more over-heated veneer. Also, veneer peeled from cold blocks has an increased tendency to split during the peeling process; blocks that are too hot are more susceptible to spinouts and also have a tendency to develop end cracks which shows up as down-graded veneer.

THE CONTROL SOLUTION:

A new control system has been developed that reduces over and under-heated veneer. It assigns to a vat a diameter range based on volume of the vat, number of vats and the processing rate. Blocks are directed to the proper vat according to their measured diameter. Blocks are pulled based on their **calculated** core temperature at the discharge end of the vat. A Monte Carlo method was used to simulate the entering block diameters for before and after studies to determine the effectiveness of the new control method. Figure 7 shows the reduction in over and under-heated blocks that could be attained using this new control method.

FIGURE 7 - RESULTS OF SIMULATION STUDY OF BLOCK CONDITIONING
AFTER CONTROL



For this particular mill, the simulation study revealed that this new control method would increase the number of blocks in the acceptable range by $(96 - 63)/63 \times 100 = 52\%$.