REGENT FLOORING INC.

Elizabeth M. A. Grasby and Dave Shaw revised this case (originally Jeffries Hardwood Flooring written by Jannalee Blok, under the supervision of Elizabeth M. A. Grasby) solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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Chad Bartos, owner of Regent Flooring Inc. (Regent) in Peterborough, Ontario, Canada, reviewed the August results from his second month in business. Sales had been slow during the summer months, but Bartos had expected this outcome, knowing the start-up nature of a new business and the fact that the summer months were usually slow in the flooring industry.

Bartos was preparing for a busy fall (September to November), a time when homeowners regularly undertook renovations. As such, he projected monthly demand of 750 square metres[1] of flooring. As he looked forward to the increase in orders, Bartos wondered whether the current manufacturing set-up could handle this demand – or possibly even greater demand – and in what area the equipment capacity was likely to be tightest. As well, how soon would he have to consider making equipment and other changes to Regent's production?

THE PRODUCT

Regent produced high-quality, finished, tri-laminated flooring made of oak, maple and bamboo. The firm's products were sold to local retail flooring centres, which in turn sold the flooring to primarily middle-income homeowners. The tri-laminated flooring had three layers: the top layer was a 0.4-centimetre piece of hardwood; the middle layer, called the core, was a 1.2-centimetre layer of high-density fibreboard; and the third layer, called the stabilizing layer, was a 0.4-centimetre thick piece of plywood with compact elastic paper attached to one side (see Exhibit 1). The finished flooring was constructed in four distinct stages: cutting, gluing, moulding and finishing.

All flooring was produced in two-metre lengths by 15-centimetre widths that were referred to as "boards." All measures of capacity were expressed in terms of boards.

THE MANUFACTURING PROCESS

[1] *The retail flooring centres typically installed the flooring purchased or arranged for installation by a third party.*

Regent purchased its hardwood lumber from local sawmills, and there was more than enough supply to meet Regent's needs. The hardwood lumber purchased came in four-metre lengths by varying widths of 16 to 17 centimetres and was from 0.5 to 0.7 centimetres thick. A fibreboard and plywood manufacturer that sold products across Ontario and into the northern United States was located about 50 kilometres from Peterborough. Regent bought its 1.2-centimetre thick, high-density fibreboard and 0.4-centimetre thick plywood (with compact elastic paper attached to one side) from this supplier in sheets that were four metres long by one metre wide.

Bartos worked nine hours a day, five days a week, taking one hour a day for lunch and breaks. He did most of the manufacturing himself, moving from one operation to the next in the process. For the functions that required two people, Bartos had hired a co-op student from the local community college to help him.

Cutting and Planing

A standard table saw was used to cut the hardwood pieces lengthwise into 15-centimetre widths. It took approximately one minute to cut six linear[2] metres. The cut pieces were then transported on a rolling wooden cart to a radial-arm saw, where they were cut into two-metre lengths and any defects or knots in the pieces were removed. Bartos estimated that the radial-arm saw could make up to 3,600 cuts a day.

The cut, two-metres by 15-centimetre pieces were then ready to be planed. The planer smoothed each piece's top and bottom simultaneously at a rate of four metres per minute.

Finally, the hardwood pieces were transferred to the thin-cut machine, where the hardwood was sliced into 0.4-centimetre veneers (the top layer). The thin-cut machine yielded 12 metres per minute. The hardwood veneer was then stacked on a cart for use later in the manufacturing process.

Before the hardwood veneer could be applied to the fibreboard and plywood, the fibreboard and plywood sheets had to be cut to two metres in length by 15 centimetres in width using the table saw. Two people were needed to do this cutting. In one day, 1,097 boards (approximately 548 fibreboard boards and 548 plywood boards) could be cut.

Gluing

At this point, the pieces of fibreboard, plywood and hardwood veneer were ready to be glued together. Using a paint roller to apply the glue, a piece of veneer was hand-glued to the fibreboard, and then the plywood was hand-glued to the fibreboard. With two people gluing, 1,920 boards a day could be completed. At this stage, the manufactured unit was structured into a "board," on which the remaining work was undertaken.

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[2] *Meaning "of length."*

Each completed board was moved directly into a press for two hours. A total of 480 boards could be pressed daily. The boards were then transferred onto a cart for another eight hours to dry and harden. The gluing and pressing took place in a separate room from the other production processes because the room temperature had to remain at an even 20 degrees Celsius for the glue to adhere properly.

Planing and Moulding

Once dried, the top side of the boards was very lightly planed again. This planing "cleaned up" the "good" side and "sized" the boards to their proper thickness of 15 centimetres. A total of 5,760 boards could be completed each day.

The boards were then moulded using a two-step process. In the first step, a moulding machine formed a tongue on one edge of each board and a groove on its opposite edge, and then three relief grooves[3] on the bottom of each board. The daily capacity for this moulding process was 2,280 boards per day. In the second step, another moulding machine called a "single ender" cut grooves into both ends of each board. A total of 1,440 boards per day could be completed.

Finishing

The finishing process included sanding, staining and varnishing. Each board was run through the sander, and two boards could be done at once, reaching a capacity of 5,760 boards a day. The sanded boards were then ready to be stained and varnished with a resin-based coating designed to resist abrasion and to protect the flooring from stains and fading.

Bartos took 10 minutes to set up the staining area, after which he could stain 240 boards in three hours, resulting in a maximum output of 624 boards each day. After staining, the boards were stacked on metal racks (there were three racks and each rack held 80 boards) and left to dry for four hours. Drying capacity was 480 boards a day.

After finishing the staining of the 240 boards, Bartos took another 15 to 20 minutes to set up the varnishing area. After the first boards were dry from the staining process and ready for varnishing, Bartos hand-sprayed the resin-based coating on both sides of the boards. Bartos could varnish 690 boards each day. The boards were stacked on metal racks (there were three racks and each rack held 80 boards) and left to dry. Three resin-based coats were applied to each board. Each coat had to dry for four hours before the next coat could be applied. A total of 480 boards could be dried each day.

The finished tri-laminated boards were stacked and carted to the finished goods area for storage. When an order came in, the finished flooring was pulled from the finished goods inventory, and the completed order was shipped.

[3] *Relief grooves provided some flex or "give" to the board.*

Each of the two-metre long by 15-centimetre wide finished boards covered a surface area (one side) of 0.30 square metres. Projected monthly sales of 750 square metres demanded the production of approximately 2,500 boards.[4]

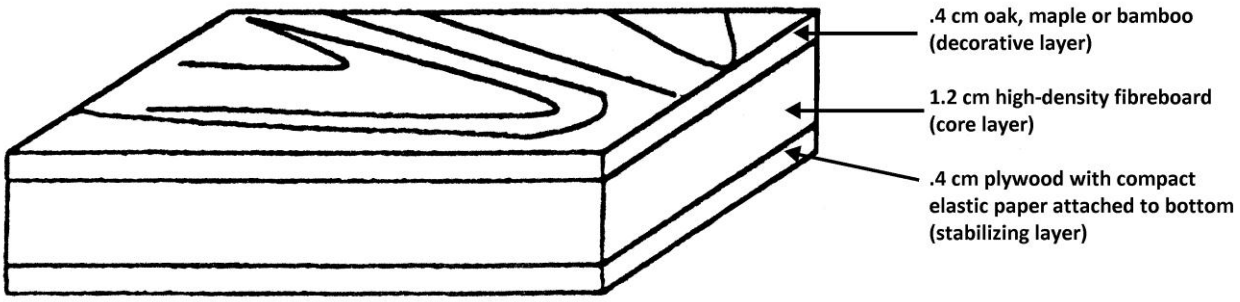
EQUIPMENT CAPACITY

Bartos wanted to know whether his current equipment could handle his projected monthly sales goal of 750 square metres or whether he would have to look into automating a few of the slower processes within his manufacturing operations. An automatic gluer could be purchased and would be able to glue an average of 135 boards every 20 minutes. An automatic sprayer for the resin-based coating would spray up to 12 metres of board per minute. The set-up time and drying time would remain the same as in the current production process.

SUMMARY

Bartos wanted to know what capacity his equipment could handle and, if monthly demand exceeded 750 square metres, at what production capacity would it be necessary to upgrade the current manufacturing operations? What benefits would the automatic gluer and resin-based coating sprayer generate? What benefits would a second person involved in operations, or extended hours for Bartos himself, accomplish?

Exhibit 1
LAMINATED WOOD FLOORING DESIGN



[4] *750 square metres of projected sales divided by 0.3 square metres per board*