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Condition monitoring and diagnostics of machines — Vocabulary

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Introduction

This International Standard defines terms relating only to condition monitoring and diagnostics of machines. It does not include terms that are defined elsewhere, nor those specific to only one area of the field. It is considered a living document and will be amended or updated as additional terms arise.

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Condition monitoring and diagnostics of machines — Vocabulary

Scope

This International Standard specifies definitions of terms used in condition monitoring and diagnostics of machines. It is intended to provide users and manufacturers of condition monitoring and diagnostics systems with a common vocabulary.

1   General terms

1.1
analysis
careful scrutiny of constituent parts of a **system** (1.17) in order to thoroughly understand the whole

1.2
breakdown maintenance
maintenance performed after a **machine** (1.10) has failed

1.3
catastrophic failure
sudden, unexpected **failure** (1.7) of a **machine** (1.10) resulting in considerable damage to the machine and/or associated machines or components

1.4
condition-based maintenance
maintenance performed as governed by condition monitoring programmes

1.5
condition monitoring
detection and collection of information and data that indicate the state of a **machine** (1.10)

NOTE   The machine state deteriorates if **faults** (1.8) or **failures** (1.7) occur.

1.6
diagnostics
examination of **symptoms** (9.5) and **syndromes** (4.9) to determine the nature of **faults** (1.8) or **failures** (1.7) (kind, situation, extent)

1.7
failure
termination of the ability of an item to perform a required **function** (1.9)

NOTE   Failure is an event as distinguished from **fault** (1.8), which is a state.

1.8
fault
condition of a component that occurs when one of its components or assemblies degrades or exhibits abnormal behaviour, which may lead to the **failure** (1.7) of the **machine** (1.10)

NOTE 1   A fault may be the result of a failure, but can exist without a failure.

NOTE 2   Planned actions or lack of external resources are not a fault.

1

1.9
function
appropriate action of any **machine** (1.10) or part of a **system** (1.17)

NOTE   The function is the action and activity assigned to, required of, or expected of a machine or system.

1.10
machine
mechanical system designed expressly to perform a specific task, such as the forming of material or the transference and transformation of motion, force or energy

NOTE   This is also sometimes referred to as equipment.

1.11
machine characteristics
distinguishing attributes, qualities and properties of a **machine** (1.10) and its subsystems which, by their presence and the relative magnitudes of their effects, define the configuration, performance, behaviour and capabilities of the machine

1.12
machine system
machine train (deprecated)
mechanical system in which the principal subsystem is a specific **machine** (1.10) and whose other subsystems are components and auxiliaries whose individual functions are integrated to support the actions and work of the machine

1.13
predictive maintenance
maintenance emphasizing prediction of **failure** (1.7) and taking action based on the condition of the equipment to prevent failure or degradation

1.14
preventive maintenance
maintenance performed according to a fixed schedule, or according to a prescribed criterion that detects or prevents degradation of a functional structure, **system** (1.17) or component, in order to sustain or extend its useful life

1.15
proactive maintenance
type of maintenance emphasizing the routine detection and correction of **root cause** (8.11) conditions that would otherwise lead to **failure** (1.7)

EXAMPLES   High lubricant contamination, misalignment and unbalance.

1.16
prognostics
analysis of the symptoms of **faults** (1.8) to predict future condition and remaining useful life

1.17
system
grouping of associated entities, which is characterized by a mental construct

NOTE   One of the associated entities is the boundary of the system.

2   Machine characteristics

2.1
critical machinery
machinery which is required to accomplish a major part of an economic process

**2.2
maintainability**

ability of a machine or part of a system to be retained in, or restored to, a state in which it can perform the required **function(s)** (1.9)

**2.3
performance**

behaviour, characteristics and efficiency of a technological process, running in a **machine** (1.10)

**2.4
reliability**

probability that a **machine** (1.10) will perform its required **functions** (1.9) without **failure** (1.7) for a specified time period when used under specified conditions

3   Operation and maintenance

**3.1
alignment**

condition whereby the axes of **machine system** (1.12) components are either coincident, parallel or perpendicular, according to design criteria

**3.2
reliability centred maintenance
RCM**

disciplined logic used to identify those cost effective and technologically feasible maintenance tasks that realise the inherent **reliability** (2.4) of equipment at a minimum expenditure of resources over the life of the equipment

**3.3
thermal growth**

change in the dimensions of a system (1.17) component caused by expansion due to changes in temperature

4   Faults

**4.1
abnormality**

deviation from a standard condition

**4.2
alarm**

operational signal or message designed to notify personnel when a selected anomaly, or a logical combination of anomalies, requiring corrective actions is encountered

NOTE   An alarm is a more severe anomaly zone than an **alert** (4.3) and should be identified with a red indicator.

**4.3
alert**

operational signal or warning message designed to notify personnel when a selected anomaly, or a logical combination of anomalies, requiring heightened awareness is encountered

NOTE   An alert is the first zone of an **anomaly** (4.4) and should be identified with a yellow indicator.

**4.4
anomaly**

irregularity or **abnormality** (4.1) in a **system** (1.17)

**4.5
distortion**

departure from normal shape or configuration