ESPE
Electro-Sensitive Protective Equipment

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Our Services:

• Project Management
• Electrical Engineering
• Machine Guarding
• Safety Products
• Machinery safety training
• Commissioning and installation
• Safety circuit upgrades
• ESPE Testing
Electro-Sensitive Protective Equipment (ESPE) using Active Opto-electronic Protection Devices (AOPD) for safeguarding machinery.

An AOPD is a light curtain and/or light beam device and can be used alone or in combination with other safeguards depending on the application.
Devices:

- Light curtain (AOPD)

- Light beam device (AOPD)
Why Use A Light Curtain

- Ease of access.
- Visibility.
- Setting.
- Increased productivity.
- Ability to detect a person but allow a product to pass.
- Secondary guarding
- Muting.
When Not To Use A Light Curtain

• Cost.
• Machine Stopping Performance.
• Inability of machine to stop part way through a cycle.
• Environmental considerations.
• Ejection of parts.
An AOPD may be used as:

a) A trip device:

b) A combined trip device and presence-sensing device: and

c) A presence-sensing device.

An AOPD should not be regarded as a substitute for primary isolation and safe systems of work during plant maintenance.
• Inspection

(1) Every employer shall ensure that, where the safety of work equipment depends on the installation conditions, it is inspected -

(a) after installation and before being put into service for the first time.

(2) Every employer shall ensure that work equipment exposed to conditions causing deterioration which is liable to result in dangerous situations is inspected -

(a) at suitable intervals.
HSG180

- This publication is provided for guidance only
- PUWER inspections may not be enough for them to meet their legal obligations in respect of machinery safety,
- Special requirements apply to machines that have ESPE
- People are not fully aware of their ESPE requirements
- Regular PUWER assessments are not enough
- Installations using ESPE should be inspected at suitable intervals
Testing

- The recommended maximum interval between each periodic inspection and test is:
  - six months for type 4 ESPE
  - twelve months for type 2 ESPE

- This interval will also depend on the equipment it is fitted to and the risk as a whole.

- There multiple factors that determine how often ESPE should be inspected/tested, in many cases will be more often that any routine PUWER assessment on the machine.
• Inspect and test machine control elements.
• Position of the light curtain (distance)
• Response time
• Detection zone
• Stopping performance
• Record of test inspections
• Know the correct distance from the danger zone?

• Test the response time and detection capability of the ESPE installation.

• Inspect any stopping performance monitor that may be fitted, and testing primary machine control elements to ensure correct functioning.

• in-house competence
• **EN ISO13855 (EN999)**

  Safety of machinery - The positioning of protective equipment in respect of approach speeds of parts of the human body

• **3.1.8 detection zone:**

  *zone within which a specified test piece is detected by the protective equipment.*

• **3.1.9 minimum distance:**

  *calculated distance between the safeguard and the hazard zone to prevent a person or part of person reaching the hazard zone.*
The separation distance from the danger zone should be calculated by using this formula:

\[ S = (K \times T) + C \]

where:

- \( S \) is the separation distance, in millimetres, from the danger zone to the detection point, line, plane or zone;
- \( K \) is a parameter, in millimetres per second, derived from data on approach speeds of the body or parts of the body;
- \( T \) is the overall system stopping performance in seconds;
- \( C \) is an additional distance, in millimetres, based on intrusion towards the danger zone prior to actuation of the AOPD.
Application images:
• ESPE periodic inspection and test service that can be tailored to suit the requirements of individual sites.

• This service accurately follows the guidance given in HSG180 and includes inspection of the ESPE to that ensure that it conforms to the HSE guidance.
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