

Integration of lot sizing and flow shop scheduling with lot streaming

ABSTRACT

We will develop a mathematical model for the integration of lot sizing and flow shop scheduling with lot streaming. We will develop a mixed-integer linear model for multiple products lot sizing and lot streaming problems. Mixed-integer programming formulation is presented which will enable the user to find optimal production quantities, optimal inventory levels, optimal subplot sizes, and optimal sequence simultaneously. We will use numerical example to show practicality of the proposed model. We test eight different lot streaming problems: (1) consistent sublots with intermingling, (2) consistent sublots and no intermingling between sublots of the products (without intermingling), (3) equal sublots with intermingling, (4) equal sublots without intermingling, (5) no-wait consistent sublots with intermingling, (6) no-wait equal sublots with intermingling, (7) no-wait consistent sublots without intermingling, and (8) no-wait equal sublots without intermingling. We showed that the best makespan can be achieved through the consistent sublots with intermingling case.

Keyword: Mathematical model; Lot sizing; Flow shop scheduling; Lot streaming