



kinetic Environmental Architecture and its impact on the techniques used in interior design and furniture

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Idea of “kinetic Environmental Architecture” that emerged in late twentieth century is technology of use modern technologies , advanced computer automation and information technology as important and essential mean in design process of environmental internal vacuum in order to achieve integration and compatibility with all that surrounds it and interact with it responsive to environmental , humanitarian and design requirements of both the indirect formal or direct formal. To activate that, it have been identified on how kinetic systems design have begun , most important determinants and thought of design which affected on internal vacuum formally and spacedly and turned it from static forms into dynamic kinetic design, and study the kinetic control systems in elements of interior and outside design, Presents a new vision of communication between the internal space and surrounding environmental by developed technology through the study of addition new procedures for environmental control in internal vacuum such as kinetic systems in ceiling , floors , walls and furniture, To activate that vision, the researcher provide a range of ideas for Dynamic environmental systems in an attempt to develop design solutions for vacuum in several aspects such as : environmental control , increase environmental control of internal vacuum efficiency and development means of vertical and horizontal communication where it was concluded that the the internal space and kinetic environmental is double conceptual haunted space combines between romance and rationality – romantic . . Where integrates and interact with everything that surrounds us unresponsive to requirements of environmental , humanitarian and design, - rational . . through the use of development and information technology - .

Key words: environment, kinetic architecture, interior design, creativity

Research problem . .

- Lack of formative and functional formulation of the contents and technical determinants of kinetic environmental architecture in the interior vacuum .
- Lack of a clear and comprehensive vision on the foundations of the design of internal environmental vacuum kinetic.

Aim of the research. .

The application of ideas and environmental kinetic architecture concepts in interior design and furniture through:

- Monitor the most important contemporary trends of thought and design, who founded it, and that led to the transformation of the formation of the internal vacuum from static to dynamic.
- Put forward a new vision of communication between the inner vacuum and environmental surrounded in advanced technology.

Architecture kinetic environmental:

The word kinetic in the English language in the dictionary means: motor or generator for movement and the term ((Kinetic Architecture) intended Architecture kinetic or architecture generated for movement and the idea of stirring it for other types of arts pioneered the architecture, such as the art of kinetic sculpture. Has been known, "Michael Fox" is based kinetic as "variable based conditions or mobile or geometrically variable or physically" in this definition, description Michael Fox, different kinds of systems, motor and seems definition also kinetic architecture is not necessarily a smart building and but architecture can control the movement of partially or



completely. and that was a new trend is trying to provide the kinetic architecture smart Kaamarh be movement in direct response to the effects of oceanic and in 2003 known as "" Oosterhuis based kinetic as "the building, which is administered by a system consists of sensors and motors to be able to respond to the data it receives and be responsive in the form of the movement

Historical summary of the development of systems in kinetic designs:

Systems kinetic its ancient history and dates back to ancient civilization such as the ancient Egyptian and Greek, Chinese, Arabs has excelled in the science of mechanics and contributed to transfer wrote former as "Euclid" and "Archimedes" and they called it " Science of tricks beneficial "

Since the beginning of the twentieth century, attempts to designers and architects to design an endless moving buildings, whether manual or mechanical or electronic movement, kinetic design Systems can be divided into three stages :

1. Architectural Systems kinetic pre-Industrial Revolution.
2. Architectural Systems kinetic post-industrial revolution.
3. Smart kinetic Systems (beyond artificial intelligence revolution).



Fig (1) Smart Systems applications in the design kinetic Furniture

Technical parameters for the development of kinetic design Systems:

1. The development of computer programs

a- Machinery of analysis data and information

b- Machinery of direct programming

- Logarithmic method
- Parametric method

c- **Changing times technology** .. This technique is concerned with quantitative and qualitative change appearance over time and not just quantity dimensions quantifiable; which relies on software that allows intervention engineering and Action Figure with other aspects of the design process. Where lies the work of renewal in a kind of fascination and indulging in design configurations relations and formal and tonal renewed in time, whether in architecture or interior design. And using modern digital technology through the design in a vacuum FREE Design in Cyberspace document to the metaphor from the environment. These characteristics are:

- Environmental topological.
- Environmental parameters.
- Time

2 - Development of sensors Control Systems

a. Sensor

b. Transducers

c. Actuators

d. Detectors

3- Development of modern construction materials



Fig (2) use of materials Alkromo electrical in the internal glass partitions to withhold the diverse activities

4. Development of the formation in design

A. Composition of design and development Starring

B. Forming generate of three-dimensional scanning

c. Technique of environmentally forming



Fig (3) Architect Frank O. Gehry one of the pioneers of the use of models "maquette" Altsamamh in the process. And the use of tri-dimensional printers 3d printer

Systems design and environmental kinetic models:

- Mobile facilities
- Kinetic Systems, which aims to increase the interaction between the building and the surrounding environment
- Kinetic Systems, which aims to increase the flexibility of the internal vacuum



Fig (4) University of Phoenix Stadium is open from the inside and from the outside and the roof and the roof is closed - and Aksnumtry interface illustrate the movement of the roof (Iron + PTFE material transparent half) and pitch (Iron + polymers like substance Genotextile fabric + concrete and tin Marj) in Phoenix Stadium

Environmental kinetic architecture and implemented in Egypt suggestions

- Some kinetic Systems, which can contribute to resolving some of the problems existing in the Egyptian environment, such as:
- Parking mechanism due to the high density of traffic and environmental pollution in many Egyptian cities



- The use of kinetic architecture and environmental technologies in low-cost housing projects for young newly-wed couples, such as multi-functional and compact furniture micro.
- The use of environmental kinetic architecture techniques to cope with a lot of crises and emergency disaster and slums in Egypt.
- Attention to projects of environmental kinetic study to save energy and are the most important problems in Egypt

Results :

- Kinetic ecosystems evolved and diversified and expanded its deployment and helped on the evolution of the building from the static state to the dynamic situation.
- Ecosystems kinetic aims to design solutions for vacuum in several aspects, such as environmental control and increase the efficiency of the internal vacuum and the development of means of communication vertical and horizontal.
- Add biggest internal vacuum and the possibility of a vacuum with multiple functions in tight spaces designed by the use of a convertible furniture and moving partitions, such as housing and compact unit integrated furniture, and other flexible
- Add new possibilities for environmental control in the vacuum procedure such as motion systems in roofs and floors and walls and furniture.
- Add a new dimension Fine internal vacuum forming is no longer limited to static rhythms, but the addition of the profile kinetic rhythms.
- There are some negative aspects of architectural systems, such as the motor of relatively high cost and increase building energy consumption and noise, but these negative aspects can be avoided over time with the development of the incident in the fields of animation technology and control and new material.
- Characterized by "environmental designs kinetic" continuous innovation and sudden and edit the familiar links between design components through the use of non-linearity and spikes and folding. . . And rely on the system for environmental cases origins of the universe and its evolution between the system and the cases of the disorder, according to the depth of regulatory. .
- Internal vacuum for Architecture is an environmental vacuum motor Fikri double haunted me combines romance and rationality - romantic (Romantic). . Which it integrates with everything that surrounds them and interact with him unresponsive environmental requirements and the humanitarian and design, rational (Rational). . And through the use of modern technology and information – technology

Recommendations:

- Recommended to use some of the kinetic systems , which can contribute to solving some of the problems existing in the Egyptian environment, such as:
- Parking mechanism due to the high density of traffic and environmental pollution in many Egyptian cities
- The use of kinetic environmental architecture technologies in low-cost housing projects for young newly-wed couples, such as unstable , compact and micro furniture..

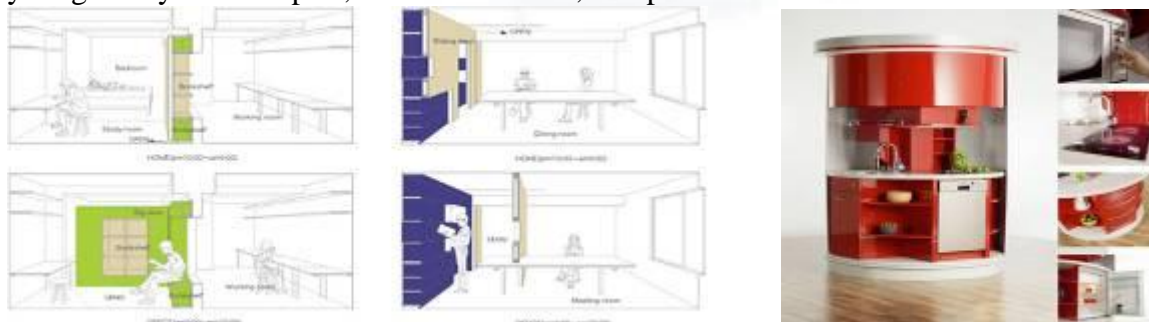


Fig (5) Examples of Furniture used in multi-use spaces



- Teaching extra Science for learners of interior design and architecture, such as mechanical kinetic systems, and electronic control systems and artificial intelligence in order to become familiar with the technical aspects, which are contributing greatly to the formation of the identity of the building.
- Increase awareness among local architect and designer with the latest systems technology and parametric universally used in contemporary buildings.

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