



THE 20TH INTERNATIONAL OPERATIONS & MAINTENANCE
CONFERENCE IN THE ARAB COUNTRIES

BUILDING MAINTENANCE QUALITY SYSTEMS MANAGEMENT OF SUSTAINABILITY

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Scope of Paper

The scope work is concerned with the following;

There are many problems inside the buildings that are not controlled, either because there is no system or a system that does not work so to make sure that the system inside the buildings works efficiently is to adhere to a quality system and implement a maintenance program for the devices inside the buildings and to preserve the national economy and reduce the losses resulting from all of this is done through the application of the quality system inside the buildings.

The paper gives a model of the method of handling and controlling the management of building maintenance quality systems in terms of the quality system. The paper includes mechanical and electrical operating instructions, operating warnings, and a maintenance program for devices and machines inside buildings.

The steps of the maintenance process inside the buildings include the following:

1. Maintenance and repair of all devices and machines inside the buildings.
2. Calibration and adjusting measuring, checking, and testing equipment to ensure that it performs the required tasks.

Electrical short circuit



- *The question of the mechanism of the conference, maintenance and operation, and its convening twenty years ago. *The goal is to have sustainability,
- green building and smart system.
- *In order to conserve economic resources.
- *Although there is a fire system, but the fire occurred. The fire system does not work because there is no quality control and follow-up system.
- For example
- Electrical short circuit – Shura Council fire Egypt-2008

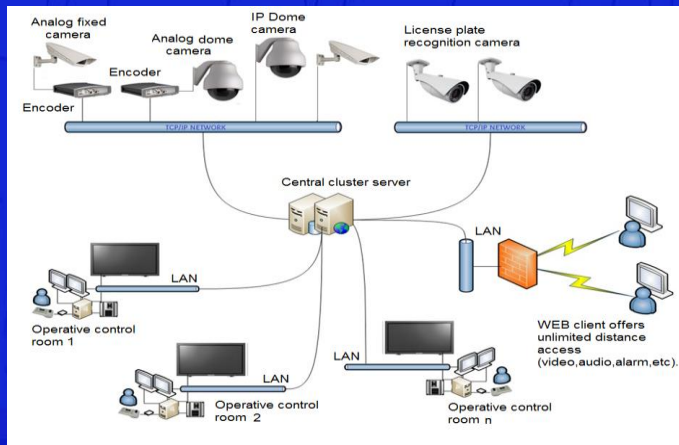


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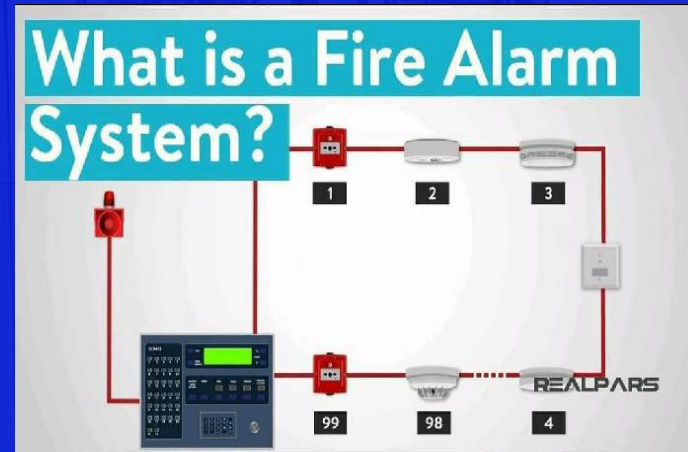
Objectives of sustainable operation and maintenance of the electrical

- 1* Improve electrical energy efficiency
- 2* Maintaining the life cycle.
- 3* Protection from electric shock hazards and electrical fire hazards.
- 3* Using the Pro-Diagnostic maintenance system, additional diagnostic maintenance (before the occurrence of the fault) to determine the location of the technical failure.
- 4* Use a proactive maintenance system (before damage occurs) instead of a reactive maintenance system (after damage occurs) Pro- Active maintenance. instead of Re-active maintenance.
- 5* Using smart monitoring and control systems throughout the day.
- 6* Using modern maintenance tools, equipment and systems to reduce maintenance costs and maintain operating time

Building management systems (BMS)



Closed-circuit television (CCTV)
Surveillance Systems for Building



Fire Alarm Systems



Optical sensors

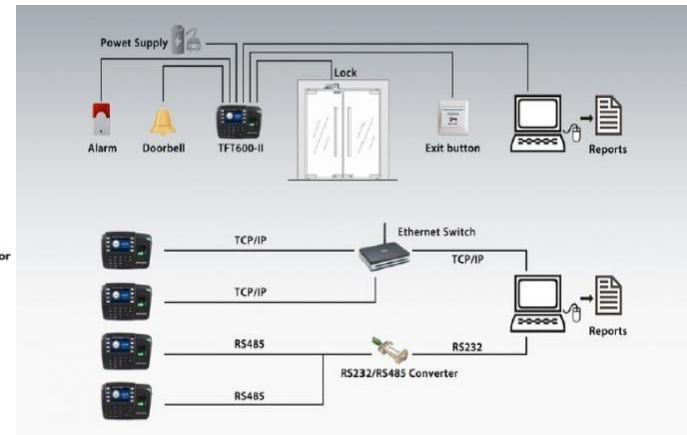
Objectives of sustainable operation and



Thermal monitoring systems

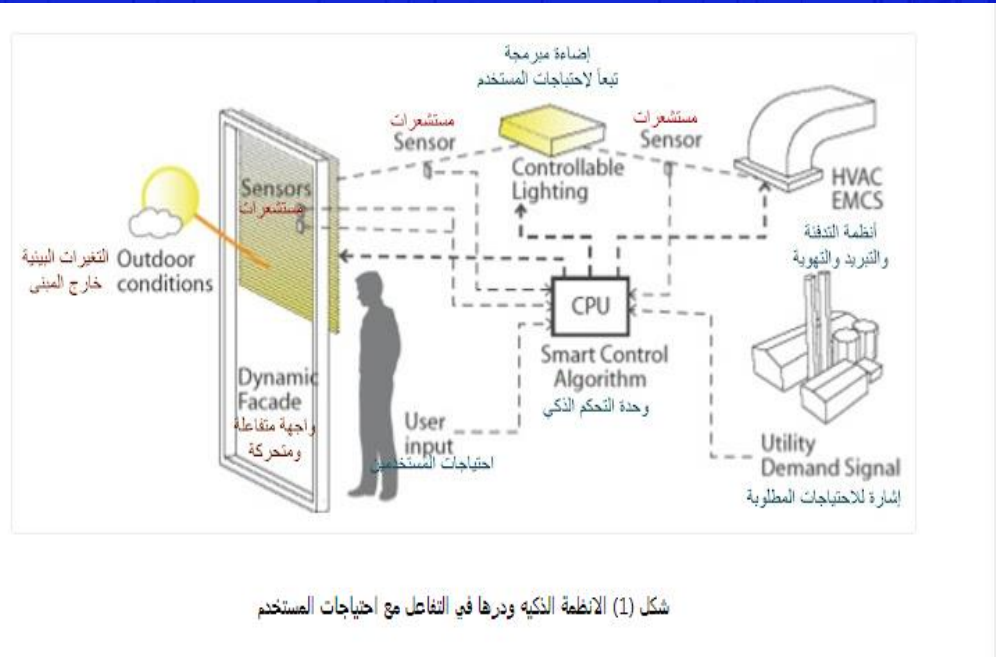


Anti-theft alarm systems



Electronic Access Control System

Smart Building



- A smart building is one in which basic equipment and assets, such as air handlers, coolers, boilers, lighting, Firefighting and alarm system, etc., can communicate with other machines. Where there is a detailed management system to control and improve all parts.
- A smart building aims to provide useful services that help make its users more productive, safer, and at the lowest cost and with the least impact on the environment.
- A smart building improves and reduces energy use, can operate with clean energy sources, and puts the security of occupants and quality of life first. These priorities not only mean physical safety, such as fire suppression and alarm systems, but also health security - high-quality air and water, and more.



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Green building leadership is LEED

LEED (Leadership in Energy and Environmental Design) certification is one of the most widely recognized standards for sustainability, and an excellent way to demonstrate your building's environmental credentials. LEED is the green building rating system for green buildings that are healthy efficient, energy efficient and cost effective.

LEED Certification Minimum Requirements

- 1- Comply with **environmental** regulations and standards.
- 2-Must meet the threshold of **floor area requirements**.
- 3-Meet a minimum of building occupancy in terms of the **number of users**.
- 5-Maintain a reasonable site boundary.
- 6-Be a permanent building.
- 7-Share **energy** and **water** usage data.

Maintenance of systems

Intake fans (Air or draw fumes)	Chilled Water Generating Units (Water Chiller)	Air conditioning, refrigeration and ventilation equipment system	Firefighting and alarm system
Centrifugal pumps	Escalators and electric walkers	Electric elevators	Boilers
Electrical generator	Cooling towers	Chiller	

- The procedures for applying mechanical requirements, such as ventilation, cooling, and heating installations, maintenance and operation, and requirements for protection against fire hazards, must be checked according to the standards specified by the manufacturer[5].
- 2) The following is a statement of the required systems maintenance records, to ensure the availability of a good system for follow-up and documentation as shown in the following table (1):-



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CONCLUSIONS

1. There must be the management of quality systems for the maintenance of smart buildings.
2. Operating instructions for building machinery and equipment must be clear and periodic training should be carried out.
3. Adoption of the maintenance program and applied monitoring to maintain the building's machinery and equipment.
4. Checking the quality system periodically and applying it well.
5. All building equipment and machinery must be calibrated.
6. There should be positive, multiple, sudden and continuous periodic administrative control.
7. Implementation Egyptian code for “The operation and maintenance of public and heritage buildings”, 2021.



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