

**Domain**

**SOLAR INSTALLATION**

**Unit ID: 1669**

**Title:**

**Develop and interpret advanced technical drawings**

**Level: 3**

**Credits: 6**

**Purpose**

This unit standard specifies the competencies required to develop and interpret advanced technical drawing. It includes the following elements: draw and interpret circuits and symbols; read and develop isometric drawings; read and develop orthographic drawings up to third angle projection and draw using basic computer aided drawing software. This unit standard is intended for those who work as solar installations technicians.

**Special Notes**

1. The assessment of this unit standard should concentrate not so much on draughtsmanship, but on the understanding of circuitry and the ability to use and sketch electrically and logically correct drawings.
2. This unit standard should be assessed in the context of solar technician operations and should be assessed in conjunction with other relevant technical unit standards selected from this domain.
3. To demonstrate competence, at a minimum, evidence is required of reading and interpreting electro technology circuits, comprising of a minimum of any four of the following circuit symbols: direct and/or alternating current, positive and/or negative voltage, power source, levers and buttons operated by pushing, switches operated by turning, boundary line, filament of a lamp, signal lamp, capacitor, transistor, diode, gauges, fuse or other circuit protection devices, heating element, solid-state circuits, variable and resistors.
4. Assessment evidence may be collected from a real workplace or an appropriate simulated realistic environment in which electro technology and plumbing operations are carried out.
5. Glossary of terms:
  - *'SANS' refers to South Africa National Standards.*
  - *'IEC' refers to International Electro technical Commission.*
  - *'IEEE' refers to Institute of Electrical and Electronics Engineers.*
6. Performance of all elements in this unit standard must comply with manufacturers' specifications, workplace specific requirements and reasonable flat rate time.
7. Regulations and legislation relevant to this unit standard include the following:
  - Labour Act, No. 11, 2007.
  - Occupational Health and Safety Regulations No. 18, 1997.
  - SANS 10142-1.
  - SANS 10142-2.

## **Quality Assurance Requirements**

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority on [www.namqa.org](http://www.namqa.org) and the Namibia Training Authority on [www.nta.com.na](http://www.nta.com.na).

## **Elements and Performance Criteria**

### **Element 1: Draw and interpret circuits and symbols**

#### **Performance criteria**

- 1.1 Importance of using circuits to represent practical systems explained.
- 1.2 Common and standard symbols used in circuit development defined and interpreted.
- 1.3 Different types of connections of circuits identified and explained.
- 1.4 Ability to draw and interpret advanced circuits demonstrated.

### **Element 2: Read and develop isometric drawings**

#### **Performance criteria**

- 2.1 Definition and importance of isometric drawings explained.
- 2.2 Dimensioning of isometric drawing explained and demonstrated.
- 2.3 Free hand sketching of isometric drawing demonstrated.
- 2.4 Developing isometric drawings using instruments demonstrated and explained.
- 2.5 Ability to interpret physical systems to develop isometric drawings demonstrated.

### **Element 3: Read and develop orthographic drawings up to third angle projection**

#### **Performance criteria**

- 3.1 Orthographic drawings are defined, and importance and use of orthographic drawings are explained.
- 3.2 Dimensioning of orthographic drawing explained and demonstrated.
- 3.3 Different angle projections are explained, interpreted and drawings are developed.
- 3.4 Free hand sketching of orthographic drawings demonstrated.
- 3.5 Developing orthographic drawings using instruments demonstrated and explained

3.6 Ability to interpret physical systems to develop orthographic drawings demonstrated.

**Element 4: Draw using basic computer aided drawing software**

**Performance criteria**

- 4.1 Computer aided drawing defined and relevant types of computer aided drawing software identified and explained.
- 4.2 Importance, advantages and limitations of computer aided drawing explained and discussed.
- 4.3 Dimensioning of drawings used in computer aided drawing explained and demonstrated.
- 4.4 Development of drawings using computer aided drawing concepts demonstrated.
- 4.5 Comparison of drawings developed using manual instruments and computer aided drawing explained.

**Registration Data**

<b>Subfield:</b>	Electrical Engineering
<b>Date first registered:</b>	28 March 2018
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