LANLEO30

Inspect and test land-based machinery and equipment

Overview

This standard covers the inspection and testing of land-based machinery and equipment. It describes how to inspect and test machinery and equipment to confirm compliance before or after a repair and during the course of diagnostic investigation.

This standard includes formulation, justification and recommendations of logical actions to be taken following inspection, test and analysis of information and data.

Inspect and test land-based machinery and equipment covers the collection of all relevant information through information gathering, diagnostic testing or operational testing and analysis of test data to allow determination of compliance and diagnosis of faults and failures experienced in land-based machinery and equipment.

Analyse and interpret findings covers analysis and interpretation of collected information by consideration of data, comparison, simulation, influences on test data/operation or appliances, as well as testing data to allow an informed diagnosis.

Formulate and recommend actions covers recommending actions to be taken, e.g. beyond economical repair; repair, replace, service exchange, re-condition etc.

This standard is for those who work in land-based engineering.

Performance criteria

You must be able to:

Inspect and test land-based machinery and equipment

1. establish the objectives of the inspection or test, which may fall into one or more **categories**
2. collect **relevant information** to aid a clear understanding of machinery and equipment, its condition, application and performance
3. gather service history and technical reference data to assist the inspection or test
4. identify the appropriate tests or procedures
5. select equipment required for the task ensuring that it is serviceable, calibrated and that all certification is in date
6. carry out any necessary preparation work and tests or procedures within agreed timescales
7. inspect failed parts
8. record all findings

Analyse and interpret findings

1. check that the data gathered is realistic and thorough and takes account of the test conditions
2. analyse the data using industry-approved methods and procedures
3. consider and eliminate any external factors affecting the performance of machinery or equipment
4. compare the analysis against the product specification and identify any faults or variations from specification
5. identify the causes of failures and determine the implications of the findings

Formulate and recommend actions

1. identify and recommend **actions**
2. ensure actions recommended meet **relevant standards** and customers' requirements
3. justify and record recommendations
4. present observations and recommendations and prepare documentation

Knowledge and understanding

You need to know and understand:

Inspect and test land-based machinery and equipment

1. the purpose and objectives relating to a request for an inspection or test
2. the actions required for the different types of inspection and tests
3. how to collect and validate relevant information
4. how to **prioritise and sequence** the testing procedures
5. methods of investigating intermittent faults
6. the appropriate methods, diagnostic and specialist equipment used to establish the conformity of a land-based machine or equipment
7. how to differentiate between a machinery characteristic and a malfunction
8. how to recognise, collect and record relevant data using the appropriate format

Analyse and interpret findings

1. how to compare, analyse and interpret data gained from testing and inspection
2. the relevant **analysis methods and techniques** of fault finding
3. the causes and symptoms of failures
4. the suitability and the limitations of the machinery or equipment being inspected to perform the given task

Formulate and recommend actions

1. the range of actions that could be considered
2. the causes and effects of failures
3. the implications relating to the proposed solution, in particular warranty, cost, future repair and impact on the customer's operations
4. how to present observations and recommendations to the customer, organisation and manufacturer
5. how to identify when operator training is required to avoid reoccurrence of failures
6. how to **classify a repair**

Glossary

actions - e.g. performance verification, conformity to purchase specification, repair verification, accident or incident investigation, diagnosis, estimation and quotation of repair services

analysis methods and techniques - e.g. by logical elimination, simulation, comparison, isolation of components, defining specification and performance against manufacturers' data

categories - e.g. compliance, verification of repair, accident or incident occurrence, diagnosis, pre-delivery inspection (PDI)

classify a repair - e.g. warranty, insurance claim, forced breakage, lack of maintenance, unauthorised intervention, sabotage, overload, operator abuse, inappropriate application

collect and validate information - e.g. verbal interrogation, personal operation, fault registers, observation, simulation, comparison

options - e.g. repair, replace, service, unsuitable for application, beyond economic repair, unsafe for continued use, fit for purpose, operator training required

prioritise and sequence testing procedures - e.g. safety, economics, position and location of machine or equipment to be tested, state of equipment being tested (e.g. not fit for testing)

LANLEO30

Inspect and test land-based machinery and equipment

Developed by	Lantra
Version Number	2
Date Approved	December 2015
Indicative Review Date	December 2020
Validity	Current
Status	Original
Originating Organisation	Lantra
Original URN	LANLEO30
Relevant Occupations	Land-based Engineering
Suite	Land-based Engineering Operations
Keywords	PDI; diagnose; analyse; land-based; engineering; equipment; machinery; inspect; test