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1. Purpose

The purpose of this guidance document is to determine the minimum requirements for the inspection bodies carrying out inspections on lifting equipment and their accessories and to ensure protection of environment, health and safety in UAE, where such inspections are carried out.

2. Scope

The scope of this document is limited to the inspections carried out in the field of lifting equipment and their accessories.

3. Definitions

Competent Inspector / Examiner

In relation to the carrying out of any test and examination required by the UAE aforesaid regulations, means a person who is: -

- a. appointed by the owner as required by this regulations to ensure that the test and examination is carried out
- b. by reason of his qualifications, training and experience, he is competent to carry out the test and examination;

Lifting Equipment

Any lifting machine, driven by manual or mechanical power that is able to raise, lower or suspend loads, and includes the supporting structure and all plant, equipment and gear used in connection with such a machine, but excludes continuous mechanical handling devices (i.e. conveyors), such as but not limited to: -

1. Cranes (tower, mobile, overhead cranes, Pipe layer crane, pedestal cranes loader crane etc),
1. Runway Beams, Monorails, All Pad Eyes, Gin Poles and Gin Wheels,
2. Winches, Hoists (air and electric), Crabs, Telfer Hoists,
3. Chain Blocks, Wire Rope Pulling Machines, Pull Lifts, Trolleys,
4. Mobile Elevating Working Platforms (MEWP),
5. Elevators and Escalators,
6. Industrial lift trucks such as Forklifts, Self Loader and Side Booms,

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7. Lifting Jacks (pneumatic, hydraulic and mechanical 'screw').

Lifting Accessories or Loose Gear

Any item used to connect a load to the lifting equipment but which is not in itself a part of the load or the equipment, such as Chains and Wire Ropes, Webbing Slings, Rings, Links, Hooks, Shackles, Eye Bolts, Swivels, Blocks, Snatch Blocks, Clamps, beams etc.

CLASSIFICATION OF LIFTING MACHINES

Class A1: Powered Lifting Machine

Lifting equipment - including attachments for fixing, anchoring or supporting equipment - that operate by means of motive power such as electric, hydraulic or pneumatic or other powered means such as cranes, elevators, winches ...etc.

Class A2: Powered Lifting Machine

Personnel lifting equipment such as elevator, escalator, passenger hoist & window cradle. They have to be inspected within an interval of 6 months as required by the standard BS EN 7121.

Class B: Manual Lifting Equipment

Lifting equipment - including attachments for fixing, anchoring or supporting equipment - that operate solely by means of the operator without any powered assistance - such as are manual chain /lever block, jacks, trolleys etc.

Class C: Lifting Accessories

Accessories used for connecting loads to lifting equipment such as slings, hooks, beams

4. Requirements of ENAS

4.1 Inspection Personnel

Inspection bodies shall ensure that their inspectors are medically fit for their scope of inspection (minimum sight requirements of "6J/12J").

For each class of equipment the inspection body shall have sufficient number of inspectors (at least an inspector per each category of lifting equipment) to carry out the work.

Inspectors shall be suitably qualified and have sufficient relevant experience in their scope of inspection. The IB shall have a minimum of category 1 and 2 as permanent full time inspectors and the evidence of which will be checked in the form of labor card or company's visa or any other suitable evidence.

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The categories of qualification for the various classes of equipment are specified in the subsequent subsections of this document.

Inspector(s) should be fully familiar with and apply the following aspects of knowledge and skill:

- the operation or use of the lifting appliance or lifting gear that he has to inspect;
- the location and function of safety devices, master switches, on-off switches;
- the safety rules, precautions, servicing and overhaul requirements and limitations as defined in the operation and maintenance manual of the lifting appliances or lifting gear that he inspects;
- the skill of using hand tools, machine tools, measuring instrument and testing devices to conduct simple functional checks;
- the maintenance record of the lifting appliances or lifting gear that he inspects; and
- the safe system of work to take care of himself and of other persons working with him during inspection.

Category 1

Engineer having (1) a B. Sc. degree in mechanical, electrical or relevant engineering discipline from an institute of learning recognized by the relevant regulatory authority, (2) undergone appropriated training through a recognized training authority such as LEEA and (3) having minimum 3 years of working experience in inspection of lifting equipment.

Only inspectors qualified under category 1 can be nominated as approved signatories for Class A equipment and below.

All Engineers shall have relevant experience in inspection lifting equipment ,non-destructive testing and other. Engineers shall be familiar with codes and standards related to lifting equipment and steel structure.

Category 2

Engineering Technicians having (1) diploma in mechanical, electrical or relevant engineering discipline from an institute of learning recognized by the relevant regulatory authority, (2) undergone appropriate training through a recognized training authority such as LEEA and (3) having 5 years working experience in the relevant engineering discipline at least 3 years of which must be related to lifting equipment. Category 2 inspectors should be in regular contact with the category 1 inspector.

Category 2 can be nominated as approved signatories for Class B equipment and below.

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Category 3

Personal with no formal education but with long experience in the field of inspections related to lifting equipment. Their competence will be assessed on individual basis by ENAS during assessment and will be authorized by ENAS.

Inspection bodies shall maintain records of inspectors' qualifications, training and experience. The records shall include how and when each inspector is authorized by the inspection bodies to perform specific inspection or testing. The records shall also include class of equipment and area of inspection that the inspectors are authorized to inspect. If freelance inspectors are used during work load, their complete records will be maintained. These inspectors will be allowed to work only as Category 3.

All inspectors shall be assessed by the assessment team prior to award of accreditation. Subsequent assessment will consist of sampling of inspectors. Inspectors not assessed by ENAS will not be allowed to work on accredited scope of lifting equipment. The assessment team will assess the nominated approved signatories. Those assessed to be competent in their area of inspection will be endorsed as approved signatories. The names, initials and signatures of staff authorized to sign report and certificate shall be sent to ENAS before each assessment. Approved signatories are to sign on endorsed inspection report for inspection performed by themselves or where they have direct supervision of the inspection work.

4.2 Facilities And Equipment

Facilities and equipment which affect results that are critical to the conclusion of the examination shall be appropriate for the particular inspection to be performed.

Inspectors shall ensure that all equipment, including equipment not under the control / ownership of the inspection body, used during inspection work are calibrated and traceable to the SI unit. Calibration shall be performed by recognized accredited laboratories.

Sensitive equipment shall be verified for functionality after they are set up at the test or inspection site.

4.3 Testing

Analytical testing as defined in IAF/ILAC-A4 is a laboratory activity and therefore does not come within the scope of ISO/IEC 17020. Examples of analytical testing are chemical or metallurgical analysis.

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Where analytical testing is required to support the evaluation, the inspection body shall ensure that the testing is performed by an accredited laboratory.

When an organization is providing other conformity assessment services such as analytical testing, product certification, system certification, personnel certification, training, consultancies etc with inspection for the same project, the organization has to ensure that there is sufficient independence between the two activities (e.g. results of inspection activities and testing activities should not be approved by the same person). The evidence of this independence will be required by ENAS.

Functional testing as defined in IAF/ILAC-A4 forms a normal part of the activities of an inspection body and is therefore within the scope of ISO/IEC 17020. Examples of functional testing are, load testing of a crane and hydrostatic test of pressure vessels.

Non-destructive testing carried out on site forms a normal part of activities of an inspection body and is therefore within the scope of ISO/IEC 17020. NDT covers inspection of equipment using one or more of the following NDT methods as deemed necessary, and shall be carried out by level II inspector:


- 1 Radiographic testing
- 2 Ultrasonic testing
- 3 Magnetic particle testing
- 4 Liquid penetrant testing
- 5 Eddy current testing
- 6 Visual inspection

Whenever, the need for NDT examination is identified the inspection body has to ensure conductance of the examination through review of the NDT reports and records and has to inform Abu Dhabi Municipality of the status of inspection.

4.4 Inspection Methods and Procedures

The inspection body shall have detailed procedures and instructions for the application of the appropriate regulations, codes of practice, standards, specifications, guidance documents and customer requirements.

Where risk assessment techniques are used to establish the nature and frequency of inspections, the inspection body shall document the techniques used in procedures including a demonstrable justification for using the technique.

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Codes, Standards and other technical literature applicable to the design, construction, operation, inspection and repair of lifting equipment, pressure systems and their components within the accredited scope shall be maintained up to date and be readily available to the staff.

4.5 Inspection Requirements for lifting equipment

A thorough examination not limited to the following should be conducted:

- visual examination;
- dimensional examination;
- functional or operational test;
- open-up examination;
- electrical test and examination; and
- non-destructive test.

During normal inspection, cranes shall undergo full NDT inspection every 2 years to reduce risks of overloading, corrosion fatigue, defects and/or microstructural changes due to overloading and/or miss use.

For cranes and specifically tower cranes of 20 year age, the bearing capability shall be re-evaluated and the safe working load shall be reduced by 25% of Load in order to reduce risks and save lives.

The NDT Examination, examine the main load bearing parts. The examination should include but not limited to the following;


- The reaction roller supports and associated structure
- The main suspension lugs and suspension brackets
- The corner nodes
- The main lifting yoke
- Pins
- Ladder and walkways
- Ram mounting brackets
- All joints plates
- Lifting Hook, Mast Bracket, Wedge Socket and securing bracket for Ballast Weight.

4.6 Requirements for Carrying Out Inspections Onsite

The inspector shall prepare and carryout inspection keeping in view the following minimum requirements:

4.6.1 Preparation for Site work:

(a) Prior to going to site, the Inspection Body must ensure the following:

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- All needed Personnel Protective Equipment that ensure safety of personnel on site are taken to site;
- Critical test equipment must be checked prior to leaving secure storage before inspection;
- Relevant documentation required such as work order, work instructions, reports and related forms, etc.

(b) The Inspection Body shall allocate inspection activities based from the work program for each inspector in the form of Work Orders. Work Orders to be used by inspectors on site shall contain the following information as minimum:

- Identification number traceable to the client request/ contract;
- Type of the equipment and related information about critical items to be inspected.
- Site Location (site map is recommended to be provided)
- Instructions for inspections
- Contact person on behalf of the IB's client

(c) Upon arriving at any inspection site, there shall also be an obligation from the IB for the inspector to enquire the following information:

- Information about previous inspections.
- If the Inspector cannot obtain sufficient information the inspection must be treated like a first inspection and therefore proceed with the 'normal' inspections.
- Manufacturing Operations Manual, Operator or Maintenance Manuals of the equipment, safe working load charts in English and/or Arabic language and in case not available and not possible to provide, the IB shall ensure that an independent competent person be engaged by the owner to provide advice and documentation to support the continued use of the lifting equipment, foundations, building ties, engineering drawings, Installation procedures, Inspection procedures, Bolt sizes, grades and torque, Wire rope size, grade and instruction, Markings etc.
- The inspector must then, before issuing any Inspection Certificate, address every issue raised in the previous Inspection Report, if any.

(d) The IB shall verify the competency of the operator of the lifting equipment to carry out all operations required by the relevant standards, if applicable; i.e. for some overload tests, the competence of the operator is critical to the safety of the lifting equipment and personnel in

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the vicinity, according to the applicable standards. The IB shall document the result of verifying the operator competency of the lifting equipment at the time of the inspection, either within the same inspection certificate/ report or in a separate report; specifying the operator name, the equipment for which his competence was checked, the criteria used for verifying his competence and date of inspection.

4.6.2 Inspectors Checklists

The Inspection Body shall use Checklist forms containing all the requirements of relevant BS/ EN inspection standards prepared. The checklist forms shall contain sufficient space to indicate the results of evaluating the inspection methods. The Inspector must sign in the checklist after recording all necessary information.

The Senior Inspector/ Engineer must co-sign the checklist whenever he makes verification visits to the site.

4.7 Reporting Defects in Equipment Under Inspection

Inspectors are required to be capable of making identification of all types of defects found in equipment under inspection; if the equipment is found unsafe and represents an imminent danger the IB must advise the owner to cease use of the equipment and report this incident immediately to the relevant authorities.

Identification: The IB's must ensure the ability to identify lifting equipment by say Serial Number and Model Number, or some form of Registration Number. If the lifting equipment (and some of their critical components) cannot be identified (even by location in the case of fixed cranes) the IB shall consider this as a defect in the crane which must be reported immediately to related authority in the relevant Emirates.

4.8 Requirements for Inspection Methods and Procedures

The Inspection Body shall use the relevant up-to-date BS and/or BS EN standards in the field of inspection of lifting equipment for performing inspection.

In addition to the relevant BS and/or BS EN standards, the manufacturer's technical literature applicable to the equipment shall also be part of the inspection methods.

It is the responsibility of the Inspection Body to ensure that these requirements and relevant standards are available at the IB offices.

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4.9 Inspection Frequencies

The mandatory inspection frequency intervals pertaining to all Contractors' are as follows:

- Class A1: Every 12 months
- Class A2: Every six months
- Class B: Every 12 months
- Class C: Every six months

4.10 General Requirements

- a) For all lifting Equipment the first and all subsequent inspections shall include all functional tests, overload and safety tests.

Periodic inspection of "Lifting Equipment" shall also include the following:

A 'Periodic Inspection', which includes:

- i. Identification of all critical components and areas; and
- ii. Detailed visual inspection of all structural and critical components; and
- iii. Tolerance checking where any wear is observed; and
- iv. Checking of tolerances for wear limit on critical components; and
- v. Checks for corrosion; and
- vi. Non-destructive examination of critical areas for evidence of cracking.


"Non- Destructive Testing" of all lifting connections, attachments and structural components, as directed by the Inspection Body.

- b) In the event of a 'major repair' the lifting equipment shall be subjected to a "Periodic inspection" and 'Proof Load Test" or other inspections specified by a competent person, prior to being returned to normal service.

4.11 Inspection Certificate/Report

After the Inspection Body has completed an inspection of lifting equipment and found no significant issues the inspection body must issue an Inspection Certificate for Lifting Equipment.


The Inspection Body shall produce an Inspection Certificate for lifting Equipment on the inspection to fulfill the client's needs, the related authority requirements and the applicable clauses of BS/ BS EN standards. The certificate shall include the following information as a

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minimum; the elements of inspection certificates/reports that are considered to be mandatory for compliance with ISO/IEC 17020 without which the certificate shall not be acceptable. Certificates issued by third party IBs that fail to give any of these details will be liable to rejection by the relevant authority in the Emirate:

4.11.1 Mandatory Information Needed on Certificates

1. Designation of the document, i.e. as an inspection report or an inspection certificate, as appropriate,
2. Identification of the document, i.e. date of issue and unique identification,
3. Identification of the issuing inspection body Name and address of the IB issuing / endorsing the certificate,
4. Identification of the client Lifting equipment's Owner's/ Contractor's name and address,
5. Description of the inspection work ordered,
6. Date(s) of inspection and Type of Inspection,
7. Identification of the object(s) inspected and, where applicable, identification of the specific components that have been inspected and identification of locations where e.g. NDT methods have been applied,
8. Information on what has been omitted from the original scope of work,
9. Identification or brief description of the inspection method(s) and procedure(s) used, mentioning the deviations from, additions to or exclusions from the agreed methods and procedures,
10. If any part of the inspection work has been subcontracted, the results of this work shall be clearly identified with Unique Identification Numbers, brief description and SWL of the equipment,
11. The results of the inspection including a declaration of conformity and any defects or other non-compliances found (results can be supported by tables, graphs, sketches, photographs, previous maintenance records),
12. Names (or unique identification) of the staff members who have performed the inspection and in cases when secure electronic authentication is not undertaken, their signature, (see also clause 13.3 of ISO/IEC 17020),
13. A statement that the inspection results relate exclusively to the work ordered or the object(s) or the lot inspected,
14. A statement that the inspection certificate/report shall not be reproduced except in full without the approval of the inspection body and the client,

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15. The inspector's mark or seal, if any,
16. Name, Signature, and Designation of signing Authority of IB, (if different than the inspector who performed the test),
17. Clearly defined Liability Clause of the IB

In addition to the above the following will also be needed on the report/ certificates:

1. Any reservations or restrictions on the use or Maximum Capacity of the equipment,
2. Information on where the inspection was carried out
3. The address of the premises at which the Inspection was made,
4. Manufacturer or Supplier of equipment name and address,
5. Identification of equipment used for measuring/testing,
6. Where applicable, and if not specified in the inspection method or procedure, reference to or description of the sampling method and information on where, when, how and by whom the samples were taken,
7. The Due date of next Thorough Inspection,
8. The Due date of next Proof Load Test, if applicable,
9. Applicable Reference Standard / Code,
10. Details of any major Repairs / Alterations carried out on the equipment, provided that the clients inform IB's inspector of any modifications or structural repairs,
11. Details of latest Inspection / Tests previously performed including any NDT if possible,
12. Measuring units (for Loads / Weights) shall be in either/both Metric kilograms or pounds,
13. Information on environmental conditions during the inspection, if relevant,
14. Professional Judgment that is included in the certificate will form part of the assessment and will be subject to accreditation.
15. If the inspection commissioned by the client could not be carried out in full or in part, a written notification to that effect shall be given to the client.

When an Inspection Body undertakes an inspection of Lifting Equipment and finds items that do not comply with the requirements of the relevant Standards and therefore declines to issue an Inspection Certificate, the IB must issue a separate document called an Inspection Report.

Re-inspection has to be performed by the same IB for equipment that failed the inspection.

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When issuing Inspection Reports, the Related Authority, shall be immediately informed in writing without exception. There would not be any response to the Inspection Reports by the Related Authority unless there is a subsequent accident. They shall remain on file for 12 months – 2 years, after which they will be destroyed (provided Inspection Certificates stay at 1 year currency period).

The Related Authority will conduct follow up action if a second Inspection Report is received in relation to particular lifting equipment during the period that the Inspection Report remains in their files. The Inspection Report file shall be maintained by the related authority for information in the event of any crane accident.

In the case if there is an accident involving lifting equipment inspected by accredited IBs and as a result of the official investigation it was determined that the accredited IB was responsible, ENAS shall immediately suspend the IB's Accredited related scope and exclude the inspector who performed the concerned inspection from the authorization list of approved inspectors.

Detailed immediate extra-ordinary assessment will be carried out by ENAS for investigation and also for lifting of suspension. The assessment will cover areas including relevant QMS and technical competence of the IB under suspension and subsequently relevant clauses related to Conditions of accreditation will be applicable. In case the accident involved serious injuries or was fatal, ENAS Director reserves the right to withdraw the accreditation for the related scope with immediate effect.

4.11.2 Validity of Certificates of Safety

An Inspection Certificate shall be issued with a nominal life as specified in this document. Each Inspection Certificate may be subject to evaluation as determined by the relevant authority and, whenever the lifting equipment is involved in an accident.

However the validity of this certificate is based on the lifting equipment being maintained and operated in accordance with all of the recommendations made by the manufacturer and not suffering any damage.

Therefore the Inspection Body must only issue an Inspection Certificate when it is satisfied that the lifting equipment is likely to be able to perform all the normal lifts within its capacity in accordance with the relevant load chart for at least 12 months.

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The designated signatories shall only be authorized by the Inspection Bodies to sign their own Inspection Certificates and Inspection reports. The designated signatory must assume responsibility for the technical validity and accuracy of all information contained in the Inspection Certificate and Inspection Reports.

A designated signatory must have carried out a minimum of inspections for each type of equipment under competent supervision before being authorized to undertake inspections alone. Each Inspection Body shall at the early stage of the implementation process designate appropriately qualified persons to perform the required inspections and that the Approved Signatories provisions of ISO/ IEC 17020 and this document shall be adopted.

4.12 Accreditation Certificate

The Accreditation Certificate shall be valid for a period of three years. A scope of Accreditation detailing the activities for which the inspection bodies have been granted accreditation will supplement the certificate.

4.12.1 Format of accreditation scope

- I. For all equipment classes, the scope of accreditation is granted only for the items, materials or systems being witnessed.
- II. For all accredited scope the inspection body shall be required to use ENAS logo as accreditation mark according to the ENAS Policy EPO2

4.12.2 Additional causes leading to suspension/ withdrawal

Besides complying with the other requirements including but not limited to, the conditions of accreditation ACG 19, use of logo as accreditation mark ACG 02, the following acts could lead also to immediate suspension or withdrawal of certificate from the inspection body:

1. Expiry of license: If the license was not renewed on time it will lead to suspension, even if identified afterwards;
2. Expiry of third party indemnity insurance: In case the license expires sometimes after the assessment is carried out by ENAS, the IB shall ensure to renew it, well before time for continuity. There shall be no gap of un-insured time in between. If for some reasons a gap occurs the IB shall voluntarily suspend all its activities completely and inform ENAS about it, before suspension. Once the insurance is renewed a copy shall be sent to ENAS and lifting of suspension will be granted. Failure to comply with this process will lead to

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suspension of accreditation for a minimum of two months, when identified during upcoming assessment or through any other source or withdrawal of ENAS accreditation certificate, depending upon the severity of violation.

3. Inspector carrying out more than three inspections on Class A on the same day by the same inspector: If it was identified this will lead to suspension of the inspection body for a period of two months to avoid compromising on quality of inspections.
4. Inspectors witnessed leaving but ENAS if not informed: If it is identified during the upcoming assessment or through other means, that the inspectors witnessed during assessment has left the organization and the IB did not inform ENAS regarding any approved inspector leaving the organization. This will lead to suspension for a minimum of two months.
5. If it is identified that the IB is involved in unethical practices, it shall be suspended immediately for a period of two months. If needed withdrawal of certificate could also be recommended, depending upon the severity of the situation.

4.12.3 Other conditions for new scope

ENAS reserves the right to allow or not to allow re-witnessing of initial assessment and scope expansion for IBs with mandatory scope.

The reason for not allowing scope expansion could be the one or more, but not limited to the following points:

- insufficient staff
- involved in unethical practices
- complaints about the performance of IB from market
- inspections resulting in accidents
- others

IBs with any of the above problems will not be allowed more than 100% of the scope expansion compared to the existing scope, at a time for major equipment Cat A1, A2, and B and will be decided by ENAS.

If the IB failed to pass more than 50% of the scope the it applied for then the following conditions will additionally apply:

- Accreditation will be granted only for the scope in which he passed.
- No re-witnessing to be done for the scopes failed in during initial assessment.

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- 1st surveillance should be conducted within 6 months after the granting
- If the IB wish to expand the scope, he can apply only after a satisfactory surveillance done on his accredited scope.
- ENAS reserves the right not to conduct more than one scope expansion in a year.

5. Reference

GSO.S/UAE ISO/IEC 17020 “General Criteria for the Operation of Various Types of Bodies Performing Inspection”.

SAC-SINGLAS Technical Note: PV/LE-01.

DAC-Req 06 “Accreditation Requirements of Inspection Bodies for Lifting Equipment”, October 2011

ISO 9927-1 specifies the regular inspections to be carried out on cranes as defined in ISO 4306-1, ISO 4306-2 and ISO 4306-3.

ISO 12482-1 aims at ensuring that the design constraints of the intended use of a crane are clearly identified and to define actions to be taken when the crane has been used over a period of time and has approached these constraints to ensure a new safe working period.

ISO 12478-1 establishes guidelines on the general requirements necessary for the preparation and presentation of maintenance manuals for cranes.

ISO 4309 specifies the examination and discard criteria for wire rope.

ISO 4310 specifies the tests and procedures to be followed in order to verify that a crane conforms to its operational specifications and is capable of lifting its rated loads.

ISO 9373 specifies the principle requirements for instruments and measurement systems of test loads, distances, time and other relevant parameters when testing cranes and related equipment.

ISO 14518 establishes standard methods for composition and measurement of test loads. It also provides standard methods and procedures for application of test loads during tests of cranes.

ISO 15386 specifies tests and test procedures for verification of the manufacturers specified operational performance and the capability of lifting rated loads.

ISO 11662-1 specifies a test method for determining the maximum capacity of a mobile crane to counterbalance loads applied on its hook block. The test is applicable for cranes whose capacity to support loads is based on its static resistance to overturning.

BS 7121-2-1:2012 Code of practice for the safe use of cranes. Inspection, maintenance and thorough examination.