Title | Demonstrate knowledge of pumps, fans, valves and static and dynamic balancing of components
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Level | 3
Credits | 3

**Purpose**
This unit standard is intended for people training in mechanical engineering trades.

People credited with this unit standard are able to demonstrate knowledge of pumps; fans; and valves used in mechanical engineering; and demonstrate knowledge of static and dynamic balancing of components.

**Classification**
Mechanical Engineering > Maintenance and Diagnostics in Mechanical Engineering

**Available grade**
Achieved

**Outcomes and performance criteria**

**Outcome 1**
Demonstrate knowledge of pumps used in mechanical engineering.

**Performance criteria**

1.1 Pump types are identified and their use and principles of operation described using reference to diagrams.

Range gear, reciprocating (piston), diaphragm, centrifugal, multistage.

1.2 Pump components for the pumps types listed in 1.1 are identified and their purpose described.

1.3 Common symptoms, causes, and remedial actions for pump operational faults are explained.

Range cavitation, aeration, leakage, vibration.

**Outcome 2**
Demonstrate knowledge of fans used in mechanical engineering.
**Performance criteria**

2.1 Fans are identified, and their use and principles of operation described using reference to diagrams.

Range axial, centrifugal.

2.2 Axial and centrifugal fan components are identified and their purpose described.

2.3 Common symptoms, causes, and remedial actions for axial and centrifugal fan faults are explained.

Range vibration, noise, loss of flow and/or pressure.

**Outcome 3**

Demonstrate knowledge of valves used in mechanical engineering.

**Performance criteria**

3.1 Valve types are identified, and their use and principles of operation described using reference to diagrams.

Range ball, butterfly, gate, globe, diaphragm, non-return, pressure relief.

3.2 Valve components for the pumps types listed in 3.1 are identified and their purpose described.

3.3 Common symptoms, causes, and remedial actions for valve faults are explained.

Range leakage, stiffness, jamming, erosion wear.

**Outcome 4**

Demonstrate knowledge of static and dynamic balancing of components.

**Performance criteria**

4.1 The difference between static and dynamic balancing of components is described.

4.2 The terminology associated with static and dynamic balancing is used.

Range force of gravity, centrifugal force, axis of rotation, bearing vibration, balancing weights, weight placement.

4.3 The effects of an out of balance component on machine performance are described.
4.4 Methods of statically and dynamically balancing components are described with reference to balancing equipment and material addition and removal.

Range components – flywheel or disk, large rotor.

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<p>| Status information and last date for assessment for superseded versions |</p>
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Consent and Moderation Requirements (CMR) reference 0013

Comments on this unit standard
Please contact Competenz [qualifications@competenz.org.nz](mailto:qualifications@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.