Applying Bin Packing Heuristics to the Repair Manpower Assignment in Steel Industry

Joong Hoi Kim and Soo Y. Chang
Department of Industrial Engineering
POSTECH, Pohang 790-784, Korea
e-mail: kijoho@postech.ac.kr

Abstract

In this paper, we consider the maintenance scheduling in the steel manufacturing plant where thousands of maintenance actions are to be taken every month. For the minimal disturbance in the production flow, the requested dates for most maintenance actions tend to be concentrated on the predetermined preventive maintenance shut down periods. Hence, there is a peak manpower demand periods. However, the maintenance manpower is not always enough to accommodate all those maintenance requests and therefore some of the requests must be turned down. Hence, it is not a trivial task to use the given limited manpower to accommodate as much requested repair jobs as possible. We have shown that this scheduling problem can be modeled as a variant of the two-dimensional bin packing problem(2DBP). Since, 2DBP belongs to the NP-complete class, developing an efficient optimal algorithm for the problem is practically impossible. Therefore, we develop a heuristic method which can be seen as a variant of the heuristic algorithm and discuss its performance.

SESSION B3: 정보통신 I