CHAPTER 6

CONCLUSION

In this research, a new heuristic namely, New Efficient Heuristic (NEHU) for solving Deterministic Assembly Line Balancing problem is developed. This will be very much useful for the industries to design mass production systems with improved productivity and to compete and survive in the competitive industrial sector in the era of globalization.

Literature review indicated that most of the Global Search methods for solving Assembly line problems stop the procedure of obtaining optimal solutions when the stopping criterion is reached. Also these methods start with an inferior initial solution. Moreover no suitable heuristic is available which gives weightage to different priority rules used for line balancing. These priority rules have to be prioritized because all of them may not have equal impact on the solution.

Hence in this research, a new efficient heuristic is developed not only to overcome the above-mentioned difficulties but also to get a better solution.

The newly developed heuristic consists of 2 phases. In the first phase the initial solution is selected from the best of the results of Heuristics for Assembly Line Balancing (HAL) and Composite Weight Factor (CWF) heuristic. In the next phase the initial solution is improved using New Global Search Heuristic (NGSH).

The heuristic will give the following results:

1. Number of workstations.
2. Work elements assigned to each station.
3. Idle Time in each station.
4. Total Idle Time (TIT) of all stations.
5. Balancing Efficiency in percentage.
These results can provide a broad guideline for designing an assembly line in a mass production system with improved productivity.

This heuristic is experimented with 12 Test problems generated randomly. The performance of the heuristic is compared with that of the existing set of heuristics, Heuristics for Assembly Line Balancing (HAL). For this purpose an experiment is designed using an appropriate ANOVA model. Software in Visual Basic is developed for testing the sample problems.

From the results of all the 12 problems it can be concluded that the Balancing Efficiencies using the newly developed “New Efficient Heuristic (NEHU)” in most of the cases are better than that of the existing set of heuristics, Heuristics for Assembly Line-Balancing (HAL). Also, one can verify the fact that the mean Balancing Efficiency using NEHU is better than that of HAL.

From the above observations it can be concluded that the newly developed heuristic, New Efficient Heuristic (NEHU) is an improved heuristic over the existing set of heuristics, Heuristics for Assembly Line Balancing (HAL).

Also, the proposed heuristic, “New Efficient Heuristic (NEHU)” has been applied to a real life situation of assembly line manufacturing Turbo-chargers. The results of assembly line balancing using this heuristic are recommended to the company for implementation.

Future work in this area can be carried out by considering multiple objectives using this heuristic, apart from Balancing Efficiency considered in this work.