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CELL FORMATION USING PART CLASSIFICATION

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A machine shop with a functional layout has been considered for the implementation of a group layout. The inherent advantage of Group Technology such as the reduction of through-put times, variety reduction, material handling, flexibility of cells have been considered. Parts classification approach with modifications required for data handling by a microprocessor in the analysis has been used. The study was carried out as the progressive form of analysis, with the following three main stages:

(a) The groups of similar components were selected by considering the similarities of the components, followed by variety reduction. In this stage, classification system developed by Optiz[2] was used and the analysis was carried out with the help of a microprocessor.

(b) The process routes of the components were redesigned by considering the capacities of the available machines in the machine shop and the design specifications of the components. The existing process routes for the components under the functional layout were considered as the basis for the modification of their process routes. Great care was exercised in allocating similar components to one group of machines.

(c) Rank Order Clustering Algorithm (ROC2) developed by J.R. King and V. Nakornchai[1] together with a relaxation procedure for bottle-neck machines was used with some modification for it, for the analysis to develop block diagonal form for the machine-component matrix.

The technique was applied for the components which are manufactured in the Sri Lanka State Hardware Corporation machine shop at Yakkala.

References

1. King J.R. and Nakornchai V. (1982) Machine-component group formation in group technology: review and extension, Int. J. Production Res.. 20 117.

2. Opitz, H. (1970) A classification system to describe workpieces, Pergamon Press, Oxford.