

بيانات البحث رقم (7) المقدم للترقية

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<b>Multi-objective optimization of household appliance scheduling problem considering consumer preference and peak load reduction</b>				عنوان البحث باللغة الانجليزية
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<b>ملخص البحث باللغة الإنجليزية:</b>				
<p>This paper addresses the load scheduling problem in residential sector while considering preferences of consumers and reduction of peak load. This study proposes an optimization model using multi-objective mixed integer linear programming considering a time-of-use (ToU) electricity tariff. Furthermore, this study considers the coordinated peak load reduction in a multiple-household environment. The proposed model aims to minimize three objectives: the electricity cost, the scheduling inconvenience and the peak load. Considering three objectives could enable consumers and utility companies to control their priority in minimizing one over the others. Three multi-objective optimization approaches are applied to solve the proposed model: normalized weighted-sum approach, pre-emptive optimization and compromise optimization. Numerical experiments show that the proposed solutions lead to significant savings in electricity costs, eliminate consumer inconvenience, while reducing the system peak loading. Furthermore, the results show outstanding performance when compared against three schedules from the literature and the consumer's preferred schedule. Moreover, the coordinated schedules for the multiple-household problem lead to a significant reduction and levelling of the aggregated peak load.</p>				