P0345

Scheduling teams for aircraft ground maintenance

Giuseppe Lancia, Paolo Serafini
Department of Mathematics and Computer Science, University of Udine, Italy

This talk deals with a real application concerning the scheduling of the maintenance staff of an airport and the described procedures are currently being implemented in a large Italian airport.

The time between the arrival and the departure of an aircraft is usually devoted to some maintenance operations carried out by the airport staff. The operations are requested by the aircraft crew just before the arrival and they are not known in advance. The operations require different skills and hence the airport staff must have available enough workers with the proper skills to cope with the requests.

The airport staff is organized according to a fixed duty table. The decision variables are the entry points in the duty table for each worker and the goal is to meet the incoming requests for a time horizon of six months.

We have split the problem into the following three steps: evaluation of the requests on a statistical basis; evaluation of the work force during a shift via a network flow model; decision of the best entry points via tabu search techniques.

Keywords: aircraft maintenance, staff scheduling, network flows, local search

P0346

An Application of Vehicle Routing Problem for an Air Conditioning Company

Ali Yurdun Orbak[1], Ilkün Orbak[2]
[1]Industrial Engineering Department, Uludag University, Bursa, Turkey
[2]Industrial Engineering Department, Maltepe University, Istanbul, Turkey

Vehicle Routing Problem (VRP) is one of the most important and significant problems in logistics' system which has been studied for about 50 years now. The problem is defined as the distribution of products to certain customers from one or more warehouses or collection of products from certain warehouses. It focuses on usage of vehicles with certain capacities effectively by carrying out distribution activities that pay attention to service time constraints specific to customers. Various optimization criteria exist in VRP such as number of routes, total route length, route duration, customer satisfaction and load balancing. In this paper a study on vehicle routing has been accomplished using actual data obtained from the logistics department of an air conditioning company. The model comprises products being taken from company warehouses and shipped to four distribution centers by using certain number of vehicles and returning those vehicles back to the warehouse. Two alternative models are used to solve this problem; mathematical model, and savings method. The models are solved using the GAMS computer program. The results indicate that the mathematical model provides slightly lower costs over the savings method. In addition the total number of vehicles used is decreased considerably.

Keywords: Vehicle Routing Problem, Logistics, Mathematicsl Model, Savings Method