

Maintenance staff scheduling: A case study

Tamer G. Ali

Department of Industrial Engineering
King Saud University
Riyadh, Kingdom of Saudi Arabia
temad@ksu.edu.sa

Adel M. Al-Shaye'a

Department of Industrial Engineering
King Saud University
Riyadh, Kingdom of Saudi Arabia
alshayea@ksu.edu.sa

Mohamed Aly O. Louly

Department of Industrial Engineering
King Saud University
Riyadh, Kingdom of Saudi Arabia
louly@ksu.edu.sa

Abstract (12 font)

A mathematical model was developed to solve a staff-scheduling problem for a maintenance staff in production. Currently, monthly schedules are manually constructed. The manual nature of the process and the large number of constraints and goals lead to a situation where the used schedules are both inefficient and unfair. A linear goal programming model is suggested to find an optimized cyclical schedule. The maintenance planner objectives as well as the engineers' preferences are taken into account. The developed model had to produce balanced schedules that provide the required coverage while satisfying fairness considerations, in terms of weekends off, working night shifts, working day shifts. A 28-days scheduling period plan has been used. All of work patterns have been mathematically formulated as a set of soft constraints. The suggested mathematical model has been implemented using Lingo software. The optimal cyclical schedule has been found. It significantly increases both efficiency and staff satisfaction. A good balance of distribution between day and night shifts has been justified even though of different worker absenteeism scenarios.

Keywords Maintenance staff. Staff scheduling.

Biography

Tamer G. Emad Ali is currently a researcher student of Master in industrial system in industrial engineering department.

Adel M. Al-Shaye'a is an associate Professor in industrial system in industrial engineering department.

Mohamed Aly O. Louly a full professor an associate Professor in industrial system in industrial engineering department.