



# Work Equipment Inspections

An integral part of equipment maintenance

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# Introduction

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The logo for ISI (Industrial Safety Institute) is a large, light blue diamond shape with a thick border. Inside the diamond, the letters 'ISI' are written in a large, bold, light blue serif font. The text 'Equipment Maintenance' is overlaid on the diamond in a black, sans-serif font.

# Equipment Maintenance

A Quick Overview

# Introduction

The dictionary defines maintenance as: “the activity of keeping something in good condition by checking it regularly and repairing it when necessary”.

This would imply that maintenance should be actions taken to prevent a device or component from failing or to repair normal ‘wear and tear’ of the device to keep it in proper working order.

The general aim of plant maintenance is to create a productive working environment that is also safe for workers.

# Types of Plant Maintenance

Typically, maintenance can be classified into following categories:

- Reactive maintenance
- Preventive maintenance

# Reactive maintenance

It has its use i.e. door locks etc.; however, it should not be relied on for work equipment where failure may cause a safety hazard.

Although a necessity after a failure or breakdown, it is no substitute for a preventive maintenance programme.

# Preventive maintenance

Types of preventive maintenance include;

- Planned Preventive Maintenance (PPM)
- Predictive Maintenance
- Proactive Maintenance
- Scheduled Maintenance
- Etc.

Preventive maintenance is based upon the principle that 'prevention is better than cure'.

# Preventive Maintenance Objectives

- To increase functional reliability.
- To maximise the useful life of the equipment.
- To maximise production capacity from the given equipment.
- To minimise the total live time cost of the equipment.
- To minimise the frequency of interruption due to breakdowns.

One more, and as far as the HSE are concerned the only one that matters;

- To protect the safety of anyone using or in the vicinity of the equipment.
- If you fail on the top points it can hit your bottom line, if you fail on this point you can go to prison.

What is the purpose of Inspections?



# What is the purpose of Inspections?

What is the purpose of an MOT for a car?

- Most people would say to check a car is roadworthy.
- Thought: great, my car has passed its MOT, I don't have to worry about for another 12 months.

However, if a car is properly serviced and maintained it will always be roadworthy.

- So, you can say the purpose of an MOT is to check that either you or who you are paying to service and maintain your car are doing it correctly.
- **Thought: the people I pay to service and maintain my car are doing the job correctly.**

# What is the purpose of Inspections?

The purpose of inspections is to check work equipment is safe to use.

If work equipment is properly serviced and maintained it should be safe to use.

Inspections check work equipment is being properly serviced and maintained.

If an inspection identifies a defect it is not the inspecting engineers fault, and it is not always a bad thing.

- Defects can highlight misuse.
- Defects can highlight deficiencies in maintenance programmes.
- And, they allow you to rectify the defect before there is an injury.



# Inspections

A General Guide

# Definitions

The HSE refer to three definitions, each with its own meaning.

- Test
- Inspection
- Thorough Examination

Every Approved Code of Practice (ACOP) for work equipment has a section that includes one or more of these.

Understanding how the HSE use the terminology can help you to understand what you need to do.

# Examples

Electrical Plant – Test

Work Equipment – Inspection

- The Provision and Use of Work Equipment Regulations 1998 (PUWER)

Lifting Equipment – Thorough Examination

- The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)

Pressure Equipment – Thorough Examination

- The Pressure Systems Safety Regulations 2000 (PSSR)

LEV – Thorough Examination and Test

- The Control of Substances Hazardous to Health 2002 (COSHH)

Power Press – Thorough Examination and Test or Inspection

- PUWER (as applied to power presses)

# Tests

A functional test, or physical test using a device i.e. PAT tester, testing the air velocity of an LEV etc.

Undertaken by a person who has the competence to do so.

Reporting requirements are dependent on what is being tested from a simple pass / fail sheet (PAT Testing) to a full report (Fixed Wire Test), to forming part of an Inspection / Thorough Examination Report.

# Inspections

Where appropriate, visual checks, functional checks and testing.

The extent of the inspection required will depend on the potential risks from the work equipment.

An inspection will vary from a simple visual external inspection to a detailed comprehensive inspection.

It should always include safety-related parts.

# Carrying out the inspection

The actual inspection can generally be done by an in-house employee with the adequate knowledge of the equipment to:

- Enable them to know what to look at
- What to look for
- Know what to do (reporting faults, making a record, who to report to).

The necessary level of competence will vary according to the type of equipment.

Inspections need to be recorded.

# Thorough Examinations

A systematic and detailed examination of the equipment and safety-critical parts, carried out at specified intervals by a Competent Person who must then complete a written report.

# Thorough Examinations

## Report or Certificate?

- A Thorough Examination report is not a certificate.
  - Certificate implies something has passed, this is not the purpose of the report.
- Its a report of the Competent Persons findings.
  - It should be written in a way that allows the quick identification of defects.

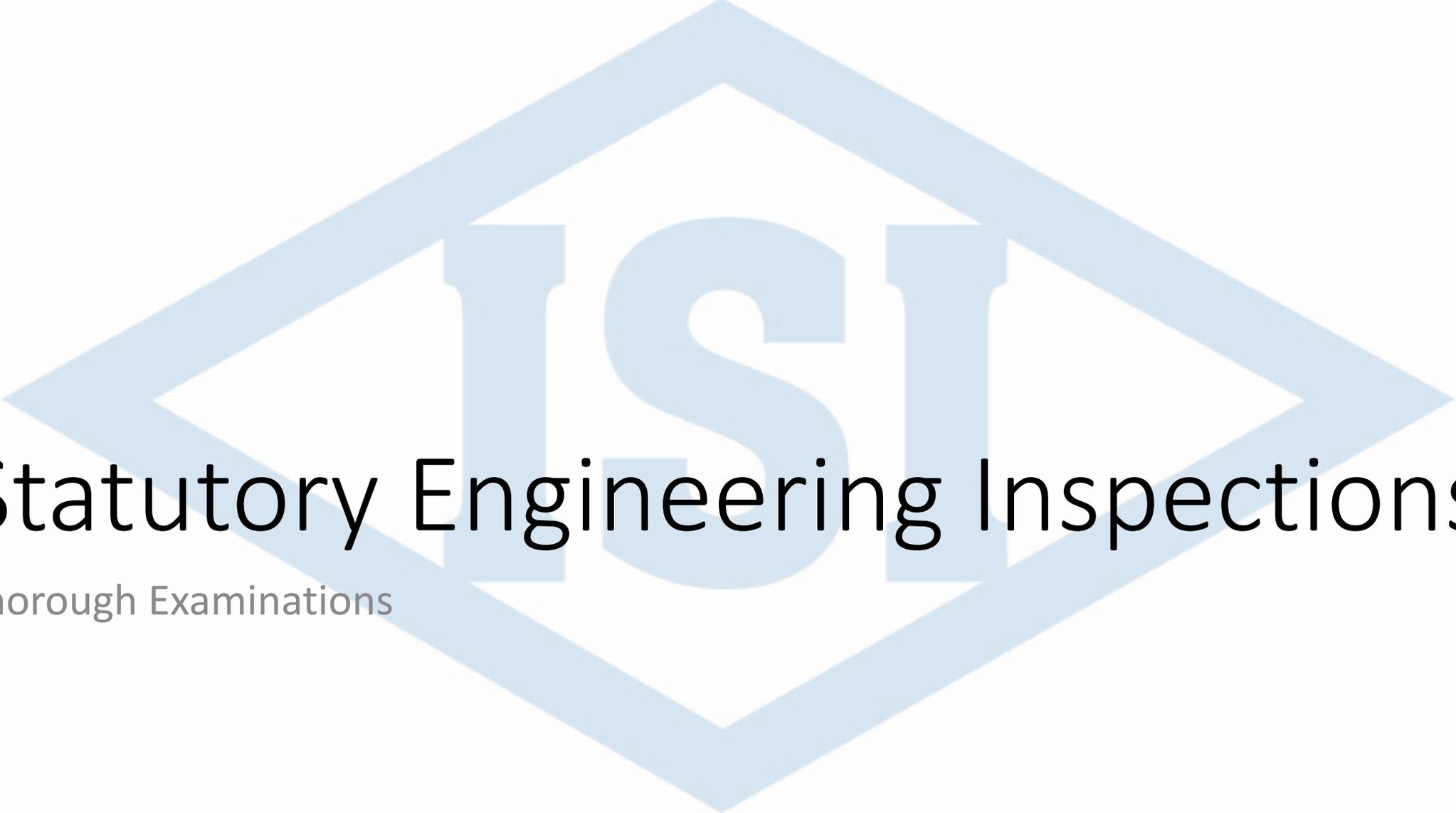
If equipment requires Thorough Examinations the ACOP will stipulate what information should be in the report.

# Thorough Examinations

Used as a best practice bench mark in areas where the regulations do not apply.

Tested in court, a housing association was prosecuted for failing in its duty of care as landlord when a resident was fatally injured by a stair lift.

- They inspected stair lifts in residential properties on a 12 month frequency, complying with the British Standard.
- As a business they should have been aware of LOLER and it was proved they were because they were having stair lifts in offices inspected on a 6 month frequency.
- The basis of the prosecution was that although LOLER did not apply it set the standard and the housing association had chosen to comply with the British Standard to reduce cost.
- The ruling was they had put cost over safety, and in doing so failed in their duty of care.



# Statutory Engineering Inspections

Thorough Examinations

# Competent Person

The person carrying out a thorough examination has such appropriate practical and theoretical knowledge and experience of the equipment to be thoroughly examined as will enable them to detect defects or weaknesses and to assess their importance in relation to the safety and continued use of the lifting equipment.

Although the competent person may often be employed by another organisation, this is not necessary, provided they are sufficiently independent and impartial to ensure that in-house examinations are made without fear or favour. **However, this should not be the same person who undertakes routine maintenance of the equipment - as they would then be responsible for assessing their own maintenance work.**

# Competent Person

The ACOP L118 (second edition) Published 2014 for lifting equipment revision to the Competent Person

## Paragraph 298

- LOLER does not expressly preclude the person carrying out the maintenance from also conducting the thorough examination. However, **the competent person who carries out the thorough examination should not normally be the same person who performs routine maintenance operations on the equipment except where the risk of injury to others is low.** This is to ensure that there is independence between the thorough examination and the maintenance and to avoid an individual examining their own work. When these functions are carried out by different people, the additional safety aspect of having a second person checking the equipment makes it more likely that defects will be identified and rectified.

## Paragraph 299

- Where the thorough examination is undertaken by the same person who has maintained the equipment, **your risk assessment should show you have considered all the options,** how you reached your decision about who should carry out these functions, and also show that the person is suitably qualified and independent to the extent that would be required for another competent person. In these circumstances any maintenance should be carried out after the thorough examination has been undertaken (see paragraph 362 on reporting defects where repairs are carried out immediately).

# Competent Person

## Paragraph 362

- Where a competent person repairs a defect on the spot, or immediately prior to thorough examination, it should be included in their report. Failing to report such a defect is disguising a potentially dangerous situation.

# What does it mean?

If the same person who has maintained the equipment undertakes the thorough examination;

- **You** need to have a risk assessment that shows you have considered all other options.
- The risk assessment needs to justify **your** decision to a point that there is no question it was based on cost.
- **You** need to ensure the risk of injury to others is low and the risk assessment demonstrates why.
- If there is any failure that results in an injury **you** will need to demonstrate to the HSE that the risk assessment is fit for purpose.
- **You** have to make sure the thorough examination is undertaken before the maintenance. It is not a way of reducing the number of defects shown on the reports.

# Pressure Systems Safety Regulations (PSSR)

The regulations covers vessels and boilers that contain;

- Steam at any pressure
- Gases (including air) which exert a pressure in excess of 0.5 bar above atmospheric pressure.

## Regulation 8 - Written scheme of examination

- The scheme should specify which parts of the pressure system need to be subject to examination, what types of examination and the intervals.

## Regulation 9 – Examination in accordance with the written scheme

- If there is no written scheme, one can be produced at the time of examination by the Competent Person, otherwise the examination cannot be undertaken.

# PSSR

Regulations 8 & 9 does not apply to all pressure vessels, systems and boilers, it does apply to;

- Steam at any pressure
- A liquid which would turn into a gas if system failure occurred.
  - Compressed gases / water at contained above its boiling point at atmospheric pressure (100c)
- Contains a relevant fluid at a pressure of 250 Bar/Litre or above
  - Bar/Litre - the pressure in Bar X the size in Litre

If regulations 8 & 9 applies it should be complied with before first use, then on going.

Regulations 8 & 9 does not apply to hot water supply / heating boilers unless it is operating at 100c or above.

- Be aware of bladder type pressurisation vessels
- You should have an annual GasSafety maintenance and test

# Lifting Operations and Lifting Equipment Regulations (LOLER)

The regulations makes two distinct definitions;

## Lifting Equipment

- Means work equipment for lifting and lowering loads. The definition includes attachments used to anchor, fix or support the equipment e.g. the runway of an overhead crane.

## Lifting Accessories

- Used for attaching loads to Lifting Equipment for lifting, i.e. Slings, FLT fork extensions.

# LOLER

Lifting Equipment should undergo a Thorough Examination at least every 12 months, or every 6 months if it is used for lifting people.

Lifting Accessories should undergo a Thorough Examination at least every 6 months.

- Unless it is permanently attached to the lifting equipment i.e. you need a tool to remove it. It then becomes part of the lifting equipment and is inspected at the same frequency.

For some lifting equipment there is a need to inspect both the lifting and non-lifting elements. The Thorough Examination will be carried out under LOLER and limited to the lifting mechanism. The inspection under PUWER will be limited to the non-lifting parts such as the brakes, lights, etc.

- In cases like these it is considered best practice to combine the LOLER and PUWER inspection procedures, if appropriate.

# The Control of Substances Hazardous to Health Regulations (COSHH)

The Thorough Examination and Test of dust and fume extraction systems (LEV) fall under the COSHH regulations.

When an LEV is installed it should have a Commissioning Report, produced by the supplier.

It takes into account the process, workplace layout, etc. and will record benchmark readings at the test points. It will normally include air quality tests to show it is fit for purpose.

During the Thorough Examination and Test, readings will be taken at the test points and compared with the benchmark readings. If the process, workplace layout, etc. and test point readings remain consistent with the commissioning report it can be considered that it is still fit for purpose.

# LEV

Legally, you are allowed 14 months between the Thorough Examination and Test of fume, vapour and non metal dust extraction systems.

- However, it is considered best practice to undertake the Thorough Examination and Test on a 12 month frequency to co-inside with your maintenance programme.

Shot blast units and metal dust extraction systems should undergo the Thorough Examination and Test on a 6 month basis.

Shot blast units in foundries should undergo the Thorough Examination and Test on a 1 month basis.

# LEV; Smell – Sight – Usage

If you can smell what the system should be removing, is it working correctly?

If you can see a build up of the dust the system should be removing, is it working correctly?

Is the system being used correctly?

- Welders are renowned for turning the system off when it pulls the flame, its your responsibility to ensure the system is used correctly.

# PUWER (as applied to power presses)

It concerns power presses and press brakes used in the processing of cold metal.

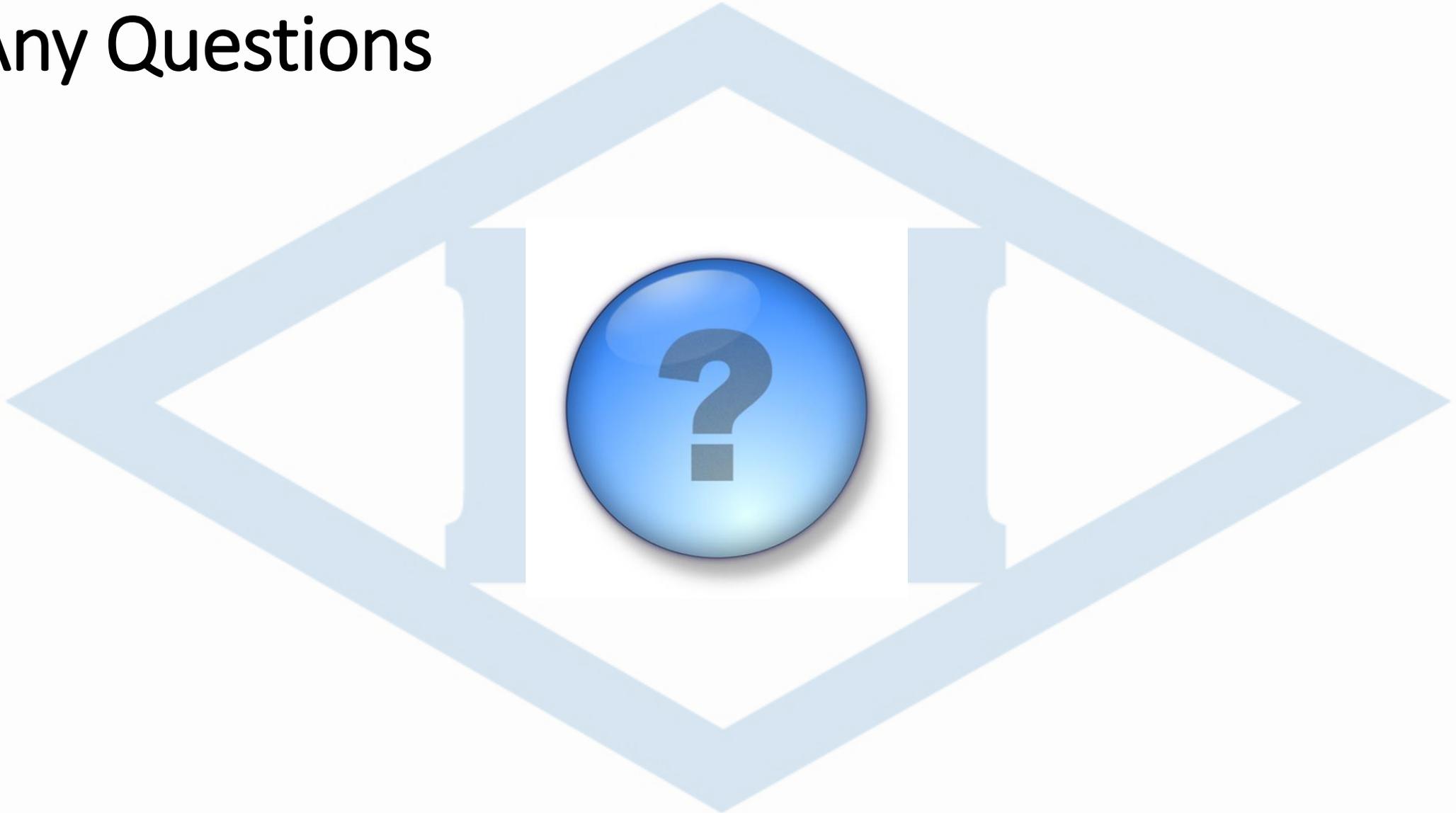
Power Presses with fixed guards should undergo a Thorough Examination and Test on a 12 month basis.

Power Presses with movable, interlocking or photo-electric / laser guards should undergo a Thorough Examination and Test on a 6 month basis.

To be be complied with before first use, then on going.

Power presses used in the processing of any other materials should undergo an inspection under PUWER.

# Any Questions



# Industrial Safety Inspections Ltd

Providing impartial, confidential and independent engineering inspections and advice to clients, ***based on common sense and sound engineering judgment***, since 1979.

Members of Independent National Inspection and Testing Association (I.N.I.T.A).

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