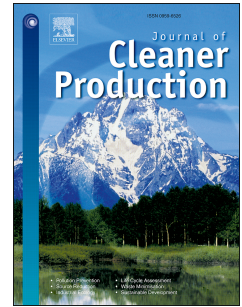


Accepted Manuscript

Bi-objective identical parallel machine scheduling to minimize total energy consumption and makespan

Shijin Wang, Xiaodong Wang, Jianbo Yu, Shuan Ma, Ming Liu



PII: S0959-6526(18)31386-6

DOI: [10.1016/j.jclepro.2018.05.056](https://doi.org/10.1016/j.jclepro.2018.05.056)

Reference: JCLP 12913

To appear in: *Journal of Cleaner Production*

Received Date: 5 December 2017

Revised Date: 6 May 2018

Accepted Date: 7 May 2018

Please cite this article as: Wang S, Wang X, Yu J, Ma S, Liu M, Bi-objective identical parallel machine scheduling to minimize total energy consumption and makespan, *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.05.056.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Bi-objective identical parallel machine scheduling to minimize total energy consumption and makespan

Shijin Wang^a, Xiaodong Wang^a, Jianbo Yu^b, Shuan Ma^a, Ming Liu^a

^a*Department of Management Science & Engineering, School of Economics & Management, Tongji University, Shanghai 200029, P.R. China*

^b*Department of Industrial Engineering, School of Mechanical Engineering, Tongji University, Shanghai 200029, P.R. China*

Abstract

Currently, energy consumption reduction is playing a more and more important role in production and manufacturing, especially for energy-intensive industries. An optimal production scheduling can help reduce unnecessary energy consumption. This paper considers an identical parallel machine scheduling problem to minimize simultaneously two objectives: the total energy consumption (TEC) and the makespan. To tackle this NP-hard problem, an augmented ϵ -constraint method is applied to obtain an optimal Pareto front for small-scale instances. For medium- and large-scale instances, a constructive heuristic method with a local search strategy is proposed and the NSGA-II algorithm is applied to obtain good approximate Pareto fronts. Extensive computational experiments on randomly generated data and a real-world case study are conducted. The result shows the efficiency and effectiveness of the proposed methods.

Keywords: Identical parallel machine scheduling, Makespan, Total energy consumption, Augmented ϵ -constraint method, Constructive heuristic, NSGA-II

1. Introduction

Nowadays, with the rapid economic growth, expanding populations and acceleration of globalization, energy demand keeps a rapid and ongoing growth

Email address: mingliu@tongji.edu.cn (Ming Liu)

Download English Version:

<https://daneshyari.com/en/article/8094508>

Download Persian Version:

<https://daneshyari.com/article/8094508>

[Daneshyari.com](https://daneshyari.com)