



Energy management And Rationalization In Government Buildings

Case Study Iraqi Embassy in Jordan-Amman

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DEDICATION

I dedicate this research to all persons who honored me with their help, support and backup.... To my beloved mother who sacrificed all what she owns to enable me occupying the highest rank and level..... To my dear brother, who is my supporter in this life who stood with me to overcome all hard circumstances which faced me.... To my beloved uncle; Ambassador Majid Abdel Ridha, for his fatherhood stand and encouragement which worked to assist me in my work.... To my beloved wife who stood and still besides me and created the academic environment and atmosphere to complete this thesis.... To all my friends, Eng. Mustafa Shehan Al Fahdawi, Eng. Mohammad Olawi & Eng. Ali Ajaj in particular.

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Energy management and Rationalization in Government Buildings

Case Study: Iraqi Embassy in Jordan-Amman

ABSTRACT

This research presents a framework for using lighting control system approach in reducing primary energy consumption from lighting and operating systems in public state buildings and governmental sectors in Jordan.

Two systems supplying lighting energy to the building are investigated; the installed main room lighting system and the usually crowded places just like passport department. A building model is created using digital timing diagram software and dialux program and modified to meet a satisfying agreement with the real building behavior. This model is used for fault detection and new control configuration investigations.

The governmental sector is classified as important domain in terms of Electrical Power rationalization. This importance is ascribed to various reasons, out of which falls under such sector's activity nature which is subject to major excess of electrical power consumption. The governmental sector is considered one of the main consumers of the electrical power and witnesses increasing consumption compared with other sectors. The governmental buildings expenditure is, normally, financed from the State balance sheet, therefore, any savings thereof shall be reflected positively on the State, and further, the striking similarity in electrical consumption modes in the governmental buildings shall work to popularize carrying out the opportunities to rationalize the power consumption therein.

This study tackles the adopted methods in Power control systems, and possibility to develop the control systems operation of buildings' power supply; particularly lighting and operating computer systems.

In the beginnings of this research, we have defined the power expenses in Iraqi Embassy buildings in Jordan, we determined the most power consuming devices in the mission buildings, then we moved to the lighting domain, and we practiced practical application in three different places within the mission. We have set out motion sensors in the passports hall, visitors' hall, and second floor corridor in the Consulate building. Moreover, we performed comparative economical study whereas the sensors usage outcomes were obtained, setting out sensors as to offices employees and employing thereof to control the lighting systems. We have employed Dialux program to simulate the respective sites and figure out whether the used lighting in such places is enough or otherwise.

We also have conducted study to control the computer sets and accessories, we have set out timers for computer sets and accessories, prepared program to act as digital timer that issues auto shutdown order at working hours end before the electronic timer cuts the supplied power to the computer sets and accessories in a way not to affect the sets safety. We also conducted economical comparative study to know the outcomes generated from using the timers, determined capital recovery, in addition to pool of outcomes and recommendations which is supposed to be applied in the future.