

MULTIPRODUCT ASSEMBLY LINE BALANCING USING EXPERT SYSTEM

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Abstract

Assembly lines are special flow-line production systems which are of great importance in the industrial production of high quantity standardized commodities. Recently, assembly lines even gained importance in low volume production of customized products (mass-customization). Due to high capital requirements when installing or redesigning a line, its configuration planning is of great relevance for practitioners. Accordingly, this attracted attention of plenty researchers, who tried to support real-world configuration planning by suited optimization models (assembly line balancing problems). In spite of the enormous academic effort in assembly line balancing, there remains a considerable gap between requirements of real configuration problems and the status of research. To ease communication between researchers and practitioners, the paper provides a classification scheme of assembly line balancing and the various optimization techniques which are used for solving the problem of ALB.

Assembly Line Balancing problems have been conventionally classified into two types i.e. type I focuses on minimizing the number of work-stations for a given cycle time and type II minimizing the cycle time for a fixed number of work stations.

The present work study is based on the *Heuristic method* for Simple Assembly Line Balancing Problem. The Ranked Positional Weight Method is used in this case and type I problem has been taken into consideration i.e to calculate optimum number of workstations for the given cycle time.

In this paper Heuristic based Rank Positional Weight (RPW) method has been adopted for handling the problem in an automobile manufacturing industry. The programme is coded in C++. The software showed satisfactory results when run on given data by giving the optimum solution to the present Assembly Line work station for the product thereby reducing the manpower required for the existing setup.

Keywords: Heuristics methods, Assembly Line balancing, optimization techniques for assembling balancing, multi-product line balancing, cost oriented assembly balancing.