

القسم : هندسة القوى والآلات الكهربائية

عنوان المشروع : التنظيم الأمثل لوحدات التوليد الموزعة للتطبيقات المنزلية

Optimal Management of Distributed Generating Units for Residential Applications

مجال المشروع : الأداء الأمثل لوحدات التوليد الموزعة

Optimal Operation of Distributed Generating Units

ملخص المشروع :

This thesis introduces a new technique for online optimal operation of DG resources, i.e. Fuel cell (FC) and photovoltaic (PV) systems, for residential applications. The proposed technique aims to minimize the total daily operating cost of residential homes by managing the operation of embedded DG units remotely from a control centre. The target is formed as an objective function that is solved using genetic algorithm (GA) optimization technique. According to the proposed technique, the optimal settings of the DG units obtained from the optimization process are sent to each DG unit with the aid of two-way communication system. The proposed interactive communication system helps to automate the data collection from consumer's smart meters. In addition, the communication system enables presenting the daily usage of each home as a first step for load management. The results show that the proposed technique has the capability to define the optimal operating settings of the DGs that minimize the total operating cost of the entire system.