
**THE ROLE OF MODERN TECHNOLOGIES IN THE SUSTAINABLE
DEVELOPMENT OF MUSEUMS
THE CENTER OF RESTORATION AND CONSERVATION OF
ANTIQUITIES AS A MODEL - THE NATIONAL MUSEUM OF EGYPTIAN
CIVILIZATION**

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Abstract

The National Museum of Egyptian Civilization is a unique model in the application of modern technologies, which contributed mainly to the preservation of the facility and its archaeological and heritage pieces. With a special attention given to the human element in terms of their health, comfort, and the work they are assigned to.

The aim of the presented research paper is to highlight the role of modern technologies, their importance, and how to make use of them in the Restoration and Conservation Centre at the National Museum of Egyptian Civilization. Which contributes to the sustainability of the entire facility and all its elements.

Keywords

NMEC - Restoration laboratories- Modern Technologies-Anoxia- DNA- C14

INTRODUCTION:

Modern technologies play an important and prominent role in preserving archaeological and heritage collections inside and outside museums, and even contribute to their sustainability and protection from risks and damage.

This is evident in the conservation and restoration center of the National Museum of Egyptian Civilization, starting with the inspection of antiquities before being packaged in other areas, storages, and museums. Followed by the packaging and transportation processes which are carried out using modern means and technologies, tools and materials that are neither harmful to the human health nor to the monuments.

It can also be seen in the treatment the pieces receive after being admitted to the restoration center from the antiquities reception unit. Where it is handled by conservation and restoration specialists, who examine the pieces carefully. The piece begin sits journey of conservation and

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restoration from that region. The process initiates with the sterilization process using the latest modern scientific methods that are unique to the restoration center, followed by the first aid process, then the necessary restoration process. Eventually, the piece is either added to the museum display or sent to the storage. The museum has the latest antiquities storage systems designed according to the nature of each archaeological material.

MATERIALS AND METHODS:

- Antiquities Conservation and Restoration Center

The Conservation and Restoration Center was established in the National Museum of Egyptian Civilization to be a research center beside the Restoration and Conservation of various archaeological and heritage materials. The center includes restoration laboratories and central scientific laboratories in addition to specialized workshops.

- Restoration and Conservation laboratories:

It is located on an area of 3200 square meters and is divided into separate restoration units and a central laboratory for the restoration of organic antiquities and restoration of inorganic antiquities. The laboratories were divided internally to place dry cleaning and wet cleaning facilities equipped with suction devices for fumes and gases with control over the suction power and dust in order to preserve the artifacts and their sustainability, as well as sealed storage places especially for preserving the restoration materials equipped with an internal suction system for the incoming fumes, if any.

1-Antiquities Receiving Unit:

It is located on an area of approximately 1500 square meters, in which the artifacts are received inside the museum, starting from the preparation of case reports and examination, where the pieces are wrapped using the latest packaging and materials and deposited in wooden boxes safe for transport and then transported on carts at a steady walking speed in order to avoid risks and increase their

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sustainability until Reaching the shipping dock at the Museum of Civilization with a 20-ton winch for large-sized artifacts.

From the shipping dock, move to the antiquities reception unit and enter from the door (anti-intrusion) to the antiquities unfolding room using some tools and equipment according to the size of the transport box, for example, the clark with a hand fork with a load of 2.5 tons or the electric clark with a high load of up to 3 tons Or some tables with different static movement and load.

, And the artifacts are examined again after they are professionally unsealed and documented and a case report prepared for them in preparation for sterilization, as the antiquities reception unit includes the insect and biological sterilization center using Inoxia, which is the most recent sterilization device in the world using nitrogen, which is pumped in certain proportions into the sterilization room where the pieces are sterilized for a period 28 days to reduce all stages of insects, and after sterilization and for a period of 10 months, they do not become infected again with any insect phase, and thus their sustainability and protection from damage.

The antiquities reception unit also includes a first aid laboratory, where preliminary cleaning and strengthening.

2- Organic Material Restoration Laboratories :-

- A- The Wooden Restoration laboratory
- B- Textile and basket restoration laboratory
- C- The Manuscript and Papyrus Restoration Laboratory

3-The Inorganic Restoration laboratory :-

- A- Silicate Antiquities Restoration Laboratory
- B- The Mineral Antiquities Restoration Laboratory

C- Small stone restoration laboratory

4-The Mummies Study and Restoration Unit:

The Mummies Study and Restoration Unit includes a highly equipped and trained team responsible for storing and restoring archaeological mummies in the museum. The mummies study and restoration unit is divided into:

A- Mummies Preservation Unit : -

The mummies are kept in nurseries equipped with nitrogen preservation with a control unit of 36 units. It also includes devices for measuring temperature, humidity and light intensity, as well as a unit for storing wooden coffins.

B- The mummies restoration and study laboratory:

The laboratory is equipped with all materials and tools for restoring mummies, as well as devices for extracting fumes, dust and gases, and cabinets for storing restoration materials with internal suction.

5-Heavy Stone Restoration & multiple purposes Lab :

A preferred unit equipped with a winch with a load of 6 tons & another one load 10 tons to deal with large and heavy artifacts, as well as lifting and loading tools for assembly, as well as it is equipped to restore all kinds of large and disassembled artifacts into large parts.

6-Icon and Oil Painting Restoration Unit:

It is also a separate restoration unit equipped with extraction devices for vapors, gases and dust, as well as a varnish unit with precise control for oil paintings, as well as sources of natural and artificial light to control the color vision and re-coloring (RE-TOUCH).

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7-Restoration workshops:

The Center for Restoration and Conservation of Antiquities at the National Museum of Egyptian Civilization includes workshops that serve the work in restoration laboratories as well as in the museum display as follows: -

A- Carpentry workshop: It is equipped with tools and devices for shaping and cutting wood of different sectors

B- Models molding workshop: where different models are formed using materials for shaping as well as intervening in the completion of some artifacts (in case of extreme necessity and what is required for restoration work)

C- Metal casting workshop: where different metals are cast after melting and shaping them into required patterns.

8 -Laser Effects Cleaning Unit

It includes a fixed laser device that cleans various organic artifacts

The Central Scientific Laboratories:

- The central laboratories contain the latest international equipment and technologies that are unique to the Center for the Conservation and Restoration of Antiquities. The museum's central scientific laboratories are also unique to a group of distinguished human elements with high competence and specialized in many branches of science.

The central scientific laboratories include: -

- 1 - Ancient Life Research Laboratory.(D.N.A)
- 2- Human Remains laboratory.
- 3-Modern Microscopy Unit.

4- Microbiology lab.

5- Radiocarbon dating lab.(C14)

6- Elemental Analysis Lab.

7- Molecular Spectrometry Lab.

8- The x-ray laboratory.

9- Laboratory of chromatography.

10- Thermal Analysis Lab.

- Modern techniques in preserving antiquities and heritage items in the archaeological stores

- The National Museum of Egyptian Civilization has the best way to store antiquities, as they are stored according to the type of material from which the relic was made,

The stores are divided according to the type of archaeological material into:

1- The Huge stone Store

2- Small Stones Store

3- Big Wood Store

4- Small Wood Store

5- Pottery and Ceramics Store

6- Metal and Glass Store

7- The Textile and Papyrus Store

8- The Archaeological Collections Store

9- Mummies Store

- 10- High Security Store - (Valuables and Jewelry)

11- Heritage and Modern Store.

- All the building provided to preserve and sustain the antiquities with the following: -

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1- Security units for opening and closing, which operate with a fingerprint and a special personal card.

2- Alarms of fire, smoke, or electrical short circuits.

3- Different extinguishing systems according to the type of store and the artifacts it contains, for example extinguishing with water, extinguishing with carbon dioxide, the FM 200 extinguishing system, and extinguishing with fogging.

4- High-precision suction system for gases and fumes

5- Day and night surveillance cameras linked to the 24-hour control room.

RESULTS AND DISCUSSION:

As a result of what was presented in the research paper, we reach important results, including:

The restoration component should be taken into account when establishing museums.

Take advantage of all the equipment available in the restoration center as well as the manpower to advance the center and serve the community.

CONCLUSION:

The restoration center should be an international center because of its modern capabilities

Establishing a private research center in the presence of laboratories that do not exist locally in Egyptian museums, but rather are not found internationally in museums

Establishing specialized units such as the mummies restoration and research unit

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