Executive Summary

Three-dimensional modeling developed in SIMIO, in this model we find the manufacture of wholesale shelves, the shelves can be found in three different sizes and made of Birch and Oak wood. Each type of shelving specifically needs an exact amount of materials for its manufacture, these materials are obtained through processes that read Excel files where the quantities necessary for this task are standardized. To manipulate the information in the Excel files, it was necessary to use the R tool.

During the manufacturing process of the shelves, it can be observed that the machines are used for the assembly of the different types of shelves, that makes the process create queues, the machinery is not enough to manufacture shelves of different types. To increase the production rate, it is necessary to make a special assembly line for each type of shelf. Another interesting fact about the original production line is that it is divided into 4 assembly cells, in these cells the same sanding, drilling and screwing processes are carried out, and the shelf must travel to the different cells increasing the manufacturing time. To reduce the manufacturing time, it is proposed to make the cells in sequence and in assembly order, this means that only cuts will be made in a cell.

Recommendations

It is recommended to make an identical production line for each type of shelf, the variants in the process are the size of the shelf, so the configuration of the machine must be carried out in the cutting, drilling and screwing station. Once this configuration is made on the production line, more machinery must be added in the assembly stations, reducing queues and increasing production.

We also recommend having a control over the inventory since during the simulation we were able to identify and quantify the necessary material for each assembly and the lack of a product such as a screw, a support or paint, will result in a delay in the task in which it is carried out. need the missing product.

As a last recommendation, the observation is made to further individualize the processes, to shorten the queues within the manufacturing process.

Impact on the Commercial problem

Thanks to the simulation tool, it is possible to make the necessary variants, to have an optimized system. This saves us time and resources, since we can go from a configuration of a cutting machine to having three cutting machines in a short time and the best thing is that we can see the behavior with this new configuration, we can compare the results and decide the best. for business.

The simulation is not limited to only machinery, we could model the schedules of the employees, the schedules of the suppliers, this set of data, helps us from an economy to a better business, in our specific case The Simio Shelving Shop.

To have a better result, it is necessary to know in great detail the business rules and the details of the processes.

That is why a documentation has been created detailing the key processes for the manufacture of each of the products that are distributed. The detail of each activity reflects the success within the simulation, that is why different measurements have been taken for the cutting, painting and transport processes. When choosing Simio as a simulation tool, we have done so thinking that the solution presented is understandable by anyone outside the business.