



Australian Government

UEEFS2008 Explore data and automation in smart energy systems

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Modification History

Release	Comments
1	This unit of competency was first released in UEE Electrotechnology Training Package Release 10.0.

Unit outcomes

This unit introduces learners to the role of data and automation in smart energy systems, with a focus on how these technologies are used to improve energy efficiency, control, and monitoring in everyday settings.

It supports the development of foundation and employability skills, preparing learners for further vocational training, apprenticeships, or employment in the energy sector.

On completion of this unit, learners will be able to demonstrate basic knowledge of how data is collected, interpreted, and used to support automated processes, components used in data and automation systems, and the types of entry-level roles, emerging energy-related roles and career pathways in related energy sector industries. They will have the skills to plan, assemble, operate and test a basic extra-low voltage (ELV) direct current automation system, and communicate information about the automation solution, task outcomes, and its benefits using appropriate energy sector terminology.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Knowledge

On successful completion of this unit, learners will have:

- basic factual knowledge of:
 - how data is used to support automation and improve energy efficiency in smart energy systems
 - how data is generated, collected, interpreted, and used to trigger automated actions and support energy monitoring and control
 - the benefits of smart energy technologies
 - safety principles and privacy considerations when using connected systems
 - entry-level occupations, emerging roles and career pathways in related energy sector industries that involve data, automation, or telecommunications work

- effect of smart energy systems on electrical roles
- basic technical knowledge of:
 - ELV components used in data and automation systems
 - traditional telecommunications systems in energy and data environments
 - basic numerical concepts and faults relevant to ELV data and automation models
 - the use of digital tools where required to record, organise, compare, or communicate project information.

Skills

On successful completion of this unit, learners will have:

- cognitive skills to:
 - access and interpret information about how data and automation are used in smart energy systems
 - interpret a project brief
 - identify opportunities to apply data and automation technologies in familiar energy-related settings
- technical and procedural skills to:
 - plan and represent a basic automation solution
 - select and check a limited range of tools, components, and materials
 - apply safety procedures
 - assemble, operate and test an ELV direct current (d.c.) automation system
 - make basic adjustments
 - record project actions and results
 - use digital tools where required to record, organise, compare, or present project information
- communication skills to:
 - communicate information about an automation solution and its benefits
 - use appropriate energy sector terminology effectively
- collaboration skills to:
 - participate in project activities with others.

Application of Knowledge & Skills

Learners will apply their knowledge and skills in a structured learning environment. They will use autonomy and limited judgement to:

- plan and manage tasks to investigate how data from ELV d.c. sensors or input devices can be collected, interpreted and used to trigger a controlled output
- interpret a project brief to identify a basic automation solution
- apply core principles of data and automation to develop a basic automation solution to a real-world energy problem
- assemble, operate, test and adjust an ELV d.c. automation system
- record and communicate information about the automation solution, task outcomes, and its benefits using appropriate energy sector terminology
- use digital tools where required to record, represent, or present project information.

Pre-requisite unit(s)

No pre-requisite units

Competency field(s)

Foundational Skills

Unit sector(s)

Electrotechnology

Range of conditions

N/A

Assessment Requirements for UEEFS2008 Explore data and automation in smart energy systems

Performance Evidence

The individual must demonstrate the ability to:

- interpret a project brief to identify the requirements of a basic automation solution for a real-world energy-related problem in a familiar setting
- plan a basic ELV automation solution that uses sensors or input devices to trigger a controlled output
- create a visual representation of the proposed solution using labelled diagrams or digital simulations to demonstrate how the system works
- select ELV components, tools, and materials required for the proposed solution and check for correct function and safe condition
- apply safety procedures, including shut-down and isolation procedures before working on the system
- assemble the ELV d.c. automation solution using sensors, input devices, and output components
- operate the ELV d.c. solution to show how data is collected, interpreted, and used to trigger a controlled response
- test the solution to identify basic faults or performance issues
- make a basic adjustment to improve solution performance
- record actions and results clearly using written notes, labelled diagrams or digital tools
- communicate information about the automation solution while participating in project activities with others, using appropriate energy sector terminology to describe the task outcomes and the benefits of the proposed automation solution.

Knowledge Evidence

The individual must demonstrate knowledge of:

- entry-level occupations, emerging roles and career pathways in the energy sector related to data, automation and telecommunications work
- the effect of smart energy systems on electrical roles in the energy sector, including requirements for electricians and technicians to configure and install:
 - smart meters, home energy management systems, and connected devices
 - solar systems with smart inverters and remote monitoring tools for residential and commercial applications

- heating, ventilation, air conditioning and refrigeration (HVACR) systems that use building automation technologies, sensors and data to optimise climate control and energy use
- how data is used to support automation and improve energy efficiency in smart energy systems, including:
 - types of data used in smart energy systems, including temperature, light, motion, and energy usage data
 - how data is generated using sensors and digital devices
 - how data is accessed or collected using basic interfaces or monitoring tools
 - how data is used to make decisions or trigger automated actions, such as switching devices on or off based on conditions
 - how automation based on data can help reduce unnecessary energy use and improve efficiency in everyday environments
- benefits of typical smart energy technologies used in homes, schools or workplaces, including:
 - reducing energy waste by automatically turning devices off when not needed
 - improving comfort and convenience by adjusting lighting, temperature or appliances based on user needs or environmental conditions
 - lowering energy costs through more efficient use of electricity and better monitoring of energy consumption
 - enabling remote monitoring and control of energy systems through mobile apps or connected devices
 - supporting environmental sustainability by reducing unnecessary energy use and integrating with renewable energy systems
 - increasing safety through automated alerts, sensor-based lighting, or smart shutdown features in the event of abnormal conditions
- the purpose and function of components used in telecommunications, data, and automation systems relating to energy sector work, including:
 - traditional telecommunications cabling systems in networked environments
 - key elements in a basic automated smart energy process
 - sensors, controllers, actuators, and data inputs and output devices
- safety principles when working with ELV components and digital tools related to course project work, including data security and privacy considerations when using connected systems
- basic numerical concepts relevant to data and automation systems, including interpreting sensor readings, comparing on/off thresholds, and tracking changes in data values over time

- faults or problems that might affect ELV data and automation demonstrations or models, including incorrect sensor placement, loose connections, or inaccurate data inputs, and simple adjustments to improve performance.

Assessment Conditions

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

All practical activities and projects involving electrical components must be limited to ELV d.c. systems as defined by relevant jurisdictional standards, to ensure they can be safely delivered and undertaken by individuals who do not require an electrical licence.

Mandatory Workplace Requirements

There are no mandatory workplace requirements for assessment. Assessment of performance evidence may be in a structured learning environment.

Unit Mapping Information

Previous Code and Title	Equivalence	Comments
	Newly created	This unit has been created to address a skill or task required by industry that is not covered by an existing unit of competency

Links

Companion volumes, including implementation guides, are found on the national training register - <https://training.gov.au/training/details/UEE>.