Australian Government

Department of Education, Employment and Workplace Relations

PMBPROD306B Prepare and start equipment for production

Revision Number: 1

PMBPROD306B Prepare and start equipment for production

Modification History

Not applicable.

Unit Descriptor

Unit descriptor
This competency covers the pre-start preparations and start-up operations to bring a production machine from 'power-off' to first-off product and handover to the operator to continue the production run. This competency is typically performed by senior operators working either independently or as part of a work team.

Application of the Unit

Application of this unit
This competency applies to operators who apply knowledge of the machine and the processes required to bring a 'cold' machine back into production.
The operator will:

- plan the job
- identify hazards and take appropriate action
- perform pre-start checks
- start up and shut down equipment as required
- adjust operation to meet production requirements
- hand over operating machine to operator.

This unit applies when start-up is performed as an activity by itself and the started plant is then handed over to an operator to operate. It does not apply when start-up is part of operation and is included in the relevant operate/produce unit of competency.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisites
This competency has the prerequisite of a *PROD200* series unit of competency.

Employability Skills Information

Employability Skills
The required outcomes described in this unit contain applicable Employability Skills. The Employability Skills Summary of the qualification(s) in which this unit is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
ELEMENT	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
1. Perform pre-start checks.	1.1 Check all emergency stops, guards, controls. 1.2 Identify requirements for materials, quality, production run. 1.3 Check and adjust equipment as required. 1.4 Check that the equipment has been set-up correctly.
2. Carry out pre-start operations to procedures.	2.1 Restore all power to the machine and ancillary equipment. 2.2 Start up the ancillary equipment and set the temperature and other controllers as required. 2.3 Check all machine settings as required. 2.4 Select and load the correct raw material. 2.5 Charge, purge and clean machine as required.
3. Start machine and hand over to operator.	3.1 Start and check machine. 3.2 Adjust machine as required to bring to operational speed/ condition. 3.3 Check and run machine until a quality product is obtained. 3.4 Make adjustments to machine and extra equipment in line to produce an acceptable product. 3.5 Make any adjustments required to ensure the machine and its upstream and downstream extra equipment in line are in balance. 3.6 Give the operator all necessary instructions and hand over the machine. 3.7 Shut down machine as required.

Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit.
Application of knowledge of the materials, equipment and process sufficient to recognise out of specification process problems and equipment.
Knowledge of organization procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards.
Application of the knowledge of managing risks using the hierarchy of controls applied to the process. Application of approved hazard control, safety procedures, the use of PPE in relation to handling materials, equipment operation and cleanup.
Knowledge as a basis for solving processing and material problems, including:

- machine construction (types of machines, component parts of machines, structure, function and general operating principles)
- machine safety interlocks and systems
- principles of operation
- measuring instruments and their function
- machine control systems
- differences between analogue controls, digital controls, microprocessor based process controls
- impact of incorrect or faulty set-up
- production workflow sequences
- correct selection and use of equipment and procedures
- the performance of dies and cores
- relevant information and workplace records
- safety precautions appropriate to the task
- polymer properties and their interactions with process conditions
- relationships between polymer properties and process conditions
- changes to polymer properties to better suit process requirements
- product problems related to polymer properties
- product problems related to process conditions
- adjustments to process conditions to meet polymer and product requirements.

Competence also includes the ability to:

- plan own work, including predicting consequences and identifying improvements
- take samples when required and identify product out of specification
- identify and describe own role and role of others involved directly in the process
- identify factors which may affect standard product quality or production output.

Language, **literacy and numeracy requirements**
Literacy is required to the level of being able to read and interpret technical specifications and production schedules and specifications.
Numeracy is required to the level of being able to calculate cycle times and production rates. An appreciation of numbers is also required to the extent needed to set and interpret numeric data.
Verbal communication is required to the extent necessary to instruct the operator.

Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the assessment guidelines for this training package.

Overview of assessment

A holistic approach should be taken to the assessment.

Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.

Where the assessee does not currently possess evidence of competency in a relevant PROD200 unit, it may be co-assessed with this unit.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to:

- bring a 'cold' machine into ready-for-production status methodically and smoothly in standard time.

Consistent performance should be demonstrated. For example, look to see that production quality and output standards are met consistently.

Assessment method and context

Assessment will occur on an industrial line in a work-like environment.

Competence in this unit may be assessed:

- by using appropriate, industrial equipment
- in a situation allowing for the generation of evidence of the ability to respond to problems
- by using a suitable simulation and/or a range of case studies/scenarios
- through a combination of these techniques.

In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment. Assessors need to be aware of any cultural issues that may affect responses to questions.

Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

Specific resources for assessment

This section should be read in conjunction with the Range Statement for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.

Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts. Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.

Context

This competency applies to all sectors within the plastics, rubber and cablemaking industries which use dedicated production machines. It includes the operation of all relevant additional equipment where that equipment is integral to the production process.

Requirements

Requirements may be determined from set-up sheets, job cards, product data sheets or similar.

Procedures

All operations are performed in accordance with procedures.

Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Tools and equipment

This unit of competency includes use of equipment and tools such as:

- hand carts and trolleys
- hoists/lifting equipment not requiring any special permits or licences
- hand tools used in the process
- relevant personal protective equipment.

Measuring instruments

Measuring instruments include:

- levelling
- temperature sensing devices such as thermocouples, pyrometers, transducers, thermometers
- pressure and vacuum gauges
- flow meters.

Safety interlocks and systems

Safety interlocks and systems include:

- limit switches
- normally open/normally closed
- overstroke control systems
- hydraulic temperature control
- material temperature control
- machine guards
- nozzle purge guard
- mould protection systems
- ejection limit switches.

Principles of operation

Principles of operation include:

- production cycle/process/sequence
- function tools/components

- calculation of machine cycle time/production rate
- safe work procedures for checking machine cycle time/production rate
- variations to the cycle/process for different systems/products.

Machine control systems
Machine control systems include:

- basic controls
- open loop
- closed loop
- shot size and correction capacity
- speed/cycle time
- screw position
- equipment/process pressure
- clamp pressure
- time
- screw speed
- screw back pressure
- screw back time
- melt decompress position
- sprue break.

Hazards
Typical hazards include:

- spills
- dusts/vapours
- slip and fall, particularly due to spilt polymer granules
- temperature
- hazardous materials
- manual handling hazards
- equipment operations.

Problems
Anticipate and solve problems means resolve a wide range of routine and non-routine problems, using product and process knowledge to develop solutions to problems which do not have a known solution/a solution recorded in the procedures.
Typical process and product problems may include:

- materials
- equipment malfunction
- process.

Variables
Key variables to be monitored include:

- equipment condition
- set up variables
- product measurements and quality.
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Unit Sector(s)

Not applicable.