ZERO-ENERGY RESIDENTIAL UNIT
INTERNATIONAL DESIGN COMPETITION

Competition Brief and Terms of Conditions

ZERU
ZeroEnergy Residential
UNIT

FOREWORD - Jury Chair

Prof. Mohamed Ayman Ashour
Dean of Faculty of Engineering, Ain Shams University

In the Egyptian futuristic Sustainable Strategy 2030, Egypt is planned to 'possess a competitive, balanced and diversified economy, dependant on innovation and knowledge, based on justice,social integrity and participation, charachterized by a balanced and diversified ecological collaboration system, investing the ingenuity of place and humans to achieve sustainable development and to improve Egyptians' life quality.'

From this potential, it is my pleasure to welcome you to participate at the ZERU- Residential Unit Competition. The competition is organized by the International Collaboration Office ICO, at the Faculty of Engineering Ain Shams University, in partnership with the University of East London. Competitors from around the globe are welcomed to open new horizons for Architectural Engineering ideas, reflecting energy strategies and sustainable future visions, as well as renewable energy potentials.
As the Architectural practice is of an interdisciplinary nature, involving a multitude of specializations; participants are welcomed from this broad spectrum. The competition follows internationally adopted standards that allows participants to flexibility express innovative design approaches.

The competition documentation was developed by the organizational team, whom have made great effort to clarify the potential intentions and goals that need to be achieved, within a minimized platform of constrains, social demands and any physical limitations.
I wish all participants a fruitful experience, and cross-cultural ideas exchange.

PREFACE - Competition Chair

Prof. Mostafa Refat

Director of International Collaboration Office
Vice Director-for Coordination and Academic Advising
Unit Head Environmental Architecture and Urbanism Programme
Professor of Architecture, Ain Shams University

The future of our Egyptian building sectors, should be resilient, secure, intelligent, and adaptable, thus to meet targets of the Egyptian sustainable strategic vision. A comprehensive developed strategy is always a key concept of success, bringing the variety and multitude of disciplines together, as being part of any Architectural creation. The virginity of this process has always been influenced by other contextual decisions not only in Egypt but worldwide.

The Zero Energy Residential Unit 'ZERU' competition has been developed to release ideas, striving to generate new, innovative strategies to help achieve the Egyptian goal for future residential units to be zero net energy. We understand intrinsically the interdisciplinary of this action, and its demand for various non- Architectural disciplines to integrate and share ideas. Net Zero has always been a challenge where objectivity, objectives, and objects collide taking into consideration all contextual constrains, encapsulating the 4th dimensional annual time frame in its scope. It is thus our pleasure to invite all disciplines, Engineers and Architects to participate in this international Design Competition, sharing innovative approaches and ideas.

Endorsed By:

University of East London

Faculty of Engineering,
Ain Shams University

International Collaboration Office
Faculty of Engineering,
Ain Shams University

Environmental Architecture and
Urbanism Research Center

Competition Sponsor:

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1 INTRODUCTION

1.1 AN OVERVIEW

The Environmental Architecture and Urbanism Research Center at Ain Shams University is pleased to announce the international design competition for all professional practitioners of Architecture and senior students to design a "Typical Zero-Energy Residential Unit" to help in improving the sustainable development within the building sector in Egypt. The competition is administered by the Faculty of Engineering, Ain Shams University (ASU) and university of East London (UEL).

This competition is intended to envision a residential unit informed by context, culture, and vernacularity, but fully embracing technology and ideas of domesticity. It challenges participants to improve the sustainability of the communities in which it works by supporting the development and delivery of innovative, sustainable residential building solutions. These efforts will minimize the negative impact of residential sector construction on the environment, reduce energy and resource consumption of neighborhoods, and increase the economic sustainability of low-income families.

1.2 THE VISION

> To Improve the Sustainability of Communities by Supporting the Development and Delivery of Innovative Building Solutions.

Using technological innovation, both in materials and systems that advances the level of energy efficiency and resiliency in homes designed and built today. Thus, reducing the impact of residential sector construction on the environment and increasing the economic sustainability of low-income households.

1.3 THE COMPETITION OBJECTIVES

The objective of the competition is to achieve a "Typical Zero-Energy Residential Unit Design". The proposed design should at least reach zero-energy consumption levels or even Energy-Plus. Only local materials should be used as well as local techniques and technologies available within the building sector in Egypt. The Egyptian climate zones of interest in this competition are as follows:

(1) Mediterranean climatic zone
(2) Semi-Arid climatic zone
(3) Arid climatic zone
See Figure 1

Accordingly, each competitor shall choose only one of these three zones to design his entry according to its climatic conditions. It will be requested by each competitor to fill in this choice online in the "Identification Code Form" during the final submission.

Figure 1. The Egyptian Climate Zones of Interest in This Competition

1.3 THE COMPETITION OBJECTIVES

Each competitor is required to propose the design of a typical zero-energy residential unit to accommodate a family consisting of four persons with minimum three bedrooms. The design should be flexible to suit the larger sector of the Egyptian community. Competitors should also consider how will this unit be assembled together to form a typical residential block of maximum five-storey height (Ground floor + 4 typical floors). Each competitor shall also consider the impact of this assembly on the environmental performance of the proposed design. The flexibility of the proposed design to allow different configurations is highly recommended. A full environmental and economic detailed analysis for the proposed design should also be presented. Table 1 gives a summary of the program of the competition.

Table 1. Program Summary

Climatic Zone	According to the competitor's choice
Building Type	Residential
No. Floors	5 Floors max (Ground + 4 Typical)
Number of Bedrooms	Minimum 3 Bedrooms
Floor Area	No specific area required
Exterior Finish Materials	Local Materials As Well As Local Techniques And Technologies Available Within The Building Sector In Egypt.
Construction Type	According to the competitor's choice

2 COMPETITION RULES AND REGULATIONS

2.1 ORGANIZATION AND METHOD OF THE COMPETITION

The competition is a one-stage open international competition, organized by Environmental Architecture and Urbanism Research Center at Ain Shams University in collaboration with university of East London. The competition is open to all Architecture practitioners and senior students. Every competitor shall register online for their participation in the competition before the submission deadline stated in the competition timetable.
(See section 2.16: Registration and Registration fees)

2.2 LANGUAGE OF THE COMPETITION

The official language shall be English for the "Competition Brief and Terms of Conditions" and also for all "Forms, Documents & Deliverables" to be submitted by the competitor.

2.3 COMPETITION TIMELINE

Competition Announcement

15th December 2017

Registration Deadline

22nd February 2018

Closing Q & A

1st March 2018

Submission Deadline

17th March 2018

Public Announcement of Winners

22nd March 2018

2.4 DEFINITIONS

Whenever the following terms are used in this document, they shall have the meaning described below:

Competitor	Shall mean the individual architect/senior student of architecture or the team lead by architect/senior student.
Team Technical coordinator	Shall mean the person who makes the registration and be responsible for sending and receiving emails, queries, submitted materials..... through the competition procedures either for him/herself or as a representative for his team. This person must be an architect or a senior student who is currently enrolled in any school of architecture and have completed at least three-year study in architecture.
Promoter Competition	Shall mean the international design competition to design a "Typical Zero-Energy Residential Unit" in Egypt.
Technical Committee	Shall mean the committee established by the promoter to organize the competition.

2.5 ANSWERS TO QUERIES

All the inquiries regarding the terms and regulations as well as the program of the competition must be submitted to the competition technical committee through the official website of the competition. Only queries received within the designated period according to the timetable of the competition will be answered. A notification will be sent to check queries replied.

2.6 ELIGIBILITY

All professional practitioners of Architecture and senior students are eligible to take part in the competition design provided that they adhere to the competition protocol. All competitors are required to register for their participation before the Registration Deadline stated in the competition time table. Teams are also allowed to apply to this competition provided that at least one of their members - who must be the technical coordinator of the team - is an architect or a senior student who is currently enrolled in any school of architecture and have completed at least three-year study in architecture. Documentary evidence of the competitor's or team technical coordinator's right to practice the profession in his or her own country is required. Students should provide evidence of their current enrollment in any school of architecture as well as a proof of completing at least three-year study in architecture. Individuals who have taken part in the organization of the competition or the preparation and writing of the competition terms and conditions, members of the technical committee established by the promoter and their families as well as the members of the jury shall not be eligible to take part in the competition design, directly or indirectly.

2.7 COMPETITION JURY COMMITTEE

Prof. Mohamed Ayman Ashour (Jury Chair)

Dean of Faculty of Engineering,
Ain Shams University

Prof. Ahmed Reda Abdin (Member)

Professor of Architecture,
Cairo University

Prof. Yasser Mansour (Member)

Professor of Architecture, former Head of the Architecture Engineering Department, Faculty of Engineering Ain Shams University

Prof. Hanan Mostafa (Member)

Professor of Architecture,
Ain Shams University

Prof. Moemen Afify (Member)

Professor of Architecture, Cairo University

Prof. Shaimaa Kamel (Member)

Professor of Architecture,
Ain Shams University

Dr. Heba Elsharkawy (Member)

Senior Lecturer in Architecture
Programme Leader BSc (Hons) Architectural Design Technology, School of Architecture, Computing and Engineering (ACE), University of East London (UEL)

2.8 COMPETITION ORGANIZING COMMITTEE

Prof. Mostafa Refat

Director of International Collaboration Office
Vice Director-for Coordination and Academic Advising
Unit Head Environmental Architecture and Urbanism Programme
Professor of Architecture, Ain Shams University

Dr. Ayman Farid

Vice-Director of International Collaboration Office for International Students and Training
Assistant Professor of Architecture, Ain Shams University

COMPETITION SUPPORTING TEAM

Eng. Hussein Farid

Assistant Lecturer,
Ain Shams University

Eng. Fatma Fathy

Assistant Lecturer,
Ain Shams University

Eng. Hebatallah Soliman

Assistant Lecturer,
Ain Shams University

2.9 AWARDS AND PRIZES

The total amount of prizes and compensation is 6500 US Dollars and shall be awarded corresponding to the following ranking:

The first prize winner

3000 US Dollars

The second prize winner

2000 US Dollars

The third prize winner

1500 US Dollars

Beside the above mentioned prize winners, 3 honorable mention prize winners will be awarded:

- The first honorable prize winner
- The second honorable prize winner
- The third honorable prize winner

After selecting the winners, projects will be presented at the 2nd sustainable workshop held by the Environmental Architecture and Urbanism Research Center at Ain Shams University in Sonesta Hotel, Cairo at the end of March.

2.10 PRESERVATION OF ANONYMITY

All competition entries must be anonymous. The anonymity of submitted materials shall be maintained until the final decision of the jury. Thus Submission shall be online without any labels, and will include the following;

Two JPG drawing panels of A1 size and one PDF report of A3 size.
(See section 3: Submission Requirements and Deliverables).

Both the drawing panels and the Report should carry the identification code that will be sent by e-mail to the competitor once the registration has been confirmed. To guarantee anonymity, all documents submitted by the competitor must be stripped of all information about the submitting competitor and instead, the identification code should be written on them. This code should be placed in the lower right-hand corner and in 1 cm high characters. This code is generated automatically after registration is confirmed and all information of the competitor will be kept anonymous until the evaluation of proposals by the competition jury is finalized. Disrespect of anonymity will result in disqualifications.

2.11 DISQUALIFICATION

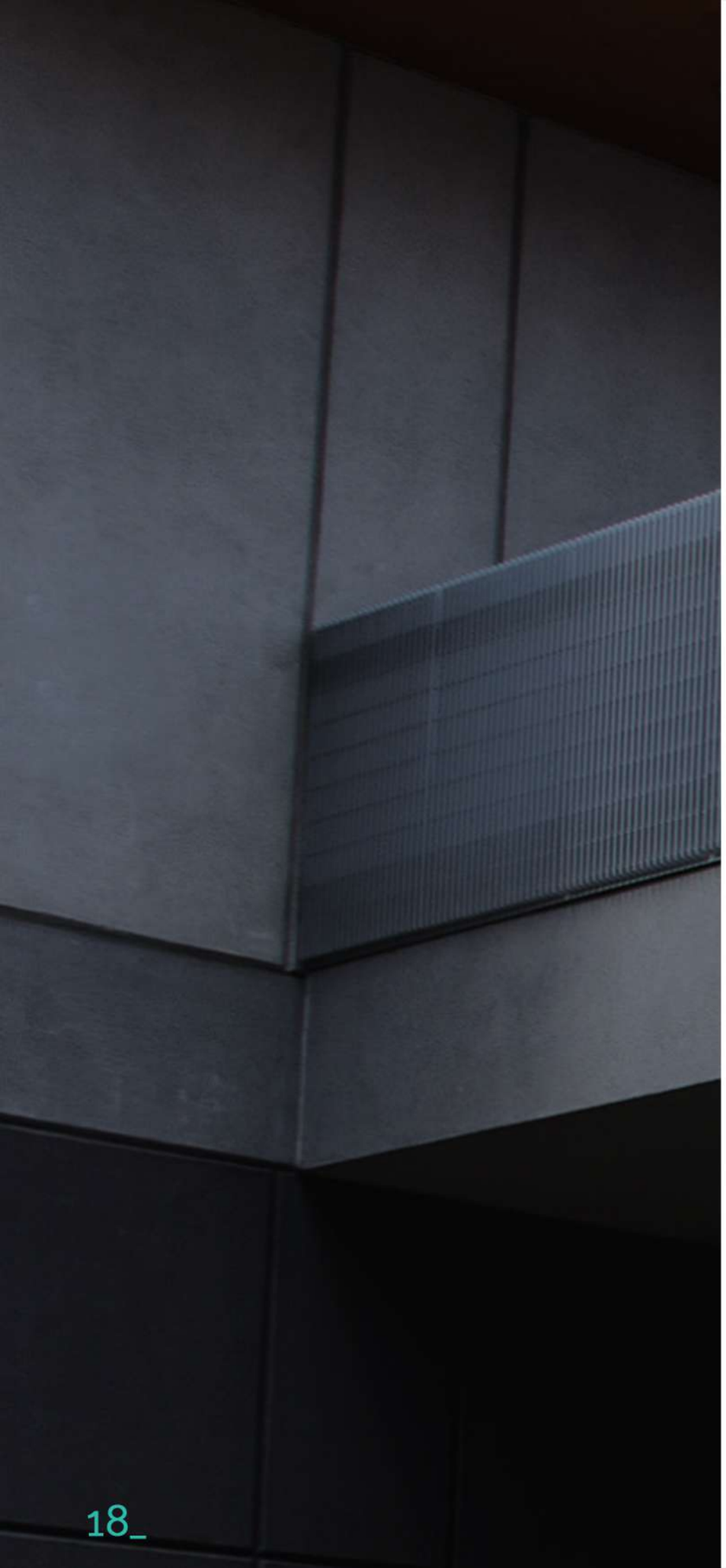
The organizing committee, together with the jury, shall have the sole responsibility for disqualifying any competitor for any of the following reasons:

- If any of the conditions or instructions stated in the competition "Brief and Terms of Conditions" is found to be disregarded
- If any competitor improperly attempts to influence, directly or indirectly, the decision of the jury, technical committee or any consultant of the promoter

2.12 EVALUATION CRITERIA

Submissions must clearly address the requirements of the program. In addressing the specific issues of the design challenge, the entries will be judged based on the following criteria, in no particular order, and from the requirements spelled out in the competition "Brief and Terms of Conditions":

- Taking into consideration the characteristics of the chosen zone local climate
- Employing strategies that increase water efficiency
- Reaching zero-energy consumption levels or even (Energy-Plus).
- Making use of on-site renewable energy to decrease negative environmental and economic effects related with non renewable resources.
- Using energy technologies that exploits renewable resources to reach zero pollution.
- Using local materials as well as local techniques and technologies available within the building sector in Egypt.
- Replacing finite raw materials with renewable or recycled content materials to decrease the embodied energy and any other negative impacts related with depletion of resources.
- Concerning residents comfort and well-being through strategies for daylighting penetration, thermal comfort, providing good air ventilation, lowering indoor air contaminants, etc.
- Respecting the physical, emotional, and cultural needs of the inhabitants.
- Considering flexibility in assembling the residential unit either vertically or horizontally to form the whole residential block.
- Achieving exceptional performance through the Innovation of design.
- Resolving a strong conceptual strategy in a coherent, integrated design proposal.
- Considering the mutual influence of the unit capital cost and running cost and its impact on the sustainability of the proposed design.



2.13 PUBLICATION & EXHIBITION

A copy of the jury's report will be sent to each registered competitor, as for the competition results, they will be sent to all competitors and will be put on public display.

2.14 COPYRIGHT & AUTHOR'S RIGHTS

the copyright of all documents and all authors' rights on/off shall be retained by the competitor. Competition winner designs may only be used when the latter commissions the winner to put the project into effect

2.15 PUBLISHING

A public announcement for the winners will take place during the workshop that will be held between 27th and 28th of march 2018 at sonesta hotel, Heliopolis, Cairo, Online exhibitions might also be considered. Awarded projects can thus be published by the promoter without author's agreement.

REGISTRATION

2.16 REGISTRATION & REGISTRATION FEES

Registration fee is USD 50 (only Egyptian participants can pay 1000 Egyptian Pounds). All competitors shall be required to register for their participation in the competition according to the deadline stated in the competition timetable. Deadline for registration will be 22nd of February 2018.

The registration will be online at the registration webpage:

http://isc.eng.asu.edu.eg/registration

Please note that the registration fees are non-refundable. The competitors are allowed to pay by bank transfer. a net of USD 50 should be transferred; any transfer fees should be bared by the competitor.

A copy of bank transfer receipt should be scanned and uploaded during online registration before deadline otherwise, their participation will not be considered. The competitor shall receive an e-mail to confirm that the registration has been completed and give the competitor his/her unique identification Code which will be generated automatically. Note that Participants are kindly requested to put this identification code on all submitted drawing panels and report.
(See section 3: Submission Requirements)

CORRESPONDENT BANK NAME: ARAB AFRICAN IN , BANK CAIRO EGYPT

SWIFT BANK CODE:	CAIRO – EGYPT
ACCOUNT NUMBER:	36001304
BENEFICIARY,s BANK NAME:	CENTRAL BANK OF EGYPT
FULL ADDRESS:	54 ELGAMHORIA ST, CAIRO, EGYPT
SWIFT BANK CODE:	CBEGEGCXXXX
BENEFICIARY ACCOUNT NO:	4082184539
BENEFICIARY CUST NAME:	AIN SHAMS UNIVERSITY FACULTY OF ENGINEERING

Egyptians can pay for the registration fees through "Fawry" paying service, using the **national ID** and **SAME MOBILE** number used during online registration
dealing with all company branches shall be under the name of:
Faculty of Engineering - Ain Shams University
The International Competition to Design a Typical Zero-Energy Residential Unit (ZERU)

يمكن للمصريين الدفع من خلال خدمة فورى عن طريق الرقم القومى ورقم الموبايل نفسه المسجل ببيانات المسابقة
التعامل مع جميع الفروع يكون باسم كلية الهندسة – جامعة عين شمس
مسابقة دولية لتصميم نموذج سكنى (صفر) الاستهلاك للطاقة

SUBMISSION REQUIREMENTS & DELIVERABLES

3. SUBMISSION REQUIREMENTS & DELIVERABLES

3.1 GENERAL REQUIREMENTS

All entries should follow the regulations of identification stated in section 2.9 Preservation of Anonymity. All submitted material shall also be presented according to the metric system and using English language only. Entries may be in black and white or in color.

Submission will be online on the following URL

http://isc.eng.asu.edu.eg/submission

3.2 DELIVERABLES:

a) Drawing panels

2 drawing panels, each of A1 size (841 mm x 594 mm) in portrait format with resolution 150 pixel/inch each. The files should be in JPEG or PDF format only. The maximum size for each panel is 20MB.

b) Report:

A PDF report explaining the concept, environmental and economic analysis and all required information to explain the design of the proposed unit and its different assemblies.
The report should be in A3 landscape format with resolution 150 pixel/inch for each sheet. The number of sheets should not exceed 10 sheets excluding the drawing panels of the project. The total maximum size for the PDF file is 30 MB

ZERU

ZeroEnergy Residential

UNIT

http://isc.eng.asu.edu.eg