Maintenance, repair, and operations

"Repair" and "repairman" redirect here. For home repair, see Home repair.

Maintenance, repair and operations[1] (**MRO**) or

Mechanical repair

maintenance, repair, and overhaul involves fixing any sort of mechanical, plumbing or electrical device should it become out of order or broken (known as repair, unscheduled, or casualty maintenance). It also includes performing routine actions which keep the device in working order (known as scheduled maintenance) or prevent trouble from arising (preventive maintenance). MRO may be defined as, "All actions which have the objective of retaining or restoring an item in or to a state in which it can perform its required function. The actions include the combination of all technical and corresponding administrative, managerial, and supervision actions." [2]

MRO operations can be categorised by whether the product remains the property of the customer, i.e. a service is being offered, or whether the product is bought by the reprocessing organisation and sold to any customer wishing to make the purchase (Guadette, 2002). In the former case it may be a backshop operation within a larger organization or smaller operation.

The former of these represents a closed loop supply chain and usually has the scope of maintenance, repair or overhaul of the product. The latter of the categorisations is an open loop supply chain and is typified by refurbishment and remanufacture. The main characteristic of the closed loop system is that the demand for a product is matched with the supply of a used product. Neglecting asset write-offs and exceptional activities the total population of the product between the customer and the service provider remains constant.

1 Engineering

Road repair

In telecommunication, commercial real estate and engineering in general, the term maintenance has the following meanings:

1. Any activity – such as tests, measurements, replacements, adjustments and repairs — intended to retain or restore a functional unit in or to a specified state in which the unit can perform its required functions.[3]

2. For material — all action taken to retain material in a serviceable condition or to restore it to serviceability. It includes inspection, testing, servicing, classification as to serviceability, repair, rebuilding, and reclamation.[3]

3. For material — all supply and repair action taken to keep a force in condition to carry out its mission.[3]

4. For material — the routine recurring work required to keep a facility (plant, building, structure, ground facility, utility system, or other real property) in such condition that it may be continuously used, at its original or designed capacity and efficiency for its intended purpose.[3]

Manufacturers and Industrial Supply Companies often refer to MRO as opposed to Original Equipment Manufacturer (OEM). OEM includes any activity related to the direct manufacture of goods, where MRO refers to any maintenance and repair activity to keep a manufacturing plant running.

2   Maintenance types

Generally speaking, there are four types of maintenance in use:

- Preventive maintenance, where equipment is maintained before break down occurs.

- Operational maintenance, where equipment is maintained in using.

- Corrective maintenance, where equipment is maintained after break down. This maintenance is often most expensive because worn equipment can damage other parts and cause multiple damages.

- adaptive maintenance, where equipment is maintained by letting it adapt to new environment.

2.1   Preventive maintenance

Main article: Preventive maintenance

Preventive maintenance is maintenance performed in an attempt to avoid failures, unnecessary production loss and safety violations.

The effectiveness of a preventive maintenance schedule depends on the RCM analysis which it was based on, and the ground rules used for cost-effectivity.[4]

Further information: Planned maintenance

3   See also

- Auto maintenance

- Darning

- Delta TechOps

- Design for repair

- Logistics center

- Maintainability

- Product Lifecycle Management

- RAMS

- Reliability engineering

- Remanufacturing

- Scheduled maintenance

- Total productive maintenance

4   References

[1] Defense Logistics Agency

[2] European Federation of National Maintenance Societies

[3] Federal Standard 1037C and from MIL-STD-188 and from the Department of Defense Dictionary of Military and Associated Terms

[4] Tain Inc RCM analysis

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5.1 Text

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