1. Introduction

The maintenance is defined as combination of all technical and administrative actions, including supervision actions, intended to retain an item in, or restore it to, a state in which it can perform a required function.

Following are the main types of maintenance:

Run to Failure Maintenance

Run to failure occurs when repair action is not taken until a problem results in machine failure. Run to failure problems often because costly secondary damage along with unplanned downtime and maintenance costs.

Preventive Maintenance

Preventive maintenance implies that a machine, or parts of a machine, is overhauled on a regular basis regardless of the condition of the parts. While preferable to run to failure maintenance, preventive maintenance is costly because of excessive downtime from unnecessary overhauls and the cost of replacing good parts along with worn parts.

Predictive Maintenance

Condition monitoring/predictive maintenance is the process of determining the condition of machinery while in operation. This enables the repair of problem components prior to failure. Condition monitoring not only helps plant personnel reduce the possibility of catastrophic failure, but also allows them to order parts in advance, schedule manpower, and plan other repairs during the downtime. With condition monitoring, machinery analysis takes two overlapping forms; predictive and diagnostic

![Fig.1 Bathtub-curve of Maintenance](#)