## 

## **Yaşar University Faculty of Engineering**

## **Department of Industrial Engineering**

## **IE 4811 INTERNSHIP REPORT**

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## Internship Date Interval: 04/07/2022 - 26/08/2022

## **Problem Identification and Definition**

## The place where I spent the most time during my internship at the factory was the CEE line, because I observed that there were minor confusions there. Later, I learned that the assembly line does not have a weekly planning, and work orders are opened on a daily basis. I have come to the conclusion that this is not very logical by both the employees and the management and that there should be an order in this regard. That's why I decided to make weekly production planning using Excel VBA.

## Irregularity of the number of workers in the CEE line, putting the products into production all of a sudden, fatigue of the workers etc. may delay production due to such situations. Thanks to this work I have done with Excel VBA, we will be able to make a weekly plan for the CEE line according to the changing number of workers and time based on production priority.

## **Identification of Key Input/Output Variables and Data Collection**

## I transferred the production quantities, cycle times and number of employees of the products produced on the CEE line to Excel with our Microfly and time studies.

## **Analysis of Data**

## The CEE line has 3 lines in total, and we set the average number of employees as 10.

## However, what we want is that no matter how much this number of employees changes, when the production order is given according to the order of the products based on the production priority (export, high, normal), their production is not interrupted, so there is no cost loss.

## For example, 3 people work in each of the 3 lines and production is made according to product priority, so that 1 person can stay out and help others while dealing with other things. In order to rule this out, our production will be healthier if we put workers as needed in each line, shift workers and give them to other lines.

## Therefore, every week, based on the production priority the number of workers and working times will be entered into Excel, and the products will be planned, and a small foresight will be formed for the CEE line.

## **Problem Formulation and Solution Approach**

## First, I created the WELCOME page to login.

## 

## Figure 1 : Welcome

## 

## Figure 2 : Parameters Button

## When you press the Parameters button, it directs you to the number of employees, hours

## worked and elapsed time. You can specify the parameters by making changes on this page as you wish.

## Figure 3 : Parameters

## When you press the data button, you will be directed to the data page. On this page, you can play around with the factory's products, cycle times, and number of employees. (in Figure 23)

## Figure 4 : Data Button

## I made 2 macro designs. The "calisma" macro does the assignments on the results pages. The "saatleriYazdir" macro prints hours and seconds.

## Figure 5 : Macros

## Then I wrote code and if I have to mention my code:

## Firstly, I started with defining variables. I closed the update screen because the macro was running slow at first, additionally I defined a variable in the total number of employees to speed it up.

## Afterwards, I wrote a code to reset the pages for each day. It first deletes the data, then resets it.

## Then, I have set the working time of the line per second as the total time. I mean; i take the assignments from the data section without looking at any restrictions for the first line, i am looking at the total number of employees for the second line, the same goes for the third line.

## So, I am looking at the jobs, if there are workers left over from that job, i am

## assigning a job by checking the constraints, or i cannot assign a job if the person exceeds the restriction.

## As you can see below (in Figure 29), we have reached the weekly production planning.

## 

## Figure 6 : Daily Planning Result

## **Discussion and Concluding Remarks**

## With the help of this project, the CEE line will be able to continue its activities on a weekly basis. Compared to daily planning, weekly planning will give the factory a lot of relief.

## Moreover, with the code running if changes are made to the data, it will work for them to plan in an up-to-date manner.

## There are problems due to the fact that there were 3 lines in the CEE line and there were an

## average of 10 employees. By assigning such employees and products, we can understand how many people should stop at least in one line and which product should be produced first, and irregular production will be eliminated. In this way, we gain more planned, less costly, faster production and efficiency.

## **Conclusion**

## Frankly, I am very lucky to have found this place as an internship place. I was very surprised to see the departmental courses I had taken at school every step of the way at the factory. At first, while doing time studies and calculations in most areas of production, I added

## something to myself in the production department and being able to access the ERP/MRP systems used next to it was very satisfying. Visiting departments such as Quality, Product Design, Maintenance and Accounting helped me to be enlightened in other areas. While

## doing my project research, I gained a lot of knowledge, especially in terms of Excel and code.