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# Effect of Electromagnetic Waves on the Design of Industrial Design Products in View of Science Technologies of Remote Sensing Dr. Mahmoud Ahmad Mahmoud Ahmad Nafea

Doctorate of Philosophy Degree in Applied Arts - Industrial Design Specialization Lecturer in industrial design department - Faculty of Applied Arts - Benha University Arab Republic of Egypt

Amnhotop000@gmail.com

# **Research Summary**

The design of equipment and apparatuses throughout the development of technology in continuous and sustainable development, in view of what is happening in the scientific arena of advanced discoveries require designers to employ them in new creations and innovations, appear in the form of adding value to those products, there is no doubt that the frequencies of the different waves of the electromagnetic chain have been applied over the past decades in many applications and most important systems of telecommunications and remote sensing, and appeared radio wave applications in the design of radio apparatuses and various communication systems, based on the properties of the visible and invisible waves of the electromagnetic wave series, It has been activated in the conclusion of information and discoveries on the surface of the earth and its construction and resources, such as raw materials and agricultural areas, using the aerial survey or satellites, and this showed the characteristics of different frequencies in sensing and detection with images by specific indications, or through indications of digital techniques which can be used in conclusion what is being research.

Therefore, the development of industrial design products by adding value with functions and smart systems requires activation of electromagnetic waves of sensing and remote control, these techniques need to reinforcement the relationship between the designer and the characteristics of the different waves in the electromagnetic chain, and in safe frameworks that do not harm by human health and achieve new functional purposes aims to upgrade the functional systems to the level of control as the human mind in the design of machines and engineering equipment's.

# **Problem of the Research:**

Lack of relationship between the industrial designer and the activation of electromagnetic wave systems in the functions of the products, especially that there are damages arising from radiation systems on human health; which is still shown from many products under the umbrella of product development and add value that always precedes the basic requirements of the human to meet Its essential functional needs.

# **Important of the Research:**

The industrial designer acquires knowledge of electromagnetic systems through considerations for the development of industrial design products with the necessary functions that depend on electromagnetic wave waves, while ensuring that these products are harmful to human health.

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# **Objective of the Research:**

Enhancing the relationship between the design of industrial design products and the activation of electromagnetic wave waves in the functions of products, taking into account the functional considerations necessary to design their functions based on electromagnetic waves, with taking into account safety.

#### **Research Framework:**

The scientific discoveries of the radiation characteristics, especially the electromagnetic series in their wavelengths and frequencies, are the ones that set the scientific rules for those waves to be shown later in the framework of utilization and application. Therefore, the design of radios and the use of radio waves in different radio stations. The equipment has the ability to sensor and transfer information to the controller in its operation; to carry out the purposes of arduous beyond the capabilities of human in the collection of information; and functional capabilities are not in the human body, which caused mutations in the design of devices and equipment that meet the needs of Human in different fields.

As far as the electromagnetic waves are tamed to be used for different purposes, their damage has been detrimental to human health. This requires design to put the functional components of these waves in reliable frames. Based on what the industrial design products have added to their value by developing the directions of activation of radiation systems In its functions and control; it may require us to research the mutations in these products to know their future in development prospects and to determine what are the essentials in the functions of products that actually need to apply radiation systems, where product development always precedes the necessary requirements of the hands Basic Gat in the design and functionality of products, and we find these functions necessary in products actually applied, such as satellites, and vehicles that explore other planets (Mars), or vehicles that sink into the deep sea to explore the seabed and the ocean .....

Because the different frequencies of the electromagnetic series are not visual except for the visible part of them, therefore, they need precise and sensitive components in the transmissions and reception of frequencies used. This requires the designers of these devices to know and standardize these components in the design of the various devices and equipment in their various functional conditions; these ingredients are entirely product design.

## **Results and Recommendations:**

1- The relationship between the designer and the remote sensing systems is a relationship that represents the design technology of equipment and equipment in advanced development. It requires designers to study, research and employ the characteristics of the electromagnetic waves to enhance the relationship between the industrial designers and activate the different waves of the electromagnetic series in the development of the functions of equipment and equipment. With a multi-functional and multi-functional nature, as well as hard working conditions.

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2- The safety requirements for the disappearance of diseases that can be produced from different waves on human health are the use of substances that prevent the propagation of these waves in a widespread manner, but only within the path of their functional nature. Designers also have the responsibility to employ the different waves in the functions necessary for their existence in order to bear the human difficult stages in collecting information and making quick decisions in control such as aircraft.

3- It is the designer's responsibility to employ the different frequencies of the electromagnetic chain in the essential functional necessities that require intense mental effort in sensing and control

### **References:**

## **Foreign References:**

- 1-Barton, D. & S. Leonov (Eds.). *Radar technology encyclopedia*. Norwood, MA, USA. 511 p. Artec House. (1997).
- 2- Campbell, J.B. *Introduction to Remote Sensing*. New York. The Guilford Press. (1987).
- 3- Canada Centre for Remote Sensing. *Fundamentals of Remote Sensing*. CANADA. Natural Resources Canada. (2000).
- 4- Lillesand, T. M. and kiefer, R.W. *Remote Sensing and Image Interpretation*. New York. John Wiley and Sons Inc. (1994).
- 5- Venikov V.A. (Prof.). *Introduction to Energy Technology*. Moscow. Mir Publishers. (1981).
- 6- Werle D. *Radar Remote Sensing A Training Manual*. Ottawa, Canada. 193p, 75, Dendron Resource Surveys Ltd. (1988 and 1992).
- 7- William H. *Engineering Electromagnetic*. Tokyo. Kosaido Printing. (1981).
- 8- Yoshio Wased, Eiichiro Matsubra, Kozoshinoda. *X- Ray Diffraction Crystallography Introduction, Examples and Solved Problems*. London New York. Tohoku University, Institute of Multidisciplinary Research for Advanced Materials, Springer Heidelberg Dordrecht. (2011).

#### **Internet Sites:**

- 9- <u>www.pdfs.semanticscholar.org/4570/069c6ff4063630922cc19c13774abc7de7cf.pdf,Marc1</u> 2.2018
- 10- www.thecartech.com/KnowYourCar/NewTechnology/ADAS.htm, April13,2018
- 11- www.theijes.com/papers/v2-i4/part.%20(2)/L0242064067.pdf, April21,2018
- 12- www.engineerprojects.info/electrical-projects/rc-controlled-forklift, May 21, 2018
- 13- www.calval.cr.usgs.gov/PDF/Iwabuchi.H\_IJRS.24.24.2003\_Chander.pdf,May18,2018
- $\frac{14-\ www.pdfs.semanticscholar.org/3971/c8cdbf1d5e34340954c75fb7e8a926f60d24.pdf, May}{18,\,2018}$
- $\frac{www.radartutorial.eu/01.basics/The\%20Radar\%20Range\%20Equation.en.html, May20,}{2018}$
- 16- www.en.wikipedia.org/wiki/Radar,May11,2018
- 17- www.researchgate.net/profile/M M Zaman Tanim/publication/310426721 Electromagn etic Radiation and Human Health/links//Electromagnetic-Radiation-and-Human,May11,2018
- 18- https://www.researchgate.net/profile/Udochukwu\_Akuru/publication/237072015\_Electromagnetic\_Wave\_Effect\_on\_Human\_Health\_Challenges\_for\_Developing\_Countries/links/56a 668d008ae4757f4a2febe/Electromagnetic-Wave-Effect-on-Human-Health,May11,2018