BS ISO 18436-4:2014

BSI Standards Publication

Condition monitoring and diagnostics of machines — Requirements for qualification and assessment of personnel

Part 4: Field lubricant analysis

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National foreword

This British Standard is the UK implementation of ISO 18436-4:2014. It supersedes BS ISO 18436-4:2008 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee GME/21, Mechanical vibration, shock and condition monitoring, to Subcommittee GME/21/7, Mechanical vibration, shock and condition monitoring - Condition monitoring.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Condition monitoring and diagnostics of machines — Requirements for qualification and assessment of personnel —

Part 4: Field lubricant analysis

Surveillance et diagnostic d'état des machines — Exigences relatives à la qualification et à l'évaluation du personnel —

Partie 4: Analyse de la lubrification sur le terrain

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 108, *Mechanical vibration, shock and condition monitoring*, Subcommittee SC 5, *Condition monitoring and diagnostics of machine systems*.

This second edition cancels and replaces the first edition (ISO 18436-4:2008), which has been technically revised.

ISO 18436 consists of the following parts, under the general title *Condition monitoring and diagnostics of machines — Requirements for qualification and assessment of personnel*:

— *Part 1: Requirements for assessment bodies and the assessment process*

— *Part 2: Vibration condition monitoring and diagnostics*

— *Part 3: Requirements for training bodies and the training process*

— *Part 4: Field lubricant analysis*

— *Part 5: Lubricant laboratory technician/analyst*

— *Part 6: Acoustic emission*

— *Part 7: Thermography*

— *Part 8: Ultrasound*

The following part is under preparation:

— *Part 9: Condition monitoring specialists*

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Introduction

Using lubricant analysis to monitor condition and diagnose faults in machinery is a key activity in predictive maintenance programmes for most industries. Other non-intrusive technologies including thermography, vibration analysis, acoustic emission, and motor current analysis are used as complementary condition analysis tools. Those in the manufacturing industry who have diligently and consistently applied these techniques have experienced a return on investment far exceeding their expectations. However, the effectiveness of these programmes depends on the capabilities of individuals who perform the measurements and analyse the data.

A programme, administered by an assessment body, has been developed to train and assess the competence of personnel whose duties require the appropriate theoretical and practical knowledge of machinery monitoring and diagnostics.

This part of ISO 18436 defines the requirements against which personnel in the non-intrusive machinery condition monitoring and diagnostics technologies associated with field lubricant analysis for machinery condition monitoring are to be qualified and the methods of assessing such personnel.

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INTERNATIONAL STANDARD ISO 18436-4:2014(E)

Condition monitoring and diagnostics of machines — Requirements for qualification and assessment of personnel —

Part 4: Field lubricant analysis

1 Scope

This part of ISO 18436 specifies the requirements for qualification and assessment of personnel who perform machinery condition monitoring and diagnostics using field lubricant analysis.

A certificate or declaration of conformity to this part of ISO 18436 will provide recognition of the qualifications and competence of individuals to perform field lubricant analysis for machinery condition monitoring. This procedure is not applicable to specialized equipment or other specific situations.

This part of ISO 18436 specifies a three-category classification programme that is based on the technical areas delineated herein.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 13372, *Condition monitoring and diagnostics of machines — Vocabulary*

ISO 18436-1:2012, *Condition monitoring and diagnostics of machines — Requirements for qualification and assessment of personnel — Part 1: Requirements for assessment bodies and the assessment process*

ISO 18436-3, *Condition monitoring and diagnostics of machines — Requirements for qualification and assessment of personnel — Part 3: Requirements for training bodies and the training process*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13372 and the following apply.

3.1
lubricant
any substance interposed between two surfaces in relative motion for the purpose of modifying the friction and reducing the wear between them

Note 1 to entry: Hydraulic and heat transfer fluids are considered lubricants.

3.2
lubricant analysis
process of monitoring and performing investigative testing of lubricants, with subsequent interpretation, reporting, and response to obtained results

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4 Classification of personnel (field lubricant analysis)

4.1 General

Individuals assessed as conforming to the requirements of this part of ISO 18436 shall be classified in one of three categories depending upon their qualifications. They shall have demonstrated the necessary skills in field lubricant analysis for their category as indicated in Annex A.

Personnel classified as category II need to have all the knowledge and skills expected of personnel classified as category I, while personnel classified as category III need to have all the knowledge and skills expected of personnel classified as category II.

4.2 Category I

Individuals classified as category I are qualified to perform field lubricant analysis according to established and recognized procedures. Personnel classified as category I shall be able to

a) dispense lubricants, re-lubricate, and/or inspect lubricants on a pre-programmed route, as appropriate, in accordance with established procedures,

b) properly maintain lubrication devices and equipment,

c) install sampling hardware deemed appropriate, safe, and non-intrusive by category II or higher personnel (any intrusive sampling hardware installation shall be undertaken by a suitably qualified person authorized by the customer),

d) verify that analysis instruments are calibrated and report to the appropriate personnel where action is needed,

e) operate (and maintain) portable lubricant analysis instrumentation on pre-programmed routes,

f) download and upload raw test data from portable lubricant analysis instrumentation,

g) acquire lubricant samples from machine systems, equipment, and/or storage containers in accordance with established procedures, and

h) prepare samples for transport and/or testing in accordance with established procedures.

4.3 Category II

Individuals classified as category II are qualified to perform basic field lubricant testing and analysis according to established and recognized procedures. Personnel classified as category II shall be able to

a) set up instruments for basic on-site testing,

b) perform calibration checks on instruments used for on-site testing,

c) establish procedures for sample acquisition, preparation, and transport,

d) select sample point locations, methods, and hardware and oversee installation of sampling hardware,

e) apply selected test methods for on-site testing and wear debris analysis,

f) liaise with an off-site laboratory,

g) classify, interpret, and evaluate basic test results (including acceptance tests) in accordance with applicable specifications and standards,

h) employ basic lubricant analysis techniques to troubleshoot lubricant, machinery, and components,

i) maintain a database of analysis schedules, results, and diagnoses,

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