



Cairo University

**RETROFITTING EXISTING OFFICE BUILDING FOR
ENERGY EFFICIENCY
(A CASE STUDY IN BASELINE MEDIUM OFFICE BUILDING,
CAIRO, EGYPT)**

By

Arch. Marina Maher Eissa Sidhom

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
Master of Science
In
Architectural Engineering

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Under the Supervision of

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Retrofitting Existing Office Building For Energy Efficiency
(A Case Study in Baseline Medium Office Building, Cairo, Egypt)

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Summary:

The rapid growth in populations and energy demands has become one of the major problems that every country is facing right now from the richest countries to the third world countries, one of the consuming domains for energy is the existing buildings sector and its rising number, along with the building construction and its operation which contribute to a significant portion in global energy consumption and greenhouse gas emissions. Therefore fast enhancement for building energy efficiency is crucial for a timely reduction in global energy use and endorsement of environmental sustainability. This research discusses the energy consumption reduction potential and opportunities in every existing office building as well as the most effective retrofitting applications that can be used for greenhouse gas emission reduction along with the energy reduction. Dividing the retrofitting approaches into three levels as per the energy reduction percentage from the operation and maintenance needed for reaching 10% total energy reduction to deep retrofit level that can reach 60% total energy reduction.

Dedication

To Tahani Rizk- Allah,
Dedication to the memory of my grandmother,
who always supported me, whatever path I took.

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Table of Contents

CHAPTER 1 : INTRODUCTION OF OFFICE BUILDING RETROFITTING

1.1.INTRODUCTION.....	1
1.2.RESEARCH PROBLEM.....	1
1.3.RESEARCH AIM.....	2
1.4.RESEARCH HYPOTHESIS.....	2
1.5.RESEARCH QUESTION.....	2
1.6.RESEARCH METHODOLOGY.....	2
1.7.RESEARCH STRUCTURE.....	3

CHAPTER 2 : LITERATURE REVIEW OF OFFICE BUILDING RETROFITTING

2.1.INTRODUCTION.....	5
2.2.LITERATURE REVIEW OF THE WORLD ENERGY CONSUMPTION AND BUILDING SECTOR CONSUMPTION.....	5
2.4.THE ASSESSMENT OF OFFICE BUILDING ENERGY PERFORMANCE BY USING DIFFERENT METHODS FOR ENERGY AUDITS.....	15
2.5.THE FACTORS AND PAYBACK PLANS INFLUENCING THE RETROFITTING DECISION.	20
2.6.OFFICE BUILDING RETROFITTING METHODS AND TECHNOLOGIES.....	24
2.7.CONCLUSION.....	37

CHAPTER 3: RETROFITTING MEASURES OF MEDIUM OFFICE BUILDING FOR IMPROVING ENERGY PERFORMANCE

3.1.INTRODUCTION.....	38
3.2.RETROFITTING MEASURES IMPLEMENTATION APPROACHES.....	38
3.3.BUILDING ENVELOPE RETROFITTING MEASURES.....	42
3.3.1.BUILDING THERMAL MASS.....	43
3.3.2. RETROFITTING MEASURES IMPLEMENTATIONS FOR BUILDING ENVELOPE IN OFFICE BUILDINGS.....	43
3.3.2.1. EXTERNAL WALLS.....	43
3.3.2.1.1. WALLS INSULATION.....	43
3.3.2.1.2. DOUBLE SKIN FAÇADE APPLICATION.....	44
3.3.2.2. WINDOWS.....	45
3.3.2.2.1. WINDOW FILMS:.....	45
3.3.2.2.2. WINDOW SHADING.....	46

3.3.2.2.3.	HIGH-PERFORMANCE WINDOWS	47
3.3.2.3.	ROOFS.....	51
3.3.2.3.1.	ROOF INSULATION.....	51
3.3.2.3.1.1.	GREEN ROOFS.....	52
3.3.2.3.1.2.	PHOTOVOLTAIC PANELS.....	53
3.4.	LIGHTING RETROFIT MEASURES	54
3.4.1.	LIGHTING DESIGN	55
3.4.1.1.	THE RIGHT QUANTITY OF LIGHT	55
3.4.2.	DAYLIGHT HARVESTING:	57
3.4.2.1.	DAYLIGHT DESIGN:.....	57
3.4.2.2.	DAYLIGHT STRATEGIES	58
3.4.2.2.1.	TOP-LIGHTING:.....	58
3.4.2.2.2.	SIDELIGHTING	58
3.4.2.2.3.	WINDOW-TO-WALL RATIO (WWR)	59
3.4.2.3.	ADD EXTERIOR WINDOW SHADING AND LIGHT SHELVES.....	59
3.4.2.3.1.	SHADING:	59
3.4.2.3.2.	LIGHT SHELVES:.....	60
3.4.3.	INNOVATIVE WAYS TO BENEFIT DAYLIGHT:	61
3.4.3.1.	PASSIVE STRATEGY EXAMPLES:	62
3.4.3.2.	ACTIVE STRATEGY EXAMPLES:.....	63
3.4.4.	RETROFIT OF ELECTRIC LIGHTING SYSTEM AND CONTROL SOLUTIONS	64
3.4.4.1.	RETROFIT OF FLORESCENT LIGHTING SYSTEM:	64
3.4.4.1.1.	CHOOSING THE RIGHT LINEAR FLORESCENT LAMP:.....	65
3.4.4.2.	LIGHTING CONTROL APPLICATIONS AND EQUIPMENT.....	67
3.4.4.2.1.	OCCUPANCY SENSORS	68
3.4.4.2.2.	SCHEDULING:	69
3.4.4.2.3.	DAYLIGHT RESPONSIVE LIGHTING CONTROLS:.....	69
3.4.4.2.4.	DIMMING CONTROLS.....	70
3.4.4.3.	COMMISSIONING OF LIGHTING CONTROLS.....	70

3.5.HVAC RETROFIT MEASURES	70
3.5.1. HVAC SYSTEMS IMPROVEMENTS.....	70
3.5.1.1. ADJUST ZONE TEMPERATURE DEADBAND:	70
3.5.1.2. ADJUST VENTILATION:.....	71
3.5.1.3. CONVERT CV SYSTEMS TO VARIABLE AIR VOLUME SYSTEMS (VAV) 71	
3.5.1.4. RIGHT SIZE FANS	72
3.5.1.5. INSTALL VARIABLE-SPEED DRIVES.....	72
3.5.1.6. MODIFY CONTROLS	73
3.6.OFFICE BUILDING RETROFITTING MEASURES	73
3.7.CONTINUOUS IMPROVEMENT THROUGH O&M	76
3.7.1. O&M MEANING	76
3.7.2. O&M MANAGEMENT	77
3.7.3. BUILDING PERFORMANCE TRACKING	78
3.8. CONCLUSION	79

CHAPTER 4 DESIGN STRATEGIES FOR MEDIUM OFFICE BUILDING RETROFITTING

4.1. INTRODUCTION	80
4.2.DESIGN STRATEGIES INFLUENCERS	80
4.3.CLIMATE INFLUENCERS	80
4.3.1 Climate Zone Strategies Recommendation.....	80
4.3.2. Egypt Climate zone.....	81
4.3.3. Envelope	82
4.3.4. Lighting	82
4.4. HVAC.....	82
4.5.BUILDING INFLUENCERS	83
4.5.1. Building Shape	83
4.5.2. Building Size.....	83
4.5.3. Number of Stories	84
4.5.4. Building Orientation and Shading	84
4.5.5. Building Occupancy Types.....	85
4.6.IMPLEMENTATION OF RETROFITTING MEASURES	86
4.6.1. Existing Building Retrocommissioning (EBRCx).....	86
4.6.2. Standard Retrofits	89
4.6.4. Retrofit Measures Summary Table	93
4.7.INTERNATIONAL EXAMPLES FOR OFFICE BUILDINGS RETROFITTING APPROACHES AND MEASURES	ERROR! BOOKMARK NOT DEFINED.

4.8.LOCAL EXAMPLES OF EXISTING MEDIUM OFFICE BUILDINGS	96
4.9. CONCLUSION	111

CHAPTER 5 : RETROFITTING STRATEGIES EFFECT ON OFFICE BUILDING ENERGY PERFORMANCE; CLIMATE CHARACTERIZATIONS OF CAIRO EGYPT

5.1. INTRODUCTION	112
5.2.THE PURPOSE OF THE PRACTICAL STUDY:	112
5.2.1. CONSTANTS IN THE STUDY:	113
5.2.2. THE VARIABLE IN THE STUDY:	113
5.3.DESIGN BUILDER SIMULATION PROGRAM INTRODUCTION	113
5.3.1. PROGRAM FEATURES:	114
5.3.2. THE BASE CASE DESIGN PLAN AND PHYSICAL PROPERTIES:	114
5.3.3. BASE CASE SIMULATION :	117
5.3.3.1. SIMULATION RESULTS:	119
5.4.RETROFITTING MEASURES IMPLEMENTATIONS	123
5.4.1. REDUCING THE ENVELOPE LEAKAGE	123
5.4.2. ADJUST ZONE TEMPERATURE DEADBAND AND MODIFY CONTROLS 125	
5.4.3. ADD WALL INSULATION	127
5.4.4. ADD GREEN ROOF	129
5.4.5. ADD WINDOW FILM ADD LOW E WINDOW FILM TO THE 6MM BLUE GLASS U-FACTOR (W/M ² -K) 3.83 SHGC 0.768.....	131
5.4.6. ADD SCHEDULED INTERNAL BLINDS TO LOW E WINDOWS ADD INTERIOR BLINDS SCHEDULED BY AN EMS PROGRAM	133
5.4.7. REPLACE WINDOWS	135
5.4.8. ADD DOUBLE GLAZING, REFLECTIVE, CLEAR, INTERNAL BLINDS WITH HIGH REFLECTIVITY SLATS AUTOMATIC CONTROLLED BY SCHEDULE137	
5.4.9. ADD EXTERIOR WINDOW OVERHANG	139
5.4.10. ADD EXTERIOR OPERABLE WINDOWS/LOUVERS CONTROLLED BY O&M PLAN	141
5.4.11. RETROFIT INTERIOR FIXTURES WITH T5 & LIGHTING CONTROLS 143	
5.4.12. RETROFIT INTERIOR FIXTURES WITH LED & LIGHTING CONTROLS 145	

5.5.IMPLEMENTATION OF THE RETROFITTING MEASURES BY USING INTEGRATED APPROACH	150
5.5.1. EBRGX RETROFIT MEASUREMENTS SIMULATION :	150
5.5.2. STANDARD RETROFIT MEASURES IMPLEMENTATION:	152
5.5.2.1. ADD FILM TO BUILDING GLAZING (SHGC=0.236 , LT=0.106)	152
5.5.2.2. RETROFIT INTERIOR FIXTURES BY USING HIGH-FREQUENCY CONTROL T8 LAMPS.....	152
5.5.2.3. INSTALL OCCUPANCY SENSORS TO CONTROL INTERIOR LIGHTING	152
5.5.3. DEEP RETROFIT MEASURES IMPLEMENTATION:.....	154
5.5.3.1. REPLACE WINDOWS (REPLACE SINGLE GLASS WITH DOUBLE GLASS LOW E	154
5.5.3.2. ADD EXTERIOR WINDOW SHADING AND LIGHT SHELVES (ADD TO THE WEST AND SOUTH FAÇADES HORIZONTAL LOUVERS 1M PROJECTION) (FIG. 5-72)	154
5.5.3.3. ADD WALL INSULATION (ADD TO THE OPAQUE WALLS INNER ISOLATION).....	153
5.5.3.4. ADD GREEN ROOF	154
5.5.3.5. RETROFIT INTERIOR FIXTURES TO REDUCE LIGHTING POWER DENSITY (USE LINEAR CONTROL LED LIGHT SYSTEM)	154
5.5.3.6. INSTALL OCCUPANCY SENSORS TO CONTROL INTERIOR LIGHTING	155
5.5.3.7. ADD DAYLIGHT HARVESTING (USE DAYLIGHT SENSOR TO INTEGRATE BETWEEN DAYLIGHTING AND INTERIOR LIGHTING SYSTEM)..	155

Chapter 6 : Conclusions and Recommendations

6.1	INTRODUCTION.....	156
6.2	OBJECTIVES ACHIEVED	157
6.3	CONCLUSION	157

List of Tables

Table 2- 1 Global energy indexes evolution between 1973 and 2004 (Source: International Energy Agency (IEA))	6
Table 2- 2 Building sector energy consumption (Source: IEA, Eurostat , and Building Research Establishment (BRE))	8
Table 2- 3 The required Electricity density and luminous intensity in space (Source: The Egyptian code for Commercial buildings (306),2015)	14
Table 2- 4 presents a summary of typical applications of energy performance assessment:.....	31
Table 2- 5 contains a list of alternative retrofit actions applied in windows , walls and roofs that was demonstrated by the paper based on a CYPE rehabilitation price generator database.....	34

The following Table 3- 1 shows most common used techniques for external and internal wall insulation: (Source: California Commissioning Collaborative, The Building Performance Tracking Handbook , ©2011).....

Table 3- 2 presents options for new window products: (Source: California Commissioning Collaborative, The Building Performance Tracking Handbook , ©2011)	44
Table 3- 3 Vertical fenestration descriptions Source : ASHRAE’s “50% Advanced Energy Design Guide for Small to Medium Office Buildings”: Technical guidance geared towards maximizing energy savings for new construction projects, 2011	50
Table 3- 4 presents special Considerations when it comes to light designing in office buildings by space type: Source: Agogino, A. (2006) University of California Energy Institute Energy Notes, Wireless Smart Lighting System [saves energy, responds to human preferences] Vol.4, Issue 2, Berkeley.	56
Table 3- 5 Passive and Active Strategy Source: Laurent Michel, Jean-Louis Scartezzini, Solar Energy and Building Physic El sevier Solar Energy Volume 72, Issue 6, June 2002, Pages 473-492.....	61
Table 3- 6 illustrates the effects of pursuing gradually more-aggressive upgrades while maintaining lighting quality and quantity: Source: Martine Knoop Daylighting And Electrical Lighting Retrofit Solutions A Source Book Of ‘Advanced Lighting For Retrofitting Buildings’ Berlin , 2016	65
Table 3- 7 shows the best choices for general lighting upgrades: Source: Martine Knoop Daylighting And Electrical Lighting Retrofit Solutions A Source Book Of ‘Advanced Lighting For Retrofitting Buildings’ Berlin , 2016	65
Table 3- 8 Present the retrofit options for electric lighting Source: Martine Knoop Daylighting And Electrical Lighting Retrofit Solutions A Source Book Of ‘Advanced Lighting For Retrofitting Buildings’ Berlin , 2016.....	67
Table 3- 9 presents Lighting control applications and equipment Source: (E source, data from Advanced Lighting Guidelines)	68

Table 3- 10Analyzing all the discussed retrofitting methods used on the building main components; Building envelope, Lighting systems and HVAC Source: Researcher 2018.....	73
Table 4- 1Typical Internal Heat Gains for Office Spaces Source: The Lighting Handbook (IES 2011).	85
Table 4- 2Top faults causing energy inefficiencies in commercial buildings assuming Source :Adapted from Roth et al. (2005).....	87
Table 4- 3The retrofit measures recommended for the EBRCx implementation Source: California Commissioning Guide: Existing Building, 2006.....	88
Table 4- 4The retrofit measures recommended for the standard retrofit implementation Source: Advanced Energy Retrofit Guide, Practical Ways to Improve Energy Performance, U.S. Department of Energy,2011.....	89
Table 4- 5The retrofit measures recommended for the Deep retrofit implementation. Source: Advanced Energy Retrofit Guide, Practical Ways to Improve Energy Performance, U.S. Department of Energy,2011	91
Table 4- 6The Deep retrofit measures energy costs and savings. Source: Advanced Energy Retrofit Guide, Practical Ways to Improve Energy Performance, U.S. Department of Energy,2011.....	93
Table 4- 7the following table lists all Retrofit measures in both category A and B implementing in office building retrofitting. Source: Researcher,2018.	94
Table 5- 1 Base case physical properties	115
Table 5- 2 Comparing the total energy consumption for the 8 direction.....	122
Table 5- 3	147
Table 5- 4 comparison between the three retrofitting measures energy consumption and Co2 emission reduction percentage compare to the base case :.....	156

List of Figures

Fig. 1- 1 Research Structure Source: Researcher 2018.....	4
Fig. 1- 2 Research Structure	3
Fig. 2- 1 Human development index Per capita (kgoe/year)	6
Fig. 2- 2 the left picture is the total oil resources , on the right is Egypt's Total Natural gas resources Source: Masters et al 1994, BP2009, US GS.....	7
Fig. 2- 3 Primary energy consumption, CO2 emissions and world population from year 1984-2004 (Source: International Energy Agency (IEA)).....	8
Fig. 2- 4 Building energy-carbon intensities by country and building sector energy consumption by sub-sector,(Source IEA, calculations derived from IEA World Energy Statistics and Balances 2016, www.iea.org/statistics, IEA, Energy Technology Perspectives 2016, www.iea.org/etp/ .)	9
Fig. 2- 5 US Energy Consumption by sector Source: US Energy information Administration (2012).....	10
Fig. 2- 6 Building energy codes and standards, (Source: J. D. Brian Dean, The Global Status Report, France: United Nations Framework Convention on Climate Change (UNFCCC), 2016.).....	11
Fig. 2- 7 Typical Open Plan Office Design standard (Source:European Commission Office for infrastructure and logistics Brussels: Manual of standard building specifications,2011)	12
Fig. 2- 8 Office building zoning design for a the preliminary schematic design stage (Source: European commission,2011)	12
Fig. 2- 9 Building Energy Certifications. (Source: J. D. Brian Dean, The Global Status Report, France: United Nations Framework Convention on Climate Change (UNFCCC), 2016).....	15
Fig. 2- 10 The left fig shows Perspective view of the Vasari wind tunnel simulation, the right fig shows Horizontal section view of the wind patterns, pressure and Pascal. Source: Thomas Spiegelhalter, 2013	16
Fig. 2- 11 Comparison of annual energy consumption for space conditioning – base case and retrofitting strategies	17
Fig. 2- 12 Comparison of the research finale results demonstrating the error percentage for the simulation programs.....	18
Fig. 2- 13 Exergy Efficiency of the GSHP system 4:00 PM on 49th day in 2012 (after retrofitting and refurbishment).....	19
Fig. 2- 14 Exergy Efficiency of the GSHP system in 2012 (after retrofitting and refurbishment).....	19
Fig. 2- 15 Retrofit to premium offices in Melbourne CBD by adaptation	21
Fig. 2- 16 On the left Fig. Schematic of the shading system design, and the right Fig. is the Appearance of the shading system after construction	22
Fig. 2- 17 Monthly reduction of cooling load caused by shading system	22
Fig. 2- 18 Detailed breakdown of the bidder’s budget	22
Fig. 2- 19 Flow Chart demmonstrating the stages of the retrofitting ideal candidate case.....	23

Fig. 2- 20 Global Buildings end-use energy consumption 1990-2050 Source: U. C. Action, http://climateaction.unfccc.int , The United Nations Framework Convention on Climate Change, 2018.....	24
Fig. 2- 21 Pay back years expected along with the energy consumption expected for each of the cases presented by the researcher Source: B. Poel et al. / Energy and Buildings 39 (2007) 393–403	25
Fig. 2- 22 Prediction of the three case studies while using the number of occurrence using design builder	26
Fig. 2- 23 Electrical consumption breakdown of design proposed building.	27
Fig. 2- 24Electrical consumption breakdown of ASHRAE budget building.....	27
Fig. 2- 25 The 14 different output analysis visualizations (1) solution fitness, (2) solutions probabilities, (3) solution range, (4) solution line, (5) solution space (Pareto Front), (6) parametric weights, (7) time series, (8) solution comparison, (9) solution tree, (10) linear trade off (11) table, (12) dendrogram, (13) fitness and average fitness, and (14) thermal contour plot).	28
Fig. 2- 26 Comparison of the predicted energy use (kWh) of a building based on an occupant survey and actual energy use of the building based on metered data.....	29
Fig. 2- 27 Energy savings in 2015 if all installed stock had met minimum energy performance standards . (Source: International Energy Agency ,IEA 2016)	30
Fig. 2- 28 Main categories of building retrofit technologies	32
Fig. 2- 29Lucy Sharman Green Roofs and Green Walls Project Officer City of Sydney	33
Fig. 2- 30 Typical green roof cross-section	33
Fig. 2- 31 Percent Energy Use by Building System (U.S. Energy Information Administration, 2006)	35
Fig. 3- 1The staged approach to building upgrades Source: ENERGY STAR, Building Upgrade Manual, 2008.....	39
Fig. 3- 2 Integrated Project Design Team - Adapted from ASHRAE (2009).....	40
Fig. 3- 3: shows an example of the use of energy modeling in a simplified approach to map the contribution toward the building energy savings achieved by each collective design decisionSource: ASHRAE’s “50% Advanced Energy Design Guide for Small to Medium Office Buildings”: Technical guidance geared towards maximizing energy savings for new construction projects, 2011	41
Fig. 3- 4Materials as a mean to prevent solar heat gain while allowing daylight. SourceGregg D. Ander, Whole building design guide, U.S. Department of Energy Federal Energy Management Program (FEMP), 2016.....	42
Fig. 3- 5Double Skin – Water Source Heat Pump LEED Platinum, Loyola information commons Chicago Source: SCB Architects , Chicago	45
Fig. 3- 6Window films can be retrofitted to existing windows to reduce heat gain due to solar radiation. Source: ENERGY STAR, Building Upgrade Manual 2008.....	46
Fig. 3- 7Buildings in sunny areas can benefit from a variety of shading techniques. Source: ENERGY STAR, Building Upgrade Manual 2008	46
Fig. 3- 8Exterior Shading Source : ASHRAE’s “50% Advanced Energy Design Guide for Small to Medium Office Buildings”: Technical guidance geared towards maximizing energy savings for new construction projects, 2011	47