



Mohamed Hssan Hassan Abdelhafez

Associate Professor - Faculty of Engineering - Aswan University - Egypt
Associate Professor - College of Engineering - University of Hail - KSA

BIOGRAPHY

Dr. Mohamed Hssan Hassan AbdElhafez was born in Egypt in 1976. Graduated from Asyut University in 1999 and continued post-graduate studies at South Valley University. There, the Master of Science was finished in 2004 by investigating the effects of human needs on the design of urban spaces in Upper Egypt cities. And the PhD studies continued at Aswan University on behalf of Dortmund University (Germany), which finished in 2010 by developing a simulation model for passive cooling in a hot desert climate.

The current research interests include the built environment and its mutual effect with outdoor-indoor climate conditions with regards to passive systems to assess their thermal impact on comfort provision, energy consumption and CO2 emissions which means to some extent sustainability. In addition, Environmental design of buildings; Thermal comfort & Energy efficiency in hot climates; Natural ventilation as a passive cooling strategy; and Computational Fluid Dynamics (CFD) modeling and simulation.

Personal Details

Date of Birth	October 30, 1976
Sex	Male
Nationality	Egyptian
Marital Status	Married (have four daughters)
Religion	Muslim
Military Service	Completed
Address	Department of Architectural Engineering, Faculty of Engineering, Aswan University, Aswan 81542, Egypt
	Department of Architectural Engineering, College of Engineering, University of Hail, Hail 2440, Saudi Arabia
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Academic Qualifications

B.Sc. "Architectural Engineering" with accumulative average grade "Very Good with honor's degree (78.63%)", Department of Architectural Engineering, Faculty of Engineering, Assiut University, June 1999.

M.Sc. Courses, Department of Architectural Engineering, Faculty of Engineering, Assiut University, June 2000.

- 1- Urban Planning
- 2- Urban Economics
- 3- Desert regions planning
- 4- Housing

M.Sc. in "Architectural Engineering" Department of Architectural Engineering, Faculty of Engineering, South Valley University, Aswan, Egypt, June 2004. The thesis entitled as *"The Effect of Human Needs on Design of Urban Spaces in Upper Egypt Cities - Aswan City for Example."*

Ph.D. in "Architectural Engineering" Department of Architectural Engineering, Faculty of Engineering, Aswan University, Aswan, Egypt, on behalf of TU Dortmund University, Dortmund, Germany, December 2010. The thesis entitled as *"Development of Building Simulation Model for Passive Cooling in Hot Desert Climate."*

Career Description

Demonstrator:

March 2000 : December 2004, Department of Architectural Engineering, Faculty of Engineering, South Valley University, Aswan, Egypt.

Teaching Assistant:

December 2004 : February 2011, Department of Architectural Engineering, Faculty of Engineering, South Valley University, Aswan, Egypt.

Visiting Scholar:

June 2007 : June 2009, Department of Building Physics, Faculty of Civil Engineering and Architecture, TU Dortmund University, Dortmund, Germany.

Assistant Professor:

February 2011 : October 2018, Department of Architectural Engineering, Faculty of Engineering, Aswan University, Aswan, Egypt.

Visiting Researcher:

November 2015 : May 2016, Department of Building Physics, Faculty of Civil Engineering and Architecture, TU Dortmund University, Dortmund, Germany.

Associate Professor:

October 2018 : Present, Department of Architectural Engineering, Faculty of Engineering, Aswan University, Aswan, Egypt.

Assistant Professor:

February 2019 : Present, Department of Architectural Engineering, College of Engineering, University of Hail, Hail, KSA.

Design skills

- Energy efficient design for present and climate change scenarios.
- Passive and Green Architectural design.
- Environmental thermal impact assessment for built environments.
- Energy efficient urban design.
- Sustainable building design.

Computer skills

- OS windows and some other software Packages.
- Good command of Microsoft Office™ tools (Holds an ICDL certificate, syllabus version 3.0, 2006).
- Excellent skills using AutoCAD, Photoshop, and SketchUp.
- Excellent skills using TRNSYS, and COMIS simulation program.
- Excellent skills using Autodesk CFD simulation program.
- Excellent skills using some energy and climatic simulation programs.

Languages skills

- Arabic language: Mother tongue
- English language: Very good
- German language: good

Organisational / Managerial skills

October 2013 : October 2015, Coordinator of Department of Architectural Engineering, Faculty of Engineering, Aswan University, Aswan, Egypt.

October 2013 : October 2015, Member of the Faculty Council, Faculty of Engineering, Aswan University, Aswan, Egypt.

March 2015 : October 2015, Member of the Engineering Studies and Consultations Centre Council, Faculty of Engineering, Aswan University, Aswan, Egypt.

September 2016 : February 2019, Head of the committee of heritage conservation, Aswan Governorate, Egypt.

March 2011 : March 2012, Head of building assessment committee, Academic Accreditation of Power Electrical Engineering Program, Faculty of Engineering, Aswan University, Aswan, Egypt.

March 2017 : February 2019, Coordinator of Academic Accreditation Committee of Architectural Engineering Program, Faculty of Engineering, Aswan University, Aswan, Egypt.

September 2019 : Present, Quality Coordinator of Architectural Engineering Program, College of Engineering, University of Hail, Hail, KSA.

September 2019 : Present, Coordinator of COOP, Department of Architectural Engineering, College of Engineering, University of Hail, Hail, KSA.

September 2019 : Present, Coordinator of ARE website, Department of Architectural Engineering, College of Engineering, University of Hail, Hail, KSA.

Consultation & Services

- Member of Egyptian Engineers Syndicate.
- Member of a scientific team of the research project, 2004, entitled as *"Medium and Small Sized Towns Extrusive Development Methodology in The South Upper Egypt."*
- Member of Aswan University team of the joint European TEMPUS project, 2012, entitled as *"530611-TEMPUS-1-2012-1-IT-TEMPUS-JPCR, Green Innovation, and Entrepreneurship Programme – GIEP"*
- Member of Engineering Studies and Consultations Centre, Faculty of Engineering, Aswan University.
- associated with designing many projects, Aswan University as follow:
 - *The design of the layout of the main administration building at Sahary Campus, Aswan University.*
 - *Associated with the design of interior spaces of the main administration building at Sahary Campus - Aswan University.*
 - *Design building of lecture halls at Faculty of Education – Aswan University.*
 - *Design building of Faculty of Linguistics – Aswan University.*
 - *Design building of Faculty of Tourism – Aswan University.*
 - *Development the building of Aswan Hospital.*
 - *Associated with the planning of new campus at New Aswan City - Aswan University.*
 - *Development and Redesign of Police Club – Aswan.*
 - *Redesign and conversion of traffic administration building to sustainable building at New Aswan City.*

Research interests

We have no choice but to adapt our communities to the near and long-term effects of climate change. These concepts are gaining traction as more people become aware of the benefits of employing various urban forms, including warm-climate urban forms in cold-climate places. The interdisciplinary nature of urban climate research has hindered climatic knowledge from being used in architectural design, urban planning, and applied design studies. This sparked my interest in the built environment and its interaction with outdoor-indoor climate conditions in order to evaluate the thermal impact of passive systems on comfort, energy consumption, and CO2 emissions, all of which contribute to sustainability to some extent.

Other interests:

- Environmental design of buildings;
- Thermal comfort & energy efficiency in hot climates;
- Natural ventilation as a passive cooling strategy;
- Sustainable urban design; and
- Computational Fluid Dynamics (CFD) modelling and simulation.

Website address

ORCID: <https://orcid.org/0000-0002-5201-272X>

Scopus Author ID: [57203248165](https://orcid.org/0000-0002-5201-272X)

1. **Hassan, M. H.** (2012). **Ventilated Courtyard as a Passive Cooling Strategy in the Hot Desert Climate.** *33rd AIVC Conference "Optimising Ventilative Cooling and Airtightness for [Nearly] Zero-Energy Buildings, IAQ and Comfort" ...* aivc.org. Retrieved from [https://www.aivc.org/sites/default/files/6 AIVC Conference Paper 2012.pdf](https://www.aivc.org/sites/default/files/6%20AIVC%20Conference%20Paper%202012.pdf)
2. Abd Elrady, A. R., & **Hassan, M. H.** (2015). **Conservation of Morphological Characters as an Approach to Thermal Comfort.** In *Vernacular Architecture: Towards a Sustainable Future - Proceedings of the International Conference on Vernacular Heritage, Sustainability and Earthen Architecture* (pp. 15–20). Taylor and Francis - Balkema.
3. Mahmoud, A. R. A., Aly, A. M., & **Hassan, M. H.** (2015). **Evaluating the Thermal Performance of Urban Spaces in Aswan City "A Case Study of Saad Zaghloul Street"**. *JES. Journal of Engineering Sciences*, 43(5), 766–782. <https://doi.org/10.21608/jesaun.2015.115227>
4. Mahmoud, A. R. A., Aly, A. M., & **Hassan, M. H.** (2016). **Simulation as a Tool to Enhance the Thermal Performance of Urban Spaces under Climate Change – A Case Study of Saad Zaghloul Street – Aswan City – Egypt.** *The 8th International Conference on Environment and Development in the Arab World, Assiut University, Assiut, Egypt.*
5. Shaban Abdel Kader, H., **Hssan Hassan, M.**, & Mohamed Aly, A. (2017). **Thermal Performance of Traditional and Modern Nubian House - Comparative Study.** *JES. Journal of Engineering Sciences*, 45(4), 533–544. <https://doi.org/10.21608/jesaun.2017.116347>
6. Shaban Abdel Kader, H., & **Hssan Hassan, M.** (2017). **Improving the Thermal Performance of Modern Nubian House (Wadi Karkar as a Case Study).** *JES. Journal of Engineering Sciences*, 45(4), 545–557. <https://doi.org/10.21608/jesaun.2017.116348>
7. **Abdelhafez, M. H. H.** (2018). **The Strategy of Developing the Industrial Regions as a Tool to Improve the Environmental Impact of New Cities in Egypt.** *The 9th International Conference for Development and Environment in the Arab World, Assiut University, Assiut, Egypt.*
8. Ahmed, K. A., & **Abdelhafez, M. H. H.** (2018). **Partnership Strategy for the Development and Implementation of Housing Projects in Arab Societies (Egypt for example).** *The 9th International Conference for Development and Environment in the Arab World, Assiut University, Assiut, Egypt.*
9. **Abdelhafez, M. H. H.** (2018). **Green Residential Districts in Hot Desert Climate Towards Low Energy Consumption.** *Journal of Engineering and Applied Science*, 65(1), 1–21.
10. **Hssan Hassan Abdelhafez, M.** (2018). **The Degree of Urban Patterns Compactness as a Passive Cooling Strategy in Hot Desert Climate "Wadi Karkar Villages – Aswan as a Case Study"**. *JES. Journal of Engineering Sciences*, 46(5), 617–629. <https://doi.org/10.21608/jesaun.2018.114995>
11. Mohamed Aly, A., **Hssan Hassan, M.**, Rajab Abd Elrady, A., & Tarek Mohammed, D. (2020). **The Effect of Using Nano-Materials in External Openings on Energy Consumption in Hot Desert Climate.** *JES. Journal of Engineering Sciences*, 48(3), 468–477. <https://doi.org/10.21608/jesaun.2020.108952>
12. Abdul Sami Eid, M., **Hssan Hassan, M.**, Rajab Abd Elradi, A., & Muhammad Othman, I. S. (2020). **Evaluation of Hybrid Ventilation Efficiency to Improve the Indoor Air Quality for Patients' Rooms in Hospitals of Aswan City.** *JES. Journal of Engineering Sciences*, 48(1), 154–168. <https://doi.org/10.21608/jesaun.2020.135091>
13. Alfraidi, Y., Alzahrani, S. M., **Abdelhafez, M. H. H.**, & Boussabaine, H. (2020). **Impact of Endogenous Risk Factors on Risk Cost in PPP Projects in Saudi Arabia.** *Engineering, Technology & Applied Science Research*, 10(4), 6087–6091. <https://doi.org/10.48084/etasr.3462>

14. Alfraidi, Y., Alzahrani, S. M., **Abdelhafez, M. H. H.**, Noaime, E. M., & Mohamed M. A. S. (2020). **Impact of Political Risk on Construction Cost in PPP Project in KSA.** *International Journal of ADVANCED AND APPLIED SCIENCES*, 7(5), 6–11. <https://doi.org/10.21833/ijaas.2020.05.002>
15. Noaime, E., Osman, A., Said, M. A., Abdullah, G., Touahmia, M., Nasser, Y., ... **Hassan, M. H.** (2020). **A Short Review of Influencing Factors of Islamic Architecture in Aleppo, Syria.** *Engineering, Technology & Applied Science Research*, 10(3), 5689–5693. <https://doi.org/10.48084/etasr.3447>
16. **Abdelhafez, M. H. H.**, Touahmia, M., Noaime, E., Albaqawy, G. A., Elkhayat, K., Achour, B., & Boukendakdji, M. (2021). **Integrating Solar Photovoltaics in Residential Buildings: Towards Zero Energy Buildings in Hail City, KSA.** *Sustainability*, 13(4), 1–19. <https://doi.org/10.3390/su13041845>
17. Abdelrady, A., **Abdelhafez, M. H. H.**, & Ragab, A. (2021). **Use of Insulation Based on Nanomaterials to Improve Energy Efficiency of Residential Buildings in a Hot Desert Climate.** *Sustainability*, 13(9). <https://doi.org/10.3390/su13095266>
18. Alkahtani, M., Hu, Y., Alghaseb, M. A., Elkhayat, K., Kuka, C. S., **Abdelhafez, M. H.**, & Mesloub, A. (2021). **Investigating Fourteen Countries to Maximum the Economy Benefit by Using Offline Reconfiguration for Medium Scale PV Array Arrangements.** *Energies*, 14(1). <https://doi.org/10.3390/en14010059>
19. Boukendakdji, M., Touahmia, M., Achour, B., Albaqawy, G., **Abdelhafez, M. H. H.**, Elkhayat, K., & Noaime, E. (2021). **The Effects of Steam-Curing on the Properties of Concrete.** *Engineering, Technology & Applied Science Research*, 11(2), 6974–6978. <https://doi.org/10.48084/etasr.4014>
20. Ahriz, A., Mesloub, A., Elkhayat, K., Alghaseb, M. A., **Abdelhafez, M. H.**, & Ghosh, A. (2021). **Development of a Mosque Design for a Hot, Dry Climate Based on a Holistic Bioclimatic Vision.** *Sustainability*, 13(11). <https://doi.org/10.3390/su13116254>

Training Courses

1. The sixth session to prepare the university teacher, South Valley University, 1 : 12 March 2003.
2. Effective teaching skills, South Valley University, 9 : 13 November 2004.
3. Effective communication skills, South Valley University, 5 : 8 June 2005.
4. Professional ethics and moralities, South Valley University, 25 : 27 September 2005.
5. Scientific Research Methods, South Valley University, 18 : 21 February 2006.
6. ICDL certification (International Computer Driving License), Assiut University, July 2006.
7. Scientific Publications, South Valley University, 14 : 16 March 2010.
8. Time and meetings management, South Valley University, 7 : 9 November 2010.
9. Training course of the joint European TEMPUS project (Green Innovation and Entrepreneurship Programme, GIEP), Politecnico di Milano, Milano, Italy, 31 January : 9 February 2014.
10. The educational course for preparing envoys to travel abroad, Institute for Leadership Development, 16 : 20 November 2014.
11. Using Computers and Managing Files, October 2016.
12. Information and Communication, October 2016.
13. Presentations, October 2016.
14. Exams systems and student assessment, Aswan University, 24 : 25 December 2016.
15. How to activate the e-course, Assiut University, 24 : 25 June 2018.
16. Publication of research in international journals, Assiut University, 24 : 25 June 2018.

Tutor for the following under-graduate courses in Department of Architectural Engineering, Faculty of Engineering, Aswan University:

- 1- Design Basics & Architectural Drawing
- 2- Architectural Design 2, 3, 4, 5, and 6
- 3- Urban Planning 1
- 4- Working Drawing 1, 2, and 3
- 5- Urban Design
- 6- Environment & Climate Engineering
- 7- History of Architecture 1, and 2
- 8- Building Construction 1, and 2
- 9- Participation in the supervision of the graduation project for undergraduate students at Aswan University.
- 10- Participation in the jury of the graduation project at Aswan University, Assiut University, and Alexandria University.

Tutor for the following under-graduate courses in College of Engineering & Technology, Arab Academy for Science, Technology, Aswan:

- 1- Environmental Control and Energy in Buildings
- 2- Visual Studies 1, 2, and 3
- 3- History of Architecture 1, 2, and 3
- 4- Applications of Computing

Tutor for the following under-graduate courses in Department of Architectural Engineering, College of Engineering, University of Hail:

- 1- Building Construction
- 2- Principles of HVAC
- 3- Working Drawings

Tutor for the following post-graduate courses in Department of Architectural Engineering, Faculty of Engineering, Aswan University:

- 1- Environment & Climate Engineering
- 2- Housing
- 3- Architectural & Interior Design
- 4- Building Economics
- 5- Applications of Computing
- 6- Sustainable Architecture

Tutor for the following post-graduate courses in Department of Architectural Engineering, College of Engineering, University of Hail:

- 1- Energy Efficiency and Sustainable Systems
- 2- Facilities Planning and Design

Supervision

Supervisors Committee member for the following M.Sc. thesis in Department of Architectural Engineering, Faculty of Engineering, Aswan University:

- Study of applying Thermally Activated Building Systems in hot desert climate "Building in New Aswan city as a case study" – (Finished, 2014).
- Prefabricated buildings and their impact on low-cost housing – (Finished, 2015).
- Assessment thermal performance of the Nubian house "A comparison study between traditional and modern house" – (Finished, 2017).
- Effectiveness of green vertical systems in improving the indoor environment of residential buildings in Upper Egypt "New Aswan city as a case study" – (Finished, 2018).
- Evaluation of hybrid ventilation efficiency to improve the indoor air quality in hospitals of Aswan City – (Finished, 2020).
- The effect of using nanomaterials on energy consumption in residential buildings in hot desert areas "Social housing in the new city of Aswan as an example" – (Finished, 2020).
- A proposed model for improving the thermal performance of streets as an entrance to update the elevation standards in Egyptian cities – (Running).

Supervisors Committee member for the following Ph.D. thesis in Department of Architectural Engineering, Faculty of Engineering, Aswan University:

- Improvement of the thermal performance for urban spaces in Aswan city under future climatic changes – (Finished, 2016).

Presentations

"Natural Ventilation," Lecture presented at TU Berlin Campus El Gouna, Hurghada, Egypt, December 2013.

"Revision of Architectural Drawings and Specifications of Materials" Training course presented at National Consulting Bureau, Kuwait office, Kuwait, 2 : 7 May 2015.

Review

- Act as a reviewer in Elsevier journals, Energy and Buildings, Sustainable Cities and Society, and Building and Environment, (since 2016).
- Act as a reviewer in Journal of Engineering Sciences (JES), (since 2020).

Abstract of the M.Sc. Thesis

The Effect of Human Needs on Design of Urban Spaces in Upper Egypt Cities - Aswan City for Example

Urban spaces are nothing but an art product of the continuous reaction from antiquity between human represented in his needs and physical and moral facilities- from one side and the ambient environmental circumstances from the other side.

Obtaining an existing content having physical dimensions, which satisfy different human needs, is the main goal. To achieve this goal, the current research relied on the analytical methodology of information. It includes the following four chapters.

Chapter I:

This chapter starts with a preliminary presentation for the concept of natural and building environment. It also, explains the human behavior, the relation between the environment and behavior, and the resulted human needs, which are related to urban spaces.

Chapter II:

This chapter contains a study of the urban spaces, their real constituents, their styles, their types, and the visual perception of the city.

Chapter III:

This chapter contains a brief note about the city constituents from urban spaces, with the concentration on roads and streets network.

Chapter IV:

This chapter contains an analytical study for Aswan city with the concentration on roads and streets network too. It also has a field study for the most two important highways in the city. This study aims at exploring the existent problems and defects and trying to solve them.

Finally, the research presents a group of recommendations which deal with urban spaces in a way agrees with their proper utilization for satisfying human needs.

Abstract of the Ph.D. Thesis

Development of Building Simulation Model for Passive Cooling in Hot Desert Climate

This research is an attempt to improve a new cooling system for hot desert climate; this system is based on a historical background for wind towers combined with an evaporative cooling; this combination was used as a natural ventilation system to dissipate the indoor heat. This research is carried out in one of the low-income housing buildings in New Aswan City – EGYPT.

To evaluate the thermal performance of the cooling system, the research used the simulation program TRNSYS 16. The thermal performance was determined within the simulation process through several steps.

The major objective of the present research is to develop a passive cooling system and to evaluate the integration of the simulation into the building design process. To achieve the goal of the study, the research is divided into five main chapters:

Chapter 1:

Introduction: Contains an introductory part to state the historical background of the re-search, to define the research objectives, to clarify the research significance and expected out-comes, to explain the research methodology and to determine the scope of the research.

Chapter 2:

Analysis of the study area: Contains information about the climate of hot desert regions, the climatic regions of Egypt, the main features of Upper Egypt climate and New Aswan City and the traditional and modern architecture in Egypt.

Chapter 3:

Factors of influence on the building model: In this chapter, essentials of the natural ventilation are discussed, as well as the evaporative cooling and criteria of wind tower are extracted.

Chapter 4:

Analysis of the thermal performance of the building model: This chapter represents the building model description, as well as the simulation program and the description of the steps of the research.

Chapter 5:

Results and Discussion: Contains the research results and discussion as well as conclusion and recommendations.



Assiut University

040301



ASSIUT UNIVERSITY
STUDENTS AND GRADUATES AFFAIRS



FACULTY OF ENGINEERING

This is to certify that Eng: *Mohamed Hssan Hassan Abdelhafez.*

has been graduated in: June 1999

And was granted the degree of bachelor in: Architectural Engineering

With cumulative average grade: Very good With honor's degree ...

With percent: (78.63%)

And cumulative grade points: (4364/7500)

Project domain: =====

Project grade: Very good.

Assiut: 20/12/2018

Responsible

Nesma

Registrar



Dean

Nouby M. H
Prof. Dr. Nouby Mohamed Hassan

ii.ii

The Faculty has been accredited from the National Authority for Quality Assurance & Accreditation of Education number 94 on 14/6/2011





Aswan University
Faculty of Engineering
Graduate Studies and Research



CERTIFICATE

This is to certify that

Eng. / Mohamed Hssan Hassan Abdelhafez

Has been awarded the Master of Science Degree in Architectural Engineering on 26/6/2004 from the Architectural Engineering Department, Faculty of Engineering, Aswan University.

The title of his thesis was:

"The Effect of Human Needs on Design of Urban Spaces in Upper Egypt Cities (Aswan City for Example)"

Registrar

Mahera Saber

Mahera Saber Mostafa



Dean

لؤي سعد الدين نصرت

Prof. Dr. Loai S. Nasrat



ASWAN UNIVERSITY



Aswan University
Faculty of Engineering
Graduate Studies and Research



CERTIFICATE

This is to certify that

Eng. / Mohamed Hssan Hassan Abdelhafez

Has been awarded the PHD degree in Architectural Engineering on
28/12/2010 from the Architectural Engineering Department, Faculty of
Engineering, Aswan University.

The title of his thesis was:

**"Developing of Building Simulation Model for Passive
Cooling in Hot Desert Climate"**

Registrar

Mahera Saber

Mahera Saber Mostafa



Dean



Prof. Dr. Loai S. Nasrat



ASWAN UNIVERSITY