

Domain

POWER PLANT OPERATIONS

Title:

Demonstrate knowledge of power generation plants

Level: 3

Credits: 8

Purpose

This unit standard is intended for those who demonstrate knowledge of power generation plants. People credited with this unit standard are able to explain principles of power generation; explain power generation processes; and explain the control of the generation process.

This unit standard is intended for those who work as power station operators.

Special Notes

1. Entry information:

Prerequisite:

- *None*

2. This unit standard is to be delivered and assessed in the context power plant 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 demonstrating knowledge of power generation plants.

4. Assessment evidence may be collected from a real workplace or a simulated workplace environment in which power generation is carried out.

5. Glossary of terms:

- '*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.

6. 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)
- Regulations relating to the health & safety of employees at work under Schedule 1 (2) of the Labour Act No.11 of 2007

- ISO 14001 (Environmental Management Standard)
- Electricity Act No.4 of 2007
- SANS 10142-1 and SANS 10142-2 electrical wiring codes 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 and the Namibia Training Authority on www.nta.com.na.

Elements and Performance Criteria

Element 1: Explain principles of power generation

Performance Criteria

- 1.1 Methods of power generation are explained.
- 1.2 Principles of hydro, thermal and geothermal power generation are explained.
- 1.3 Types of generators are identified and explained.
- 1.4 Environmental effects of each generation method are identified and described.

Element 2: Explain power generation processes

Range

Types and Components of the different power generation processes may include but not limited to hydro power, coal fired, gas fired, fuel oil, photovoltaic and wind turbine power plants.

Fuel oil may include but not limited to diesel and Heavy Furnace Oil (HFO).

Performance Criteria

- 2.1 Components of power generation processes are identified and their function explained.
- 2.2 Hydro power plant generation stages are outlined and explained.
- 2.3 Coal fired power plant generation stages are outlined and explained.

- 2.4 Gas fired power plant generation stages are outlined and explained.
- 2.5 Fuel oil power plant generation stages are outlined and explained.
- 2.6 Photovoltaic power plant generation stages are outlined and explained.
- 2.7 Wind turbine power plant generation stages are outlined and explained.

Element 3: Explain the control of the generation process

Performance Criteria

- 3.1 Power plant control room procedures are explained.
- 3.2 Generation parameters and control variables are identified and explained.
- 3.3 Generation control equipment functions are explained.
- 3.4 Generation process control is explained.
- 3.5 Safety features of a generation plant are explained.
- 3.6 Activation and deactivation of visual and audible alarms is explained.

Registration Data

Subfield:	Electrical Engineering
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Body responsible for review:	Namibia Training Authority