Computers & Industrial Engineering, Vol. 52, Issue 4, May 2007, p. 380-403

A Decision Support Tool to Facilitate the Design of Cellular Manufacturing Layouts

V. Vitanov, B. Tjahjono* and I. Marghalany

School of Applied Sciences

Cranfield University, Cranfield, Bedford MK43 0AL

United Kingdom

*Corresponding author

Email: b.tjahjono@cranfield.ac.uk

ABSTRACT

This paper presents a decision support tool that can be used by practitioners and industrialists to solve practical cell formation problems. The tool is based on a cell formation algorithm that employs a set of heuristic rules to obtain a quasi-optimal solution from both component routing information and other significant production data. The algorithm has been tested on a number of data sets obtained from the literature. The test results have demonstrated that in many cases the algorithm has produced an exceptional performance in terms of the grouping efficiency, grouping efficacy and quality index measures. The algorithm, to an extent, overcomes common problems in existing cell formation methods such as in dealing with ill-structured matrices and achieving rational cell sizes.

Keywords: Cell Formation, Cellular Manufacturing, Production Flow Analysis, Heuristics

https://dspace.org/

A decision support tool to facilitate the design of cellular manufacturing layouts

Vitanov, Val; Tjahjono, Benny; Marghalany, I.

2007-05
Elsevier
http://dx.doi.org/10.1016/j.cie.2007.01.003
V. Vitanov, B. Tjahjono, I. Marghalany, A decision support tool to facilitate the design of cellular manufacturing layouts. Computers & Industrial Engineering, Vol. 52, Issue 4, May 2007, p. 380-403

Downloaded from a DSpace repository. https://dspace.org/