Task assignment

Concerns with the operational efficiency of the workflow of the assembly line for the steel toe work boots leads to an analysis of its current process. The assembly schedule shows eight workstations with a maximum 60 minute task time. However the current performance times for the workstations seems to be Imbalanced which is causing inefficiencies. Through decision analysis we can determine the best way to optimize production and reduce these inefficiencies. This will include possible adjustments to the number of workstations and any metrics that can be implemented for them to be a more efficient process.

GET TASK 1 3 GET TASK 1 4 This was accomplished by using assembly line balancing, which is used to minimize imbalances between machines and/or employees on an assembly line. Also staying within the current cycle time parameters from the provided information. The current operational plan with the eight workstations is imbalanced. The current data allows the task to be reviewed in order to balance the line. All the tools needed to do the job are in place as well as each functions times to be executed. The opportunity would be to fine-tune the process to help with the efficiencies.

The steps needed to use the assembly line balancing tool: iris the overall cycle times to produce six boots per hour. This is for a 40 hour workweek (six boots every hour). Then the total time to make the boot, the provided diagram shows 46 minutes which is the sum of the task times of the eight stations. Then we need to figure out a more efficient number of workstations for the line which is extrapolated from the data input. Lastly we take all the task to produce the boot and assigned them to a workstation according to

specific rules such as logical sequence or reducing all the idle times to name a couple.

Being able to use the POMP application allowed al these to be factored in. GET TASK 1 5 POMP shows that a five workstation arrangement can be used to create a more efficient process. It reduces the overall cycle time to 46 minutes. This is a reduction from the original 60 minutes that was previously set. This helps reduce idle time and overall production time. The more efficient five workstation arrangement has shown how to improve the overall efficiency to 92% in the palm output gave the metric needed to accomplish the desired result of improved efficiencies of the line.

GET TASK 1 6 Part B: Learning Curve The Maim sandal initial cost analysis. The samples are new product that is being released in California and the southwestern United States. They have a anticipated high demand based upon the current marketing research. GET TASK 1 7 This equates to the Shanghai plant needing to gear up to produce them in batches of 10, 000. The first four months initial projections are that it will take 1000 labor hours to make the first batch. (This number is based upon previous new product rollover) the new product cost are at a $1. 08 per labor hour in Shanghai.

Lastly the learning curve is the final factor that needs to be figured out for the Maim sandal. The learning curve is simply the employees at the Shanghai plant becoming better and faster making the new product the repetition. Overall this reduces the amount of labor hours it takes to produce each batch, which equates to a drop in labor costs as the number of batches increases up to a certain point. The point being when workers are performing

each task as fast as they can without a drop in quality. This point is when the labor cost will no longer diminish. In previous projects the learning curve has been 80%.

The learning curve for principle is based upon a doubling of production. This means every time that the reduction doubles, there is a cut in the time to perform each task which impacts the time and cost of the production. This means by the fourth unit it will take 80% of the time of the second and the eighth unit will take 80% of the time of the fourth unit. GET TASK 1 8 Managements questions are what should be the schedule of production hours by month should be during months one through four and what the direct labor hours budget for those months should be as well.

This is ascertained by taking the on hand data using the learning curve analysis tool in order to give the desired information. The learning curve tool can help the management team get an idea of the labor hours and production costs for the Maim sandals and how they will change over the first four months of production. This is based Upon the employees getting better performing the assigned tasks each day of operation. The tool provides realistic views of costs and the labor hours this can help create an appropriate budget and validate that the product can be efficiently produced.

In the Shorewood scenario the Learning Curve is being used internally to establish costs and budgets for the project. The goal is to act according to the curve. The steeper the curve the more aggressively they can respond. It can allow them to price the product more aggressively as they see the

overall cost dropping and try and gain market share or GET TASK 1 9 simply try and focus on continuing cost reduction and product improvement. These are two different Strategic focuses that can be assessed by Shorewood by analyzing the Learning Curve data and seeing the overall costs reduction as the batches increase.

Initial cost estimates for the first batch production equal 1 000 labor hours at a labor cost of $1. 08 per hour. This equates to average cost per batch of $1080. 00. Using the learning curve tool and reviewing these numbers again after five batches the total labor hours for production are 3737. 74 at $1. 08 per hour; with the average cost per batch for those five batches $807. 35 which is as projected. A continued review shows the next 10 batches will be 4772. 80 at 1. 08 per hour which equates to $515. 46 per batch average cost in months two.

Month three schedule is for 15 batches which computes to be 5509. 36 at 1. 08 per hour with an average batch cost of $396. 67 for those 15 batches. Last review shows for the final month which has 20 batches of sandals on task for production to have total abort hours to complete as 6101. 82 at the $1. 08 per labor hour which tallies an average cost per batch of $329. 50 for the fourth month. The learning curve tool shows how the months one average cost was $1080 to the final month with these cost drop to $329. 50 which is over 69% reduction of cost to produce.

GASKETS 1 10 GET TASK 1 11 GET TASK 1 12 Part C: Staffing Plan Assignment With regard to the world of product manufacturing; production goals are a daily part of operations as are the challenges that come with

them. Another opportunity has been brought to light with the manufacturing of little women shoes, which have special skill requirements of the machine operators. The plant has four such skilled operators that are skilled and trusted enough to take on these projects. However even these operators finished these task at different times.

Management is looking to schedule those specific operators to jobs that would be most cost-effective for them. The cost matrix which gives some estimates that show how each operator performs at each job. The best way to assess this information would be use of the assignment method to solve this issue. This method involves the Assigning of tasks to resources. This is the best way to attain their goal to get this worked out. This method is used mostly to minimize the total cost and time, our situations tied to costs.

GET TASK 1 13 We take the data and setting up in a matrix or a table, also involved is the adding and subtracting of the appropriate numbers in the matrix to come up with the lowest opportunity costs. This cost optimization is generally achieved by creating zero opportunity cost through continuous subtraction of the lowest cost. This was accomplished using the POMP software to solve this problem. The PALM solution output shows assigned jobs to each operator with the best solution at 37.

The job assignment tool was the decision analysis tool used in multiple business situation to help assigned machines to different personnel, operators to a job, orders and different sections of a business. It is used best to assist in production minimization and also to minimize the overall costs. This was actually the best choice in this scenario to minimize costs by

signing operators to jobs. GET TASK 1 14 Part D: Short-Term Scheduling This is defined as scheduling concerns and the allocation of limited resources to tasks over time. These Shorewood scenarios deal with multiple areas that management needs to address on a consistent basis.

Such as materials, machinery, jobs and personnel. They need to make decisions, create schedules, and make plans with regard to these specific areas. These activities of management fall into the category of " Short-Term Scheduling". These all relate to hours, minutes and days for scheduling opportunities. The overall importance of scheduling for these factors help deal with: Increasing the per dollar invested value by creating additional capacity. Improves customer service by achieving improved delivery times. Reduction of production cost by the effective use of assets.

GET TASK 1 15 Short-term scheduling can have forward and backward classifications; Forward = as soon as the requirements are known. Backward = begin with the due date and schedule the final operation first. And also produces the schedule, by working backwards to to process. Both can minimize idle time, cost and completion times. The Shorewood scenario in the Steele Boot, Maim Sandal and the Women Shoe Production. All were examples of short-term scheduling. The Work Boot scenario, assembly line balancing main purpose was the minimization of use with regard to personnel and equipment.

Another would e the production of the women shoes and the assignment method for that scenario provides efficient utilization of company assets. Again another short- term scheduling concept. Part of manufacturing and

production is the delivery and receipt of materials and the delivery of the finished product. The organization can utilize short-term scheduling techniques Called Sequencing by using the application of a single resource method to help reduce production costs. Sequencing simply specifies the order that jobs should be done at work centers it also uses priority rules to dispatch or sequence jobs.

An example of this would be a solution technique for a single machine using single dimension rules such as Shortest Processing Time (SPOT) and Earliest Due Date (DEED). Since these base a job's priority assignment only on information about the jobs waiting for processing at the individual workstations. These can help GET TASK 1 16 determine priority based on a single aspect of the job, such as arrival time at the workstation, the due date, or the processing time. Of these performance measures that helps decide the selection of the technique such as tardiness, early this, flow times, and lateness.

For minimization of flow times SPOT is probably best. However with regard to reducing tardiness DEED is a better choice. Once Again these follow the Short Term Scheduling Technique of Sequencing. In the women shoe production scenario this was probably the most fitting. The deck shoe project, the optimum decision would be two machines or the Multidimensional rule of Sequencing scheduling technique, which has no wait time. Such as CRY (Critical Ratio) or The Johnson Rule. These would be effective since it gives them a backup machine if another machine were to fail of the three machines they have.