

**Domain****SOLAR INSTALLATION****Title:****Install Solar Water Heating (200 litres and above including preheating)****Level: 3****Credits: 10****Purpose**

This unit standard specifies the competencies required to Install Solar Water Heating (200 litres and above including preheating). It includes the following elements: plan and prepare for the work; install and connect components and inspection, testing and commissioning of the system. This unit standard is intended for those who work as solar installation technicians.

**Special Notes**

## 1. Entry information:

Prerequisite:

- *1641: Apply safety rules and regulations in a solar energy installation environment or demonstrated equivalent knowledge and skills.*

## 2. To demonstrate competence, at a minimum, evidence is required of identifying deficiencies of plant or solar water heater system equipment through inspection and testing and ability to remove, clean and replace worn parts.

## 3. Tools, equipment, accessories and materials may include but are not limited to removing/fixing tools, calculators, pencil/pen, manufacturers' manuals and guides, schedules, spare components, formats and instructions for the estimation of quantities and costs and the preparation of quotations.

## 4. Assessment evidence may be collected from a real workplace or an appropriate simulated realistic environment in which system operations are carried out.

## 5. Performance of all elements in this unit standard must comply with all relevant workplace requirements and manufacturers' specifications.

## 6. Glossary of terms:

- *'isolation and lockout procedures'* refer to isolating the PVP from the water supply and electrical source of supply where applicable.
- *'Thermal insulation'* refers to minimizing heat loss in any heat transfer media.
- *'Specifications'* refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements, national and international standards and legislations.
- *'ISO'* refers to International Organization for Standards.
- *'SANS'* refers to South African National Standards.
- *'PVP'* refers to Photo Voltaic Pump.
- *'INSOLATION'* refers to Incoming Solar Radiation.

## 7. Regulations and legislation relevant to this unit standard include the following:

- Labour Act No. 11 of 2007.
- Petroleum Products and Energy Amendment Act No. 2 of 2005.
- National Energy Fund Act of 2000.
- Gas Act (Draft 2b).
- Occupational Health and Safety Regulations No. 18, 1997 and all subsequent amendments.
- ISO 14001 (Environmental Management Standard) and all subsequent amendments to any of the above.

### **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: Plan and prepare for the work**

##### **Performance criteria**

- 1.1 Importance of site visits and assessment are discussed.
- 1.2 Appropriate tools and materials used in both site visit and installation are identified.
- 1.3 Strategy for locating mounting points of main components is explained.
- 1.4 Safety requirements for an installation are discussed.
- 1.5 Installation plan including general layout of the system are developed and explained.

#### **Element 2: Install and connect components**

##### **Performance criteria**

- 2.1 Skills to use and follow installation drawings are demonstrated.
- 2.2 Installation procedures are discussed and explained.
- 2.3 Importance of earth and connection of earth to the system is explained.
- 2.4 Connecting components using appropriate tools and plumbing demonstrated.

#### **Element 3: Inspection, testing and commissioning of the system**

##### **Performance criteria**

- 3.1 Importance of inspecting, testing and commissioning of the system is explained.
- 3.2 Methods of conducting an inspection are outlined and explained.

- 3.3 Intervals for re-testing of different installations are stated and reasons for different intervals are explained.
- 3.4 Non-powered and powered to an installation are explained.
- 3.5 Equipment is checked for functionality and installation is commissioned and signed off.

### **Registration Data**

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