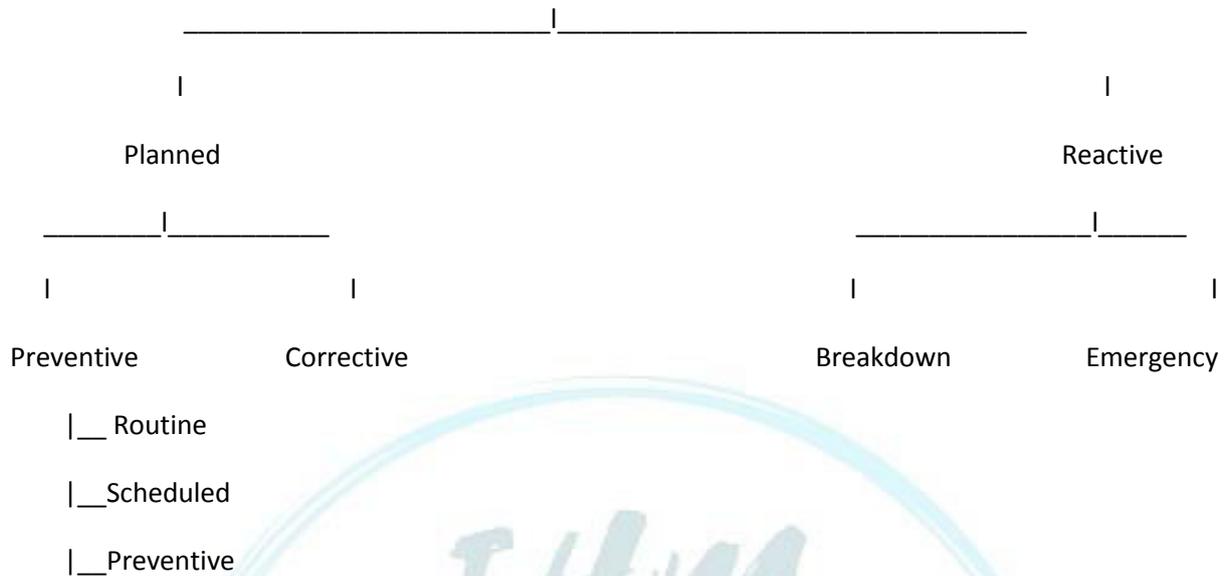


MAINTENANCE



Planned Maintenance- Equipment will be maintained throughout its working life, before a complete breakdown requiring replacement / major repair.

Preventive maintenance- Actions carried out on a **time-based** and **condition-based** schedule which detect, preclude or mitigate degradation of a component through controlling degradation to an acceptable level.

Preventive maintenance is based on the principle “Prevention is better than cure”. It cannot prevent failure but can extend the working life of the machines.

Constant inspection and checking can predict failures and can avoid complete stoppage of service by keeping alternative facilities.

Philosophy of time-based preventive maintenance:-

- Scheduling maintenance activities at predetermined time intervals.
- Repairing or replacing damaged part before problems occur.

These are achieved through i) Routine maintenance and ii) Scheduled maintenance programmes.

Routine maintenance- Cleaning of machines, regular lubrication of moving parts (bearings, door hinges etc.).

Scheduled maintenance- Done using experience and following manufacturer’s maintenance schedule. Schedule of machines are prepared, log books are maintained. Advantages are significant for equipment which does not run continuously but needs people having good knowledge, skills and time to perform this maintenance.

Philosophy of condition-based preventive maintenance:- (also called predictive maintenance)

- Scheduling maintenance activities when mechanical or operational conditions demand.
- Repairing or replacing damaged equipment before problem occurs.

Scheduling maintenance by periodically monitoring the machinery for excessive vibration, temperature, lubrication degradation, any other unhealthy trend that occurs over period of time.

When condition deteriorates to predetermined unacceptable level the equipment is shut down to repair or damaged components replaced to avoid occurrence of costly failure.

Basic Preventive Maintenance programme consists of:-

- a) Regular periodic inspection of machines, utilities, buildings. The schedule is determined based on experience of maintenance engineer and the recommendations of the manufacturer.
- b) Preparing information database regarding nature and possible causes of breakdown of different equipment to analyse and maintenance action can be taken to avoid repetitive occurrence.

Corrective maintenance- Sometimes it is called running maintenance. This takes place where minor repair work is carried out on machines initiated by a formal work order from the machine user department. Work order can clearly or roughly identify the problem. Maintenance crew inspects the machine and does repair work in a short time. Corrective maintenance attempts to meet the known needs in an orderly and timely manner as per the requirement of the property.

Reactive maintenance- It is a maintenance action as a reaction to failure of equipment or building civil work.

Breakdown maintenance is a strategy; emergency breakdown is related to emergency situations where failure occurs in spite of other modes of maintenance being carried out.

Philosophy of breakdown maintenance:-

- Allowing the machinery to run up to the point of failure.
- Repairing or replacing damaged equipment when problems occur.

Breakdown maintenance implies restoration of a facility to almost its original condition for which it is designed either by major repair or by total replacement.

Modern equipment like modern cars, washing machines, vacuum cleaners, dish washers, mincers, mixers etc. are made with high degree of sophistication and reliability. It is advantageous from cost point of view to run them till they fail. Also true for electronic control systems like sensors etc. Electric bulbs may be replaced by group replacement policy.

In breakdown maintenance there cannot be any delay in repairing or replacing the components, otherwise the entire operation will come to a halt.

Advantages of Breakdown maintenance:

It saves a lot of regular maintenance work in terms of labour and spares inventory. If immediate restoration is required, there might be cost of overtime, emergency spares of high value. So it works well if equipment shutdowns do not affect service and if labour and material cost do not matter in case of emergency repair.

Emergency Maintenance is carried out when a portion of equipment suddenly fails – can be delayed keeping the post out of service – though it may cause a high level of inconvenience. For example, emergency repair of a guest room. It is an expensive way of maintenance.

Advantages of Preventive maintenance:

- It is cost-effective in many capital intensive equipment.
- Increases operational life of equipment.
- Operates at design conditions. (lubrication, filter change etc.)
- Gives maximum return on capital investment.
- Reduces the number of equipment and service failures in a place.
- Provides flexibility for adjustment in maintenance schedule.
- Improve worker morale by reducing idle time.
- Results in an estimated 12 – 18% cost saving over reactive maintenance programme.
- Provides safety to personnel and property from hazards by reducing possible sudden breakdown (for example, in boilers, compressors, transformers etc.)

Disadvantages of Preventive maintenance:

- It cannot eliminate complete failure.
- It is more labour and time intensive.
- Maintenance activities that are really not required are carried out.
- It requires extra facilities and may lead to underutilization of facilities.
- It is not economical for small property which has got cheaper and non-critical equipment.
- Saving potential is not readily seen by management which usually focuses on running costs.

Advantages of Running maintenance:

- Has a lower cost due to no regular application.
- Requires fewer staff for applying the scheme.

Disadvantages of Running maintenance:

- Increased costs due to unplanned downtime of equipment.
- May involve prolonged downtime if proper manpower and components are not readily available.
- Increases labour costs, especially if overtime is needed.
- May increase costs associated with repair or replacement of equipment on an urgent basis.

- May result in possible damage to associated equipments.

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Additionally two more maintenance practices are there for hospitality industry – Routine maintenance and Guest room maintenance.

Routine maintenance- General upkeep of the property is done on regular basis (daily or weekly). For example, cleaning of floor, sweeping the carpets, cleaning guest rooms etc. They do not require any formal work order or skilled person.

Guest room maintenance- It has a special meaning in hotel industry. Some include it in the category of preventive maintenance, other call it corrective or running maintenance. The most important aspect of hotel industry is the level of comfort and ambience provided to the guest. When the guest steps in, the condition of the room is the assessing factor for quality. So this maintenance should have top-notch level of maintenance programme in hotel industry.

Example, i) Condition and proper operation of furniture, fixtures, equipment (TV, A/C etc.)

- ii) Appearance of walls, ceilings, condition of carpets, supply of water in the toilet, overall cleanliness etc.