Australian Government

Assessment Requirements for UEEEL0016 Provide advice on effective and energy efficient lighting products

Release: 1

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Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including using of risk control measures
- applying sustainable energy principles and practices
- planning and providing advice on lighting products, including:
  - determining the nature and scope of the advice required
  - documenting inquiries and responses in accordance with workplace procedures
  - referring technical and costing inquiries to appropriate person/s
  - reviewing relevant lighting product documentation and providing appropriate product advice
- using oral communication skills/language, including:
  - active listening
  - asking for clarification/feedback
  - questioning
  - seeking advice from supervisor/appropriate person/s.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- current industry standards, practices and technologies, including:
  - classification of light distribution and beam spread
  - electrical function and components appropriate for the insulation class or extra-low voltage (ELV) fault protection, including supply terminals, lamp holder(s), electrical ancillaries when needed and appropriated internal wiring
  - fluorescent lamps types and principles

- high intensity discharge (HID) lamps
- illumination and lighting principles
- incandescent lamp types and principles
- ingress protection (IP) ratings and examples of their application to luminaires
- light-emitting diode (LED) lamps types and principles
- light distribution and reading a polar luminance distribution curve
- light output ratio of common typical luminaires without and with reflector and diffuser mechanisms
- lighting technology
- luminaires (light fittings) types and principles
- mechanical function and components (including IP rated enclosure with suitable mounting arrangement, mechanisms to accommodate lamp(s), electrical ancillaries when needed, optical system and excessive temperature rise)

- technology of light, including:
  - electromagnetic spectrum and visible (frequency/wavelength) range
  - light output from a source, including luminous flux, and efficacy of different types of lamps
  - terms, units, definitions, and symbols used for:
    - light intensity and the relationship with luminous flux
    - illuminance and the relationship with luminous flux and environmental factors
    - luminance and the relationship with luminous intensity and illuminance
  - significance of inverse square law on illuminance
  - vision and illuminance standards for particular environments and activities
- nature of light, including:
  - colour rendering, colour distortion, colour temperature scale and the perceived colour of a light source
  - comparison of the colour spectrum of sunlight and light generated from different lamp types
  - frequency and colour that light is perceived, including primary and additive colours
- incandescent lamps, including:
  - application, types, principles, common power ratings and features, including envelope, filament type and temperature (K), fill gas and cap
  - effect of filament evaporation over time and parameters (ϕ, η, P, hr) with variations in rated voltage
- fluorescent lamps, including:
  - application
  - compact fluorescent (CFL) types, including integrated and non-integrated ballasts, form, and rating for equivalent light out of general lighting service (GLS) lamp
  - expectations (efficacy [l/w]; visual ambience [K]; visual satisfaction [CRI] and life [hr])
  - type T accessories, including the basic operation, features and advantage of the electromagnetic ballast; and starter capacitor

    - type T series, including the basic principle, double and single phosphor coating and colour rendering index (CRI)
- high-intensity discharge (HID) lamps, including:
    - application
    - mercury lamp types, including blended and high-pressure (HP)
    - metal halide lamp, including principles, structural features, lamp forms, spectral intensity and CRI
    - structural features and spectral intensity
- LED lamps, including applications, types, structural features, spectral intensity and CRI
- optical function and components, including a variety of mechanism to distribute light, direct light, filter light and/or limit glare; and maximum possible light output ratio
- relevant luminaires for indoor and outdoor applications
- types and features of indoor luminaires, including light distribution, symmetry, screening and utilisation factor
- luminaires - light fittings, including:
    - classification of light distribution and beam spread
    - electrical ancillaries when needed, including optical system and excessive temperature rise
    - electrical function and components that must be appropriate for the insulation class or ELV fault protection, including supply terminals, lamp holders, electrical ancillaries when needed, and appropriated internal wiring
    - examples of currently available luminaires for indoor and outdoor applications
    - IP ratings and examples of their application to luminaires
    - light distribution and reading a polar luminance distribution curve
    - light output ratio of common typical luminaires without and with reflector and diffuser mechanisms
    - mechanical function and components for IP rated enclosure with suitable mounting arrangement; mechanisms to accommodate lamps
    - optical function and components, including a variety of mechanisms to distribute, direct, and filter light and/or limit glare to achieve the maximum possible light output ratio
    - types and features of indoor luminaires, including light distribution, symmetry, screening and utilisation factor
    - types and features of outdoor luminaires, including types of light distribution and reflector control
- interpersonal and communication skills, including listening, questioning and receiving feedback
- relevant job safety assessments or risk mitigation processes, including safe working practices
- relevant lighting manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies, procedures and instructions
- sustainable energy principles and practices.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6