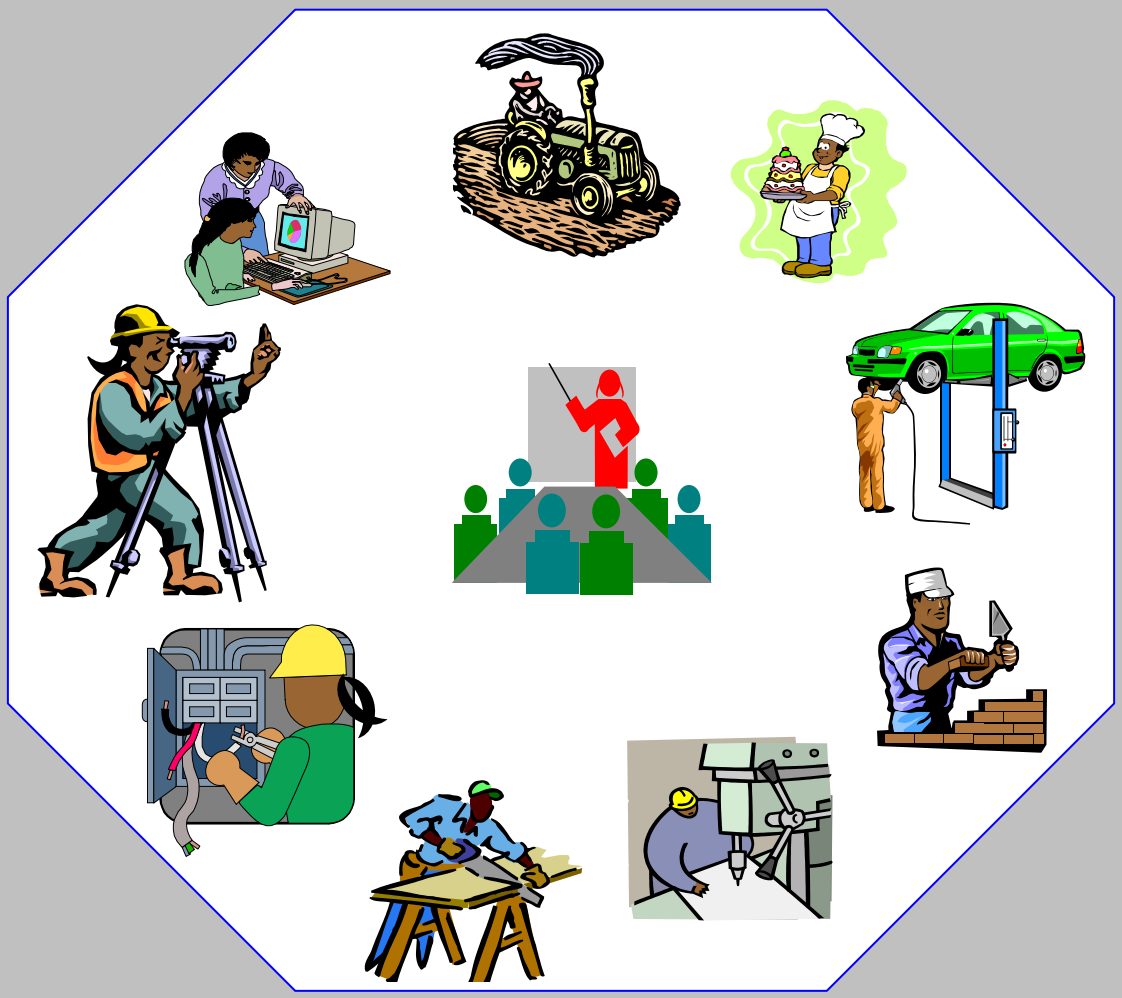
Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

CEMENT TECHNICAL PRODUCTION SUPERVISION

NTQF Level IV



Ministry of Education

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Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopia Occupational Standards (EOS) is the core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF).They are national Ethiopian standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title, NTQF level
- Unit code
- Unit title
- Unit descriptor
- Elements and Performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the respective occupation with all the key components of a Unit of Competence:

- the chart with an overview of all Units of Competence for the respective occupation including the Unit Codes and the Unit Titles
- the contents of each Unit of Competence (competence standard)
- occupational map providing the technical and vocational education and training (TVET) providers with information and important requirements to consider when designing training programs for this standards, and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Cement Technical Production Supervision

Occupational Code: IND CPS

NTQF IV

IND CPS4 01 0111 Trial New Process or Product	IND CPS4 02 0111 Respond to Abnormal Process Situations	IND CPS4 03 0111 Operate Complex Control Systems
IND CPS4 04 0111 Improve Cost Factors in Work Practices	IND CPS4 05 0111 Apply Statistics to Processes in Manufacturing	IND CPS4 06 0111 Facilitate Use of Planning Software Systems in Production
IND CPS4 07 0111 Develop and Adjust Production Schedule	IND CPS4 08 0111 Coordinate Permit Process	IND CPS4 09 0111 Implement and Monitor Environmentally Sustainable Practices
IND CPS4 10 0111 Assess and Manage Risk	IND CPS4 11 0111 Choose Materials for an Application	IND CPS4 12 0111 Manage Cement Production Operation
IND CPS4 13 0111 Establish Quality Standards	IND CPS4 14 0111 Utilize Specialized Communication Skills	IND CPS4 15 0111 Develop Individuals and Teams
IND CPS4 16 0111 Migrate to New Technology	IND CPS4 17 0111 Manage and Maintain Small/Medium Business Operations	IND CPS4 18 1012 Manage Continuous Improvement System

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Trial New Process or Product**
Unit Code	**IND CPS4 01 0111**
Unit Descriptor	This competence typically applies to a technician in a plant who is taking a lead technical role in the trialing of a new product or the trialing of a new or significantly altered process. This competence does not apply to minor modifications to existing products or processes. Similarly it does not apply to a technician or operator taking part in such trials, and/or who is following directions set by the technician, chemist, engineer, supervisor or manager. The technician is expected to be a technical expert in that part of the plant/process where the trial is being conducted.

Elements	Performance Criteria
1. Contribute to the selection of equipment/ process conditions	1.1 Liaise with appropriate technical expert(s). 1.2 Interpret properties of materials and desired product characteristics. 1.3 Interpret technical specifications/drawings of plant requirements. 1.4 Recommend equipment/ancillary equipment appropriate for the materials, products and conditions. 1.5 Recommend process conditions appropriate for the equipment, materials and product characteristics. 1.6 Recommend feed rates/order/condition appropriate to the process conditions, equipment, materials and product characteristics. 1.7 Ensure hazard identification and analysis procedures are completed, including consultation with stakeholders, and findings included in plan. 1.8 Ensure recommendations meet the identified need.
2. Prepare for trials	2.1 Determine the availability of resources required such as materials, equipment, people and skills. 2.2 Estimate time required for trial. 2.3 Liaise with relevant stakeholders. 2.4 Schedule trial at a convenient time. 2.5 Develop documentation for the trial. 2.6 Identify potential ***hazards*** and required hazard control ***procedures*** by applying the hierarchy of control.

	2.7 Determine clearance requirements and special safety and storage requirements. 2.8 Verify decisions with appropriate experts/stakeholders. 2.9 Ensure people with adequate skills are available for the trial
3. Conduct test runs/trials	3.1 Ensure hazard controls are implemented prior to commencement. 3.2 Run trials. 3.3 Maintain communication with all relevant people. 3.4 Closely monitor critical parameters. 3.5 Recognize actual and potential ***problems***. 3.6 Make adjustments to process conditions as required during trial. 3.7 Sample and test product as required. 3.8 Record and report performance data. 3.9 Ensure all materials, products and ***wastes are handled*** correctly. 3.10 Leave plant in a condition suitable for routine production to recommence.
4. Evaluate results and identify modifications	4.1 Interpret data from trial. 4.2 Identify factors which might be related to low rates or low charge amounts. 4.3 Recommend modifications and improvements required. 4.4 Develop and check standard operating procedure. 4.5 Complete documentation and report to appropriate personnel. 4.6 Ensure all relevant staffs have required skill levels for the introduction of the new process.

Variable	**Range**
Context	This unit includes all items of equipment and unit operations which form part of the trial
Liaison	Liaison with technical experts may (depending on trial requirements and company protocols) include one or more of: • manufacturers • chemists • engineering personnel • designers • OHS advisors • maintenance personnel

	• Potential customers
Hazard analysis	Hazard analysis procedures may include: • JSA/JHA (Job Safety Analysis/Job Hazard Analysis) • hazard and operability (HAZOP) studies • hazard analysis (HAZAN) studies • Other company specified procedures. • It is not expected that the candidate will be able to conduct technical hazard analysis procedures (such as HAZOP or HAZAN) but they should be able to interpret and use the outcomes of such analyses where relevant.
Hazards	Hazards may be determined from: • materials safety data sheets (MSDSs) • other relevant documentation such as hazard logs, incident reports • company hazard identification procedures • hazard analysis results • standard operating procedures
Waste handling	Waste handling may include: • collection for re-use • recycling • Disposal in accordance with health and environmental regulations.
Problems	Typical problems for the trial might include: • mixing is poor • materials do not behave as expected • process/reaction does not proceed /proceeds too slowly • process/reaction proceeds too quickly/runs away • yield is low • quality is out of specification • process is unstable • instrumentation is not sufficiently sensitive/too sensitive • fluctuating flow/pressure/temperature
Health, Safety and Environment (HSE)	• All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence
Procedures	• All operations are performed in accordance with procedures. • Procedures means all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards

Evidence Guide	
Critical aspects of Competence	Assessment requires evidence that the candidate: • identified and controlled hazards • recognized early warning signs of equipment/processes

	needing attention or with potential problems • identified and analyzed range of possible causes and determined the most likely cause • took appropriate and timely action to ensure the safety and success of the trial • recognized obvious problems in related plant areas and made an appropriate contribution to their solution
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • identifying all items on a schematic of the plant and describe the function of each • describing the nature/condition of materials entering and leaving each stage of the process, the changes which have occurred in that stage and why they have occurred • stating the major design features of plant equipment, plant conditions and variables and the impact of these on the properties of materials passing through them • describing the causes and remedies of common problems such as those selected in the Range Statement • applying the hierarchy of control to minimize the risk of hazards identified • describing methods of changing rate and the advantages and disadvantages of each • describing methods of controlling other process variables and the advantages and disadvantages of each • process material variations • instrument failure/wrong reading • electrical failure, mechanical failure and operational problem
Underpinning Skills	Demonstrates skills to: • Communicate and liaise with people at a range of levels about technical matters. • Reading to the level of interpreting technical specifications, manuals and procedures; and writing technical documentation such as specifications and procedures required for the trial. • Numeracy to the level of interpreting technical specifications and test results, • Analyze process data and determining required variations in process variables.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Assessment Methods	Competency may be assessed through: • Interview / Written Test / Oral Questioning • Observation / Demonstration
Context of Assessment	Competency may be assessed in the work place or in a simulated workplace setting

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Respond to Abnormal Process Situations**
Unit Code	**IND CPS4 02 0111**
Unit Descriptor	This unit applies an in depth knowledge of process and plant to the recognition and solving of more complex/less obvious process/plant/ technical problems.

Elements	Performance Criteria
1. Recognize there is a problem	1.1 Compare current performance with expected/historic 1.2 performance 1.3 Identify plant/process areas with poor performance 1.4 Check the impact of routine adjustments to improve performance. 1.5 Identify problems not solved by the routine solutions.
2. Define the problem	2.1 Apply problem isolation techniques to isolate problem to a small part of the plant/process 2.2 Quantify the effect of the problem in operational terms 2.3 Postulate possible causes of the problem 2.4 Identify types of evidence for each possible cause 2.5 Investigate problem to accumulate evidence of cause type 2.6 Analyze data to confirm cause of problem 2.7 Determine the level of severity of the problem, priority of any required action
3. Develop solution	3.1 Discuss possible solutions to cause with relevant people. 3.2 Determine whether a quick fix is needed. 3.3 Arrange for implementation of quick fix if required. 3.4 Check effectiveness of quick fix and take appropriate action. 3.5 Agree required solution with appropriate people. 3.6 Arrange for required solution to be undertaken in appropriate time frame. 3.7 Follow items initiated through until final resolution has occurred. 3.8 Check effectiveness of solution and take appropriate action. 3.9 Complete reports to procedure.

Variable	Range
Codes of practice/ standards	• Where reference is made to industry codes of practice, and/or Ethiopian/international standards, the latest version must be used
Context	• This unit of competence includes problems in the plant, plant equipment or process which may make itself evident through lower quality, lower rates, greater variability or greater difficulty in control.
Health, safety and environment (HSE)	• All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • analyzed and resolved different types of problems • satisfied different types of stakeholders • identified and analyzed range of possible causes and determined the most likely cause and took appropriate action
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • plant equipment, its characteristics and limitations • impact of variations in plant/process and the distinctive signs of each variation • process chemistry, physics and biochemistry as relevant, e.g. to the extent of writing chemical equations and identifying factors controlling reaction rate and yield or equivalent. • problem isolation techniques and • problem analysis techniques • organization approval processes
Underpinning Skills	Demonstrates skills to: • analysis • problem solving • negotiation • communication
Resource Implications	The following resources should be provided: • Access to relevant workplace or appropriately simulated environment where assessment can take place • Materials relevant to the proposed activity or task
Methods of Assessment	Competence may be assessed through: • Interview / Written Test / Oral Questioning • Observation/demonstration
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

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Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Operate Complex Control Systems**
Unit Code	**IND CPS4 03 0111**
Unit Descriptor	This unit covers the operation of a complex control panel. These controllers use a large number of control loops and a broad range of control algorithms. The panel will control entire plant areas and multiple products/ process streams. It will typically be located off plant in a control room and will require managing multiple complex tasks.

Elements	Performance Criteria
1. Use operator interface	1.1 Use keyboards, track ball and monitor and/or stand alone controllers to access control system/panel. 1.2 Monitor the process using the operator interfaces. 1.3 Select appropriate controller modes. 1.4 Access historical data and information. 1.5 Acknowledge messages and alarms. 1.6 Access advanced control features as appropriate.
2. Access control information	2.1 Obtain relevant data and information from the control system by applying systems knowledge 2.2 Identify the status of individual pieces of equipment from the control panel and use information to identify potential faults. 2.3 Minimize fluctuations and variations in process through the interpretation of existing trends and control schematics. 2.4 Determine the overall operating effectiveness of the plant area related to the required targets for the area. 2.5 Record process variations/irregularities to procedures.
3. Control process variations and monitor operations	3.1 Use historical data to assist the identification of problems. 3.2 Process available information to identify potential faults 3.3 Undertake required set point/output changes to meet plant area and process requirements. 3.4 Adjust production in response to test results and control panel information. 3.5 Monitor key process and environmental variables and take appropriate action. 3.6 Adjust controller settings in accordance with procedures.

	3.7 Use advanced control features as appropriate. 3.8 Optimize entire plant area in accordance with guidelines. 3.9 Undertake calibration operations as appropriate. 3.10 Coordinate with stakeholders external to the plant area as appropriate. 3.11 Record adjustments and variations to specifications/schedules. 3.12 Communicate to appropriate personnel as required.
4. Facilitate planned and unplanned process start-ups and shut-downs	4.1 Select and apply procedures to planned startup and shutdown processes. 4.2 Select and apply procedures to unplanned shutdown processes. 4.3 Implement all required emergency responses. 4.4 Communicate necessary information to all personnel affected by events. 4.5 Log all required information.
5. Respond to alarms or out of specification conditions	5.1 Identify system(s) affected by the alarm or condition. 5.2 Interpret alarms and prioritize actions to be taken. 5.3 Respond to the alarm or incident by following procedures. 5.4 Deal with any out of specification material in accordance with procedures. 5.5 Communicate the problem/solution to appropriate personnel. 5.6 Record the information as required. 5.7 Provide details of the alarm and action taken to the next shift at change over. 5.8 Follow the incident up. See that ***appropriate action*** has been taken.
6. Control hazards	6.1 Identify hazards in the production/processing work area. 6.2 Assess the risks arising from those hazards. 6.3 Implement measures to control risks in line with ***procedures*** and duty of care.
7. Resolve other problems within scope of responsibility	7.1 Identify possible problems in equipment, control systems or process. 7.2 Determine problems needing action. 7.3 Determine possible fault causes. 7.4 Rectify problem using appropriate solution within area of responsibility.

	7.5 Follow initiated items through until final resolution has occurred. 7.6 Report problems outside area of responsibility to designated person.

Variable	Range
Codes of practice/ standards	• Where reference is made to industry codes of practice, and/or Ethiopian/international standards, the latest version must be used
Context	This unit of competency includes all such items of equipment and unit operations which form part of the control system. This includes:- • process control systems (e.g. Distributed Control Systems) • use of multiple control systems • personal computers • printers • fire and gas detection/protection systems • emergency shutdown systems • communications systems Typical problems may include:- • operating without advanced control features • loss of power/utilities • analyzing failure modes • variation/loss of feed • unstable control of pressure, temperature level and flows • control equipment failure • process plant trips • change in atmospheric conditions (rain, temperature, wind, lightning) • emergency situations
Alarms or abnormal conditions	Alarms or other abnormal conditions includes: • emergency, including emergency shutdown • partial or complete controller failure
Other problems	Other problems includes: • problem solving control functions
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person

Procedures	Procedures may be written, verbal, computer-based or in some other form. They include: • all work instructions • standard operating procedures • formulas/recipes • temporary instructions • any similar instructions provided for the smooth running of the plant
Health, safety and environment (HSE)	• All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • recognized early warning signs of equipment/processes needing attention or with potential problems • analyzed and identified the range of possible causes and determined the most likely cause • took appropriate action to ensure a timely return to full performance • recognized obvious problems in related plant areas and made an appropriate contribution to their solution
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • advanced control features • interactions between control loops • interactions between plant units within the entire plant • the architecture and location of the process/production equipment • specific plant process operations • interactions between plant items/processes • product specifications and tolerances • systems operating parameters • system integrity limits • process control philosophies and strategies • emergency shutdown procedures • process specific physics, chemistry and mathematics • relevant chemistry of the process to the level of writing chemical equations and identifying and manipulating factors controlling rate of reaction and yield (or equivalent physics for a physical process/biochemistry for a biochemical process) - chemistry to include both intended products and interfering reactions • basic science of upstream and downstream processes

	• interactions between plant area and other value stream members • impact of external factors, e.g. variations in weather, feed etc • complex process drawings, e.g. P&ID, PFD, cause and effect • basis of control for the plant/s • instrumentation and control systems including feed forward, feedback and open control • instrumentation and control system components (e.g. relevant primary sensing devices, final control elements, transducers/transmitters) • control loops (including PID control, set points, controlled variable, indicated variable) • interaction between multiple control loops (including cascade control) • impacts of changing controller settings and the limits within which changes can be made • effective communication techniques • organization procedures • UPS and its applications and use
Underpinning Skills	Demonstrates skills to: • instrument failure/malfunction • electrical failure/malfunction • mechanical failure/malfunction • equipment design deficiencies • product parameters (temperature, flows, pressure and levels) • process control system malfunction • power/utility failures • software problems • multitasking
Resource Implications	The following resources should be provided: • Access to relevant workplace or appropriately simulated environment where assessment can take place • Materials relevant to the proposed activity or task
Methods of Assessment	Competency may be assessed through: • Interview / Written Test / Oral Questioning • Observation/demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

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Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Improve Cost Factors in Work Practices**
Unit Code	**IND CPS4 04 0111**
Unit Descriptor	This unit covers the knowledge, attitudes and skills needed to evaluate the product or process outcomes of a team in terms of their cost components and to be able to determine in general terms the cost impacts of alternative actions.

Elements	Performance Criteria
1. Analyze cost components of team's function	1.1 Identify ***cost components*** in the product or ***process*** 1.2 Identify cost factors under control of the team 1.3 Identify causes of variability in costs 1.4 Analyze impact of costs on production or process activities 1.5 undertaken by team
2. Improve cost efficiency of team processes	2.1 Identify methods of improving productivity and/or reducing costs within team's area of responsibility. 2.2 Determine cost/ ***benefit*** ratio of alternative methods improving productivity and/or reducing costs. 2.3 Consult with all relevant stakeholders regarding possible changes. 2.4 Recommend changes which will increase productivity and reduce cost and variability. 2.5 Implement recommended changes in consultation with relevant stakeholders.

Variable	Range
Cost components	• Cost components may include fixed and variable costs such as power/energy, materials, plant and equipment, salary and wages, office expenses such as telephone, and government taxes and charges.
Process	• Process may include a production, maintenance, logistics or office process in a manufacturing environment.
Procedures	• Procedures include all work instructions, standard operating procedures, formulas/recipes, batch sheets, temporary instructions and similar instructions provided for the smooth running of the plant. They may be written, verbal, computer based or in some other form. • Procedures also includes good operating practice as may be defined by industry codes of practice (e.g. Good

	Manufacturing Practice (GMP), Responsible Care) and government regulations.
Benefits	• Benefits should include positive benefits as well as negative benefits such as quality, safety, reliability and similar issues which may be impacted by a cost saving.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • analyzed cost factors relevant to their team's operation and implemented improvements to the team's cost efficiency
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • cost components of products made • costs concepts such as expense, income and cost benefit • major cost contributors to product (e.g. energy) • the difference between internally and externally controlled costs • difference between overhead, labor and consumables • mathematical concepts and application • calculations and conversion of units
Underpinning Skills	Demonstrates skills to: • analyze data and information • analyze and improve cost efficiency • perform numeracy skills / calculations
Resource Implications	The following resources should be provided: • Access to relevant workplace or appropriately simulated environment where assessment can take place • Materials relevant to the proposed activity or task
Methods of Assessment	Competency may be assessed through: • Interview / Written Test / Oral Questioning • Observation/demonstration
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Apply Statistics to Processes in Manufacturing**
Unit Code	**IND CPS4 05 0111**
Unit Descriptor	This unit covers the knowledge and skills required to apply statistical theory and principles to the analysis and control of processes in manufacturing.

Elements	**Performance Criteria**
1. Collect process data	1.1 Interpret ***sampling scheme*** 1.2 Obtain measurements in accordance with standard ***procedures***. 1.3 ***Handle data*** as required.
2. Interpret data	2.1 Plot data on appropriate ***control chart*** 2.2 Distinguish between ***random*** and ***non-random*** patterns of results. 2.3 Identify results outside the ***control limits*** 2.4 Recognize situations requiring action 2.5 Take appropriate action in accordance with standard procedures 2.6 Determine ***cost of non-conformance***
3. Calculate control limits	3.1 Consult relevant stakeholders to determine ***appropriate limits*** 3.2 Control limits are calculated in accordance with standard procedures and measures

Variable	**Range**
Sampling scheme	Sampling scheme may include: • sampling for attributes or sampling for variables • batch, continuous or custom made products • number of items/samples • size of sample • timing of sampling • location of sampling points • type of sample • number/type of measurements to be done on each sample • sampling equipment • measurement/testing equipment/methods
Procedures	• Procedures includes all work instructions, standard operating

	procedures, formulas/ recipes, temporary instructions and similar instructions provided for the smooth running of the plant. They may be written, verbal, computer based or in some other form. • For the purposes of this Unit, ' procedures' also includes good operating practice as may be defined by industry codes of practice (e.g. Good Manufacturing Practice (GMP), Responsible Care) and government regulations.
Handle data	Handle data may include: • calculating means, ranges, mean of means, standard deviation (using appropriate calculation aids) • entering data into a software package • recording data either in writing or electronically • Other required manipulations of the data.
Control chart	Control charts may include: • run • tally • mean/range • attributes • other relevant charts
Random	• Random variation is the term used in statistical control to refer to those variations for which no cause can be found.
Non-random	• Non-random, also called identifiable cause, or assignable cause or special cause are those variations for which a cause can be found and so the cause of the variation eliminated. • Non-random variation may also be used to predict possible breaches of the control limits.
Control limits	• Control limits, also referred to as process capability are those limits within which the process will operate if it is 'under control'.
Cost of non-conformance	Cost of non-conformance includes: • reprocessing/rework • expediting • unplanned service • excess inventory • complaint hand line • downtime • returns • scrap • labor costs • material costs • infrastructure costs/overhead • utility costs
Appropriate limits	Appropriate limits may include: • 1 sigma warning limits • 2 sigma warning limits • 3 sigma control limits

	• 6 sigma limits
Evidence Guide	**Description**
Critical Aspects of Competence	Assessment requires evidence that the candidate: • Applied statistical theory to a process.
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • sampling techniques • purpose of sampling and measurement • random, systematic, stratified sampling • relevance, reliability and representativeness of samples/data collected • purpose of replication of data for statistical control • samples, populations, finite and infinite populations and the differences • methods of calculating means, standard deviations and the like and their purpose in statistical control • the causes of variation in a process • the meaning of broad/ narrow frequency distributions/ range/standard deviations and skewed distributions in process terms • types of control charts and their applications to different types of process/product and for different purposes • process causes of variation and typical cause types of non-random variation • non-process (e.g. measurement) causes of variation • recognition of stable and unstable processes • causes of stability/instability in the process • calculation of control limits/process capability and the applications of different control limits • the standard distribution curve and confidence limits
Underpinning Skills	Demonstrate skills in: • analysis • problem solving • communication • documenting • calculations • use of statistics
Resource Implications	The following resources should be provided: • Access to relevant workplace or appropriately simulated environment where assessment can take place • Materials relevant to the proposed activity or task
Methods of Assessment	Competency may be assessed through: • Interview • Observation/demonstration
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Facilitate the Use of Planning Software Systems in Production**
Unit Code	**IND CPS4 06 0111**
Unit Descriptor	This unit covers the knowledge and skills required by a team leader or technical expert to use and facilitate the use of planning software systems (known by various names such as ERP, SAP and MRP). This unit also covers the interactions of the person with a planning software system as they both use it for their own work and support their team members use it.

Elements	Performance Criteria
1. Communicate using the planning software system	1.1 Send and receive information using ***planning software*** 1.2 Send and receive messages using planning software 1.3 Planning software is used in accordance with standard procedures
2. Make decisions using planning software	2.1 Interrogate the planning software system to find required current, historical or predicted information. 2.2 Take actions appropriate to the information in accordance with procedures.
3. Monitor the use of planning software	3.1 Routinely monitor planning software information and use along the ***value chain.*** 3.2 Review performance and use of planning software with team.
4. Support team use planning software	4.1 Regularly communicate with team, both using planning software and face to face. 4.2 Identify improvements required 4.3 Take appropriate actions to implement improvements

Variable	Range
Planning software	• Planning software is a general term applied to a number of software systems which integrate a range of business information such as finance, logistics maintenance and production. It is frequently referred to by names such as ERP, SAP or MRP/MRPII. In some cases it can be integrated with engineering applications such as Systems Control and Data Acquisition (SCADA) systems. • A Competitive manufacturing organizations encompass the entire production system, beginning with the customer, and includes the product sales outlet, the final assembler, product

	design, raw material mining and processing and all tiers of the value chain (sometimes called the supply chain). Any truly 'competitive' system is highly dependent on the demands of its customers and the reliability of its suppliers. No implementation of competitive manufacturing can reach its full potential without including the entire 'enterprise' in its planning
Value chain	• A Competitive manufacturing organizations encompass the entire production system, beginning with the customer, and includes the product sales outlet, the final assembler, product design, raw material mining and processing and all tiers of the value chain (sometimes called the supply chain). Any truly 'competitive' system is highly dependent on the demands of its customers and the reliability of its suppliers. No implementation of competitive manufacturing can reach its full potential without including the entire 'enterprise' in its planning.

Evidence Guide	
Critical Aspects Of Competence	Assessment requires evidence that the candidate: • Used planning software and also of assisted the team to use it effectively and efficiently.
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • hierarchy of planning software system and operation • information available from/through the planning software system • facilities and information offered by planning software • support/training/skill development mechanisms available for access by team members
Underpinning Skills	Demonstrates skills to: • communication • teamwork • problem solving • planning and organizing
Resource Implications	The following resources should be provided: • Access to relevant workplace or appropriately simulated environment where assessment can take place • Materials relevant to the proposed activity or task
Methods of Assessment	Competency may be assessed through: • Interview • Observation/demonstration
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

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Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Develop and Adjust Production Schedule**
Unit Code	**IND CPS4 07 0111**
Unit Descriptor	This unit refers to the scheduling of production to meet operational requirements. It aims at ensuring that operators identify resource requirements, and document, monitor and adjust schedules in response to operational variations.

Elements	Performance Criteria
1. Identify resources to meet production requirements.	1.1 Determine demand for product. 1.2 Access and verify information on orders, stocks and delivery. 1.3 Determine material requirements. 1.4 Determine human resource requirements. 1.5 Determine health, safety or environment issues in meeting requirements
2. Develop schedules	2.1 Determine production priorities. 2.2 Identify production opportunities ('windows'). 2.3 Develop production schedules in accordance with ***procedures*** taking account of safety requirements. 2.4 Communicate and distribute production schedules to appropriate personnel.
3. Monitor production schedules	3.1 Monitor production output against schedule. 3.2 Identify variations between production and schedule. 3.3 Record operational variation and discuss with appropriate personnel. 3.4 Identify possible cause of variation.
4. Adjust schedules	4.1 Adjust schedules in response to operational variation. 4.2 Adjust schedules in response to unexpected events. 4.3 Distribute adjusted/amended schedules to appropriate personnel. 4.4 Maintain product output in accordance with production and health, safety and environment requirements

Variable	Range
Context	This competency is typically performed by an experienced operator, team leader or similar. Indicative functions include: • regular planning operations • communication with all relevant personnel, including management and administration • unit content areas include responses to: • immediate production needs • future production needs • reworking requirements • indicative information sources and resources include: • customer requirements • organizational plans, policies and procedures • production schedules, run plans • resource utilization actual and targets
Procedures	• All operations are performed in accordance with procedures. • Procedures means all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards
Health, Safety and Environment (HSE)	All operations are subject to stringent health, safety and environment requirements, which may be imposed through State or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the scheduler needs to ensure the HSE requirements take precedence.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • identified resource requirements • recorded, monitored and adjusted schedules in response to operational requirements • identified resource requirements are correctly in accordance with production requirements • planned schedules for the most effective and efficient manner to meet operational requirements schedules allow for health safety, and environmental (HSE) issues and reinforce HSE priorities • adhered to timelines • adjusted schedules and resource requirements • amended in response to operational variations • communicated variations to schedules and documented appropriately

Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • production objectives, priorities, targets and resource requirements • customer and quality requirements • process and plant operational requirements • hazards associated with the process • awareness of the hierarchy of control in controlling the hazards • impact of adjustments on process/plant efficiencies and production outcomes/targets • safety implications for schedule/schedule changes • planning, sequencing, monitoring and reviewing steps • company policies and procedures
Underpinning Skills	Demonstrates skills to: • access and interpret a range of written, numeric and graphical data • writing is required to the level of interpreting orders (and forecasts) and producing schedules and related reports • numeracy is required to interpret numeric data and relevant statistics (such as trends and cycles) and from this calculate production and resource requirements
Resource Implications	• Fax machine • Telephone • Writing materials • Internet
Methods of Assessment	• Direct Observation • Oral interview and written test
Context of Assessment	Competency may be assessed individually in the actual workplace or through accredited institution

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Coordinate Permit Process**
Unit Code	**IND CPS4 08 0111**
Unit Descriptor	This competence covers the issuing and auditing of any and all permits across multiple plant areas or an entire site. It is typically undertaken by a senior process technician. This may be a routine job, a role in part of a job or a temporary role in a shut down or similar.

Elements	Performance Criteria
1. Assess planned work for conflicts	1.1 Identify all planned work for a time period 1.2 Determine the scope and HSE impacts of each planned job 1.3 Confirm hazard analysis and controls for each planned job 1.4 Compare hazard profiles for each planned job 1.5 Identify conflicts between planned jobs 1.6 Negotiate a solution between conflicts 1.7 Communicate results of negotiations to relevant stakeholders
2. Issue required permits	2.1 List those jobs which will be allowed to proceed in the time period 2.2 Confirm hazard controls required for these jobs 2.3 Identify jobs which have impacts across plant areas 2.4 Ensure controls and communications are adequate 2.5 Issue/cause to be issued required permits 2.6 Report as required by procedures
3. Audit live permits	3.1 Audit plant preparations 3.2 Audit permit issuing process 3.3 Check appropriate controls have been specified 3.4 Audit handover/sign on process 3.5 Audit work in progress for conformance to permit conditions 3.6 Audit work completion and hand back/closing process 3.7 Audit desolation and return to work preparations 3.8 Take immediate and appropriate action on any problems found 3.9 Report on audit as required by procedures

4. Audit past permits	4.1 Obtain relevant paper work 4.2 Check for conformance to procedures 4.3 Check for appropriateness of specified hazard controls 4.4 Identify any non-conformance 4.5 Identify systemic non-conformances 4.6 Take any immediate action which is appropriate 4.7 Report on audit as required by procedures
5. Analyze audit findings	5.1 Identify improvements to the permit system 5.2 Identify improvements to the implementation of the permit system 5.3 Suggest improvements to the permit system as appropriate 5.4 Suggests improvements to hazard analysis processes 5.5 Suggest improvements to the plant preparation/return to operations processes 5.6 Suggest improvements to hazard controls 5.7 Suggest training required as appropriate

Variable	**Range**
Codes of practice/ standards	Where reference is made to industry codes of practice, and/or Ethiopian/international standards, the latest version must be used
Context	This competency covers the issue of any and all work permits. Permits are called clearances by some organizations. The types of permit include: • cold work • excavation • vehicle entry • minor repairs • working at heights • hot work • confined space • electrical • increased hazard • other relevant permits • requirements identified on the permit may include testing of atmospheric conditions, ventilation and control measures such as isolation, barriers, tag out/lockout signs, communications, and incident response • safety structures and controls may include automatic plant shut down buttons, cords/lanyards, alarms, barriers, guards, earth leakage devices, tag out/lock out procedures, warning lights

Live permits	• Live permits applies to work currently being done
Past permits	• Past permits apply to any permit which has been handed back/closed.
Audit permits	Auditing of permits includes all of: • selecting an individual permit and following it through • spot checking any aspect of permits • intensively checking one aspect of the process with all permits on issue
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • demonstrated ability to specify the requirements and then select the best solution to meet the necessary and desirable requirements
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • the operations of the plant and each major unit in it • hazards associated with all plant materials, processes and process conditions • hazard analysis and control • HSE legislative requirements related to plant • plant preparation procedures • auditing principles
Underpinning Skills	Demonstrates skills to: • analysis • decision making • communication • prioritization • leadership • negotiation • problem solving
Resource Implications	• Fax machine • Telephone • Writing materials • Internet
Methods of Assessment	• Direct Observation • Oral interview and written test
Context of Assessment	Competence may be assessed individually in the actual workplace or through accredited institution

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Implement and Monitor Environmentally Sustainable Work Practices**
Unit Code	**IND CPS4 09 0111**
Unit Descriptor	This competence covers the outcomes required to effectively analyze the workplace in relation to environmentally sustainable work practices and to implement improvements and monitor their effectiveness. This unit is based on the sustainability guideline standard (Ethiopian standard GCSSUS02A) Implement and monitor environmentally sustainable work practices

Elements	Performance Criteria
1. Investigate current practices in relation to resource usage	1.1 Identify environmental regulations applying to the enterprise. 1.2 Assess ***procedures*** for assessing ***compliance*** with environmental regulations. 1.3 Collect information on environmental and resource efficiency systems and procedures, and provide to the work group where appropriate. 1.4 Measure and record current resource usage by members of the work group. 1.5 Analyze and record current ***purchasing strategies***. 1.6 Analyze current work processes to access information and data and assist in identifying areas for improvement.
2. Set targets for improvements	2.1 Seek input from stakeholders, key personnel and specialist. 2.2 Access external sources of information and data as required. 2.3 Evaluate alternative solutions to workplace environmental issues. 2.4 Set efficiency targets
3. Implement performance improvement strategies	3.1 Source techniques/tools to assist in achieving targets. 3.2 Apply continuous improvement strategies to own work area of responsibility and communicate ideas and possible solutions to the work group and management. 3.3 Integrate environmental and resource efficiency improvement plans for own work group with other operational activities and implement them. 3.4 Seek ***suggestions*** and ideas about environmental and resource efficiency management from stakeholders and act

	upon them where appropriate. 3.5 Implement costing strategies to fully value environmental Assets.
4. Monitor performance	4.1 Document outcomes and communicate reports on targets to key personnel and stakeholders. 4.2 Evaluate strategies. 4.3 Set new targets and investigate and apply new tools and strategies. 4.4 Promote successful strategies and reward participants where possible

Variable	**Range**
Context	• This competence applies to all sectors of the manufacturing industry. It may also be applied to all sections of an organization, including office, warehouse etc. This unit will need to be appropriately contextualized as it is applied across an organization and across different industry sectors.
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
Environmental and resource efficiency issues	Environmental and resource efficiency issues include: • addressing environmental and resource sustainability initiatives such as Environmental Management Systems, action plans, surveys and audits • reference to standards, guidelines and approaches such as: ➢ ISO 14001 Environmental Management Systems ➢ Life Cycle Analyses ➢ Global Reporting Initiative ➢ Ecological foot printing ➢ Triple Bottom Line reporting ➢ Product Stewardship ➢ determining enterprise's most appropriate waste treatment including waste to landfill, recycling, re-use and wastewater treatment ➢ applying the waste management hierarchy in the workplace ➢ initiating and/or maintaining appropriate enterprise procedures for operational energy consumption, including stationary energy and non-stationary (transport)
Appropriate techniques	Appropriate techniques include: • material fed to/consumed by plant/equipment • plant meters and gauges • job cards • examination of invoices from suppliers • measurements made under different conditions

	• examination of relevant information and data • others as appropriate to the specific industry contexts
Compliance	Compliance includes meeting relevant federal, state and local government laws, by-laws, regulations and codes of practice
Incidents	Incidents include: • breaches or potential breaches of regulations • occurrences outside of standard procedure which may lead to lower environmental performance
Purchasing strategies	Purchasing strategies include: • influencing suppliers to take up environmental sustainability • selecting materials/components with a lower environmental profile
Stakeholders, key personnel and specialists	Stakeholders, key personnel and specialists include individuals and groups both inside and outside the organization that have some direct interest in the enterprise's conduct, actions, products and services, including: • employees at all levels of the organization • customers • suppliers • other organizations • key personnel within the organization, and specialists outside it who may have particular technical expertise
Suggestions	Suggestions includes ideas that help to: • prevent and minimize environmental risks and maximize opportunities • reduce emissions of greenhouse gases • reduce use of non-renewable resources • make more efficient use of energy • maximizing opportunities to re-use and recycle materials • identifying strategies to offset or mitigate environmental impacts. e.g. purchasing of carbon credits • expressing purchasing power through the selection of suppliers with improved environmental performance. e.g. purchasing renewable energy • eliminating the use of hazardous and toxic material increasing the reusability/recyclability of wastes/products

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • monitored and investigated current resource usage • developed plans to improve sustainability • implemented environmental improvements • monitored and investigated environmental performance • followed areas for improvements, monitored and investigated implemented changes
Underpinning	Demonstrates knowledge of:

Knowledge and Attitudes	• know how to access and use relevant environmental and resource efficiency systems and procedures • know best practice approaches relevant to own area of responsibility • know and apply strategies to maximize opportunities and minimize impacts relevant to own work area • know relevant environmental and resource efficiency issues specific to industry practices
Underpinning Skills	Demonstrates skills to: • access and use relevant environmental and resource efficiency systems and procedures • apply quality assurance systems relevant to own work area • apply relevant supply chain procedures • Language, literacy and numeracy requirements • communication/consultation skills to ensure information is supplied to the work group • Writing is required to comprehend documentation and interpret environmental and energy efficiency requirements. • Numeracy is required to interpret numeric workplace information, readings and measurements, handle data as required and complete numeric components of workplace forms/reports.
Resource Implications	The following resources should be provided: • Access to relevant workplace or appropriately simulated environment where assessment can take place • Materials relevant to the proposed activity or task
Methods of Assessment	Competency may be assessed through: • Interview • Observation/demonstration
Context for Assessment	Competency may be assessed in the workplace or in a simulated workplace setting

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Assess and Manage Risk**
Unit Code	**IND CPS4 10 0111**
Unit Descriptor	This unit covers the development, implementation and evaluation of a risk management plan for the organization. It incorporates an assessment of all potential risks facing the organization and the development of strategies and plans to mitigate all risk situations through elimination, isolation or protection

Elements	Performance Criteria
1. Identify hazards and potential operability problems	1.1 Contribute to the compiling of a system description of all the machinery, equipment, operations, products and materials relevant to the everyday working ***procedures*** of the facility. 1.2 Contribute to the compiling of a checklist containing ***process parameters*** (primary key words) and guide words (Secondary key words) relevant to the system. 1.3 Identify ***hazards***, existing control measures and potential operability ***problems*** or breakdowns in control measures using the compiled system descriptions and the checklist.
2. Assess impact of risk and determine alternative strategies	2.1 Screen for causes of deviations and establish consequences. 2.2 Determine alternative strategies for action in relation to each deviation within the range of competency and responsibility. 2.3 Review, clarify and/or analyze risk information to determine its relevance and reliability depending upon the task assigned, level of competency and area of responsibility.
3. Develop risk management plan	3.1 Analyze and interpret strategic position and policy on risk management. 3.2 Ensure that an audit is conducted to identify risk management ***context*** and potential areas of risk. 3.3 Analyze organizational capability to reduce/control the likelihood of both incidents and consequences. 3.4 Evaluate the risk register to ensure it contains relevant information regarding sources of risk, scenarios for loss of control of the risk, possible consequences, risk controls and action. 3.5 Establish or review risk management policies. 3.6 Evaluate the requirement for training/education for all groups and individuals. 3.7 Identify access to external specialist assistance.

	3.8 Establish procedures for ongoing identification of hazards, and assessment and control of risk. 3.9 Consult stakeholders in the development of the plan
4. Implement risk management plan	4.1 Review, in consultation with stakeholders, the ranking of ***risks*** and the classifications of levels of risk. 4.2 Place on a monitor/review watch list risks classified as low/acceptable. 4.3 Implement processes to eliminate wherever practicable risks that are unacceptable 4.4 Implement processes to mitigate/minimize risks that cannot be eliminated in accordance with the risk management plan and the hierarchy of control. 4.5 Document strategies for risk minimization
5. Evaluate risk management plan	5.1 Establish ***procedures*** to regularly review risk management activities. 5.2 Ensure stakeholders have input to the review. 5.3 Examine activities that do not achieve their objective/ performance outcomes to determine cause. 5.4 Identify targets for improvement and update plan. 5.5 Establish evaluation of risk management as a key component of all projects/activities
6. Assess risk information against established risk criteria in risk management plan	6.1 Check risk acceptance criteria for any changes over past period. 6.2 Compare risk information against risk acceptance criteria and procedures to assess acceptability of risk. 6.3 Conduct liaison with other internal departments to assess impact on business if applicable. 6.4 Document findings according to company policies and procedures.
7. Develop a risk register	7.1 Develop a risk assessment chart for each system studied containing deviation, cause, consequence, control measures and action. 7.2 Develop action plan for implementation of control measures, including any changes to procedures. 7.3 Establish or review the procedures by consulting relevant/different work groups. 7.4 Inform relevant work groups of any changes and implement, within area of responsibility, changes in the procedures. 7.5 Monitor effectiveness of the control measures including revised procedures.

8. Establish and maintain procedures for identifying hazards, and assessing and controlling risk	8.1 Identify and develop procedures for routine hazard identification, assessment and control of risks. 8.2 Address identification of all hazards at the planning, design and evaluation stages of any changes in the workplace to ensure that new hazards are not created by the proposed changes. 8.3 Develop and maintain procedures for selection and implementation of risk control measures in accordance with the hierarchy of control. 8.4 Identify inadequacies in existing risk control measures in accordance with the hierarchy of control and, within area of responsibility, promptly provide resources enabling implementation of new measures.

Variable	**Range**
Context	• Persons and organizations engaged in assessing managers in this unit need to have appropriate qualifications and experience in risk management as well as workplace assessment. • Risk management is the systematic process that is directed towards identifying hazards, assessing the risk and developing controls to minimize the risk and monitor the effectiveness of the controls (and taking action as required). • Relevant groups and individuals refers to those personnel who have knowledge about the issue being dealt with and the expertise to assist the decision making process. • External specialist assistance refers to any group or individual in the community who has the expertise to assist the organization to deal with any event/incident which may occur
Risks	Risks may include: • injury or disease • environmental • product failure • financial/economic loss/failure • damage to property/plant/equipment • industrial disputes • professional incompetence • natural disasters • security failure (including criminal or terrorist activities) • equipment/system failures • political events
Legislation	Legislation, codes and national standards relevant to the workplace may include: • award and organization agreements and relevant industrial instruments • relevant legislation from all levels of government that affects business operation, especially in regard to OHS,

	environmental issues, industrial relations and anti-discrimination • relevant industry codes of practice
Risk ranking	• Risk ranking is a highly subjective process of rating risks according to their severity and likelihood. Common ranking systems are based on matrices or nomograms
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. • All operations to which this unit applies are subject to stringent health, safety and environment requirements, which may be imposed through Regional State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and HSE requirements, the HSE requirements take precedence
Hazards	Typical hazards include: • handling chemicals and hazardous materials • chemical and or hazardous materials spillage • gases and liquids under pressure • moving machinery • materials handling • working at heights, in restricted or confined spaces, or environments subjected to heat, noise, dusts or vapors • fire and explosion
Problems	Typical process and product problems may include: • incidents with a potential for injury • fires, explosions • chemical spills • bomb scares
Process parameters	Specific process parameters (primary key words) relevant to the system may include: • flow • temperature • pressure • relief • instrumentation • sampling • addition • safety • reaction • reduce (grind, crush) • absorb • isolate • vent • start-up • composition • phase • level • corrosion • erosion • services • utilities • maintenance/maintain • inserting • purging • contamination • separate (settle, filter, centrifuge) • mix • drain • shutdown

Evidence Guide	

Critical Aspects of Competence	Assessment requires evidence that the candidate:
	• analyzed energy consumed and improvements made should be available
	• understood the workplace systems and the importance of critical procedures
	• applied a working knowledge of all relevant workplace procedures
	• enabled identification of hazards and how hazard controls may break down
	• enhanced the understanding of risks and how it may be reduced
	• permitted the modeling and evaluation of a wide range of failure modes
	• enabled the analysis to be carried out in a manner that
	  ➢ is auditable, repeatable and verifiable
	  ➢ are usable by other staff
	  ➢ are appropriate to the system operating in the given domain
	  ➢ give valid results from data of the quality and quantity actually available
	  ➢ are appropriate for the particular lifecycle phase at which it is to be applied
	  ➢ provide standard pro-formas to support the technique
	  ➢ have a rational technical basis which may include reference to national or international standards, defense standards or published reference books
	• identification of hazards and how hazard controls may break down
	• understanding of risks and how they may be reduced
	• the modeling and evaluation of a wide range of failure modes
	• analysis which is auditable, repeatable, verifiable and usable by other staff
	• analyzing systems appropriate to the system operating in the given domain and appropriate for the particular life cycle phase at which it is to be applied.
	• determining valid results from data of the quality and quantity actually available
	• using of standard pro-formas to support the technique
	• rational technical base which may include reference to national or international standards, defense standards or published reference books

Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • relevant legislation from all levels of government that effects business operation, especially in regard to OHS and environmental issues, industrial relations and anti-discrimination • the legal implications of deeming identified risks as acceptable

	• strategic, tactical and operational plans of the organization • legal requirements for operating the business relevant to the area of responsibility • relevant awards and industrial agreements • workplace standards for OHS and environmental management • internal or external audit methods • focus groups processes • hazard analysis processes • investigation reports • review of data such as hazard and incident reports, maintenance records, production records
Underpinning Skills	Demonstrates skills to: • communicate high level material using all modes of communication to all levels • interpret process plant descriptions and drawings • writing is required to the level of writing reports, policies and procedures • interpret hazard and probability data and determine risk profiles (numeracy interpret and manipulate technical data)
Resource Implications	• Fax machine • Telephone • Writing materials • Internet
Methods of Assessment	• Direct Observation • Oral interview and written test
Context of Assessment	Competency may be assessed individually in the actual workplace or through accredited institution

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Choose Materials for an Application**
Unit Code	**IND CPS4 11 0111**
Unit Descriptor	This unit of competence covers the application of the knowledge of materials characteristics to their properties so enabling the choice of an appropriate material mix for an application

Elements	**Performance Criteria**
1. Determine possible product properties	1.1 Estimate product ***properties*** from different materials and processing conditions 1.2 Predict the impact of different grades of materials/ additives on product properties 1.3 Predict the impact of different processing conditions on product properties
2. Choose materials/material mix for an application	2.1 Select appropriate base materials for an application based on the material properties 2.2 Determine reinforcements/additives required to meet product specification 2.3 Predict failure mechanism for selected mix and modify selection if appropriate 2.4 Identify any health, safety or environmental issues with materials and modify selection if appropriate 2.5 Develop formulation and select appropriate production method
3. Organize testing of product and interpret test results	3.1 Select appropriate tests for product based on test purpose and limitations, and material being tested 3.2 Test color using color coordinates as required 3.3 Interpret test results and modify formulation/production method as required to meet product specification

Variable	**Range**
Procedures	All operations are performed in accordance with standard procedures and work instructions
Standard procedures	Standard procedures refer to: • all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards

Properties	Properties include: • particle size, size distribution, • flow properties, viscosity • chemical composition • bulk density • burnbility • coatbility • moisture content • grindbility • compressive strength • dimensional and thermal stability
Test methods	Test methods include: • chemical, physical/analytical tests • color tests - color coordinates (LAB), color difference (D E)

Evidence Guide	
Critical Aspects of Competency	Assessment requires evidence that the candidate: • demonstrated the ability to recognize and analyze potential situations requiring action and then in implementing appropriate corrective action • demonstrated knowledge of material properties to the selection of appropriate materials to an application
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • chemistry and physics as relevant to the products and process • process and material characteristics sufficient to enable the selection of materials with appropriate base properties including: ➢ property changes caused by different processing methods and conditions ➢ typical processing conditions for typical products ➢ property changes caused by using additives ➢ test methods ➢ properties and applications of materials
Underpinning Skills	Demonstrates skills to: • implementing enterprise standard procedures and policies, relevant regulatory requirements and national/international standards within appropriate time constraints and in a manner relevant to the job • adjusting/correcting/responding to work requirements • identifying and solving problems • working in a team or individually, as required • reading and numeracy to interpret workplace documents and technical information
Resource	• Fax machine and Telephone

Implications	• Writing materials • Internet
Methods of Assessment	• Direct Observation • Oral interview and written test
Context of Assessment	Competency may be assessed individually in the actual workplace or through accredited institution

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Manage Cement Production Operations**
Unit Code	**IND CPS4 12 0111**
Unit Descriptor	This unit covers the knowledge, attitudes and skills required to develop and monitor the implementation of the operational plan and to provide efficient and effective workplace practices within the organization's productivity and profitability plans.

Elements	Performance Criteria
1. Develop operational plan	1.1 Resource requirements are researched, analyzed and documented and an operational plan is developed and/or implemented in consultation with ***relevant personnel, colleagues and specialist resource managers***
	1.2 ***Consultation processes*** are developed and/or implemented as an integral part of the operational planning process
	1.3 **Operational plans** are developed to contribute to the achievement of the organization's performance/business plan
	1.4 Details of the operational plan include the development of ***key performance*** indicators to measure organizational performance
	1.5 ***Contingency pla*ns** are developed and implemented at appropriate stages of operational planning
	1.6 The development and presentation of proposals for resource requirements are assisted by a variety of information sources, and specialist advice is sought as required
2. Plan and schedule work activities	2.1 Tasks/work activities to be completed are identified and prioritized as directed
	2.2 Tasks/work activities are broken down into achievable components in accordance with set time frames
	2.3 ***Resources*** are allocated as per requirements of the activity
	2.4 ***Schedule of work activities*** is coordinated with personnel concerned
3. Plan and manage resource acquisition	3.1 Strategies are developed and implemented to ensure that employees are recruited and/or inducted within the organization's human resource management policies and practices

	3.2 Strategies are developed and implemented to ensure that physical resources and services are acquired in accordance with the ***organization's policies, practices and procedures***
4. Monitor and review operations	4.1 Performance systems and processes are developed, monitored and reviewed to assess progress in achieving profit and productivity plans and targets 4.2 Budget and actual financial information is analyzed and interpreted to monitor and review profit and productivity performance 4.3 Areas of underperformance are identified, solutions recommended, and prompt action is taken to rectify the situation 4.4 Implementation of developed systems are monitored to ensure that mentoring and coaching are provided to support individuals and teams to use resources effectively, economically and safely 4.5 Recommendations for variations to operational plans are negotiated and approved by designated persons/groups 4.6 Systems are developed and implemented to ensure that procedures and records associated with documenting performance are managed in accordance with the organization's requirements
5. Review and evaluate work performance	5.1 Work plans, strategies and implementation are reviewed based on accurate, relevant and current information 5.2 Review is based on comprehensive consultation with appropriate personnel on outcomes of work plans and reliable feedback 5.3 Results of review are provided to concerned parties and formed as the basis for adjustments/simplifications to be made to policies, processes and activities 5.4 Performance appraisal is conducted in accordance with organization rules and regulations 5.5 Performance appraisal report is prepared and documented regularly as per organization requirements. 5.6 Recommendations are prepared and presented to appropriate personnel/authorities 5.7 ***Feedback mechanisms*** are implemented in line with organization policies

Variable	Range
Relevant personnel, colleagues and specialist resource managers	• managers • supervisors • other employees • OHS committee(s) and other people with specialist • responsibilities • union or employee representatives • people at the same level or more senior managers • people from a wide range of social, cultural and ethnic Backgrounds
Consultation processes	• meetings, interviews, brainstorming sessions, email/internet communications, newsletters or other processes and devices which ensure that all employees have the opportunity to contribute to team and individual operational plans • mechanisms used to provide feedback to the work team in relation to outcomes of consultation
Operational plans	• tactical plans developed by the department or section to detail product and service performance • organizational plans
Key performance indicators	• measures for monitoring or evaluating the efficiency or effectiveness of a system which may be used to demonstrate accountability and to identify areas for improvements
Contingency plans	• rental, hire purchase or alternative means of procurement of required materials, equipment and stock • contracting out or outsourcing human resource and other functions or tasks • restructuring of organization to reduce labour costs • strategies for reducing costs, wastage, stock or consumables • diversification of outcomes • recycling and re-use • finding cheaper or lower quality raw materials and consumables • seeking further funding • increasing sales or production • risk identification, assessment and management processes • succession planning
Organization's policies, practices and procedures	• those organizational guidelines which govern and prescribe operational functions, such as the acquisition and management of human and physical resources • standard operating procedures • undocumented practices in line with organizational operations • organizational culture

Designated persons/groups	• managers or supervisors whose roles and responsibilities include decision making on operations • other work groups or teams whose work will be affected by recommendations for variations • groups designated in workplace policies and procedures • other stakeholders such as Board members
Feedback mechanisms	Feedback mechanisms include: • verbal feedback • informal feedback • formal feedback • questionnaire • survey • group discussion

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • developing operational plan • planning and managing resource acquisition • monitoring and reviewing operational performance
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination • the principles and techniques involved in the management and organization of: ▪ planning and managing operations ▪ consultation and communication ▪ contingency planning ▪ resource planning and acquisition ▪ resource management systems ▪ budgeting and financial analysis and interpretation ▪ monitoring and review of performance systems and processes ▪ reporting performance ▪ problem identification and resolution ▪ alternative approaches to improving resource usage and ▪ eliminating resource inefficiencies and waste ▪ ways of supporting individuals/teams who have difficulty ▪ in performing to the required standard
Underpinning Skills	Demonstrates skills to: • relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities • functional literacy skills to access and use workplace information • monitor and review a safe workplace and environment • access and use feedback to improve operational performance • prepare recommendations to improve operational plans • access and use established systems and processes

	• coach and mentor skills to provide support to • colleagues
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: • Interview/Written Test • Observation/Demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Establish Quality standards**
Unit Code	**IND CPS4 13 0111**
Unit Descriptor	This unit covers the knowledge, attitudes and skills required to monitor quality of work, establish quality specifications for work outcomes, participate in maintaining and improving quality at work, identify hazards and critical control points in the operation, assist in planning of quality assurance procedures, report problems that affect quality and implement quality assurance procedures

Elements	Performance Criteria
1. Establish quality specifications for product/ service	1.1 Market specifications are **sourced** and ***legislated requirements*** identified. 1.2 Quality specifications developed and agreed upon 1.3 Quality specifications are documented and introduced to organization staff / personnel in accordance with the organization policy 1.4 Quality specifications are updated when necessary
2. Identify hazards and critical control points	2.1. Critical control points impacting on quality are identified. 2.2. Degree of risk for each hazard is determined. 2.3. Necessary documentation is accomplished in accordance with organization quality procedures
3. Assist in planning of quality assurance procedures	3.1 Procedures for each identified control point are developed to ensure optimum quality. 3.2 Hazards and risks are minimized through application of appropriate controls. 3.3 Processes to monitor the effectiveness of quality assurance procedures are developed.
4. Implement quality assurance procedures	4.1 Responsibilities for carrying out procedures are allocated to staff and contractors. 4.2 Instructions are prepared in accordance with the enterprise's quality assurance program. 4.3 Staff and contractors are given induction training on the quality assurance policy. 4.4 Staff and contractors are given in-service training relevant to their allocated procedures.
5. Monitor quality	5.1 Quality requirements are identified

of product	5.2 Inputs are inspected to confirm capability to meet quality requirements 5.3 Work is conducted to produce required product 5.4 Work processes are monitored to confirm quality of product and/or service 5.5 Processes are adjusted to maintain product within specification.
6. Participate in maintaining and improving quality at work	6.1 Work area, ***materials, tools and equipment***, processes and product are routinely monitored to ensure compliance with quality requirements 6.2 Non-conformance in inputs, process, product and/or service is identified and reported according to workplace reporting requirements 6.3 Corrective action is taken within level of responsibility, to maintain quality standards 6.4 Quality issues are raised with designated personnel
7. Report problems that affect quality	7.1 Recognize potential or existing quality problems. 7.2 Identify instances of variation in quality from specifications or work instructions. 7.3 Report variation and potential problems to supervisor/manager according to enterprise guidelines.

Variable	**Range**
Sourced	• end-users • customers or stakeholders
Legislated requirements	• Verification of product quality as part of consumer legislation or specific legislation related to product content or composition.
Safety procedures.	• use of tools and equipment for operation • workplace environment and handling of material safety, • following occupational health and safety procedures designated for the task • respect the policies, regulations, legislations, rule and procedures for operation
Materials	may include but not limited to • sand stone • limestone • clay • gypsum • pumice
Tools and Equipment	may include but not limited to • hand tools

	• personal protective equipments • kiln • grinding mill • crusher • packing machine

Evidence Guide	
Critical Aspect of Competence	Assessment requires evidence that the candidate: • Monitored quality of work • Established quality specifications for product • Participated in maintaining and improving quality at work • Identified hazards and critical control points in the operation • Assisted in planning of quality assurance procedures • Reported problems that affect quality • Implemented quality assurance procedures
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Electrical machine and instrumentation policies and procedures • Applying federal, regional state or territory legislation within day-today work activities • Accessing and using management systems to keep and maintain accurate records
Underpinning Skills	Demonstrates skills in: • Monitoring quality of work • Establishing quality specifications for product • Participating in maintaining and improving quality at work • Identifying hazards and critical control points in the operation • Assisting in planning of quality assurance procedures • Reporting problems that affect quality • Implementing quality assurance procedures
Resource Implications	The following resources must be provided: • Workplace or fully equipped environment with necessary tools and equipment as well as consumable materials
Assessment Methods	Competence may be assessed through: • interview/ written exam / oral questioning • observation/demonstration
Context of Assessment	Competence may be assessed in the workplace or in a simulated work place setting

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Utilize Specialized Communication Skills**
Unit Code	**IND CPS4 14 0111**
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to use specialized communication skills to meet specific needs of internal and external clients, conduct interviews, facilitate group discussions, and contribute to the development of communication strategies.

Elements	**Performance Criteria**
1. Meet common and specific communication needs of clients and colleagues	1.1 Specific communication needs of clients and colleagues are identified and met 1.2 Different approaches are used to meet communication needs of clients and colleagues 1.3 Conflict is addressed promptly and in a timely way and in a manner which does not compromise the standing of the organization
2. Contribute to the development of communication strategies	2.1 ***Strategies*** for internal and external dissemination of information are developed, promoted, implemented and reviewed as required 2.2 Channels of communication are established and reviewed regularly 2.3 Coaching in effective communication is provided 2.4 Work related network and relationship are maintained as necessary 2.5 Negotiation and conflict resolution strategies are used where required 2.6 Communication with clients and colleagues is appropriate to individual needs and organizational objectives

3. Represent the organization	3.1 When participating in internal or external forums, presentation is relevant, appropriately researched and presented in a manner to promote the organization 3.2 Presentation is clear and sequential and delivered within a predetermined time 3.3 Utilize appropriate media to enhance presentation 3.4 Differences in views are respected 3.5 Written communication is consistent with organizational standards 3.6 Inquiries are responded in a manner consistent with organizational standard
4. Facilitate group discussion	4.1 Mechanisms which enhance ***effective group interaction*** is defined and implemented 4.2 Strategies which encourage all group members to participate are used routinely 4.3 Objectives and agenda for meetings and discussions are routinely set and followed 4.4 Relevant information is provided to group to facilitate outcomes 4.5 Evaluation of group communication strategies is undertaken to promote participation of all parties 4.6 Specific communication needs of individuals are identified and addressed
5. Conduct interview	5.1 A range of appropriate communication strategies are employed in ***interview situations*** 5.2 Records of interviews are made and maintained in accordance with organizational procedures 5.3 Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated

Variable	**Range**
Strategies	• Recognizing own limitations • Utilizing techniques and aids • Providing written drafts • Verbal and non verbal communication
Effective group interaction	• Identifying and evaluating what is occurring within an interaction in a non judgmental way • Using active listening • Making decision about appropriate words, behavior • Putting together response which is culturally appropriate • Expressing an individual perspective • Expressing own philosophy, ideology and background and

	exploring impact with relevance to communication
Types of Interview	• Related to staff issues • Routine • Confidential • Evidential • Non disclosure • Disclosure
Interview situations	• Establish rapport • obtain facts and information • Facilitate resolution of issues • Develop action plans • Diffuse potentially difficult situation

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • demonstrated effective communication skills with clients accessing service and work colleagues • adopted relevant communication techniques and strategies to meet client particular needs and difficulties
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Communication process • Dynamics of groups and different styles of group leadership • communication skills relevant to client groups
Underpinning Skills	Demonstrates skills to: • full range of communication techniques including: ▪ Full range of communication ▪ Active listening ▪ Feedback ▪ Interpretation ▪ Role boundaries setting ▪ Negotiation ▪ Establishing empathy • communication skills required to fulfill job roles as specified by the organization
Resource Implications	Access to appropriate workplace where assessment can take place
Methods of Assessment	Competence may be assessed through • Direct observation • Oral Interview
Context for Assessment	Competence may be assessed in the workplace or in a simulated work place setting

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Develop Individuals and Teams**
Unit Code	**IND CPS4 15 0111**
Unit Descriptor	This unit covers the skills, knowledge and attitudes required to determine individual and team development needs and facilitate the development of the workgroup.

Elements	Performance Criteria
1. Provide team leadership	1.1 ***Learning and development needs*** are systematically identified and implemented in line with ***organizational requirements*** 1.2 Learning plan to meet individual and group training and developmental needs is collaboratively developed and implemented 1.3 Individuals are encouraged to self evaluate performance and identify areas for improvement 1.4 ***Feedback on performance*** of team members is collected from relevant sources and compared with established team learning process
2. Foster individual and organizational growth	2.1 Learning and development program goals and objectives are identified to match the specific knowledge and skills requirements of competency standards 2.2 ***Learning delivery methods*** are appropriate to the learning goals, the learning style of participants and availability of equipment and resources 2.3 Workplace learning opportunities and coaching/ mentoring assistance are provided to facilitate individual and team achievement of competencies 2.4 Resources and timelines required for learning activities are identified and approved in accordance with organizational requirements
3. Monitor and evaluate workplace learning	3.1 Feedback from individuals or teams is used to identify and implement improvements in future learning arrangements 3.2 Outcomes and performance of individuals/teams are assessed and recorded to determine the effectiveness of development programs and the extent of additional support 3.3 Modifications to learning plans are negotiated to improve the efficiency and effectiveness of learning 3.4 Records and reports of competency are maintained within organizational requirement

4. Develop team commitment and cooperation	4.1 Open communication processes to obtain and share information is used by team 4.2 Decisions are reached by the team in accordance with its agreed roles and responsibilities 4.3 Mutual concern and camaraderie are developed in the team
5. Facilitate accomplishment of organizational goals	5.1 Team members actively participated in team activities and communication processes 5.2 Teams members developed individual and joint responsibility for their actions 5.3 Collaborative efforts are sustained to attain organizational goals

Variable	**Range**
Learning and development needs	• Coaching, monitoring and/or supervision • Formal/informal learning program • Internal/external training provision • Work experience/exchange/opportunities • Personal study • Career planning/development • Performance evaluation • Workplace skills assessment • Recognition of prior learning
Organizational requirements	• Quality assurance and/or procedures manuals • Goals, objectives, plans, systems and processes • Legal and organizational policy/guidelines and requirements • Safety policies, procedures and programs • Confidentiality and security requirements • Business and performance plans • Ethical standards • Quality and continuous improvement processes and standards
Feedback on performance	• Formal/informal performance evaluation • Obtaining feedback from supervisors and colleagues • Obtaining feedback from clients • Personal and reflective behavior strategies • Routine and organizational methods for monitoring service delivery
Learning delivery methods	• On the job coaching or monitoring • Problem solving • Presentation/demonstration • Formal course participation • Work experience

	• Involvement in professional networks • Conference and seminar attendance

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: • identified and implemented learning opportunities for others • gave and received feedback constructively • facilitated participation of individuals in the work of the team • negotiated learning plans to improve the effectiveness of learning • prepared learning plans to match skill needs • accessed and designated learning opportunities
Underpinning Knowledge and Attitude	Demonstrates knowledge of: • coaching and monitoring principles • understanding how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective • understanding how to facilitate team development and improvement • understanding methods and techniques to obtain and interpreting feedback • understanding methods for identifying and prioritizing personal development opportunities and options • knowledge of career paths and competency standards in the industry
Underpinning Skills	Demonstrates skills to: • ability to read and understand a variety of texts, prepare general information and documents according to target audience; spell with accuracy; use grammar and punctuation effective relationships and conflict management • communication skills including receiving feedback and reporting, maintaining effective relationships and conflict management • planning skills to organize required resources and equipment to meet learning needs • coaching and mentoring skills to provide support to colleagues • reporting skills to organize information; assess information for relevance and accuracy; identify and elaborate on learning outcomes • facilitation skills to conduct small group training sessions • ability to relate to people from a range of social, cultural, physical and mental backgrounds
Resource Implications	Access to relevant workplace or appropriately simulated environment where assessment can take place
Assessment	Competence may be accessed through:

Methods	• Interview / Written exam • Observation / Demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Migrate to New Technology**
Unit Code	**IND CPS4 16 0111**
Unit Descriptor	This unit defines the competence required to apply skills and knowledge in using new or upgraded technology. The rationale behind this unit emphasizes the importance of constantly reviewing work processes, skills and techniques in order to ensure that the quality of the entire business process is maintained at the highest level possible through the appropriate application of new technology. To this end, the person is typically engaged in on-going review and research in order to discover and apply new technology or techniques to improve aspects of the organization's activities.

Elements	Performance Criteria
1. Apply existing knowledge and techniques to technology and transfer	1.1 Situations are identified where existing knowledge can be used as the basis for developing new skills. 1.2 New or upgraded technology skills are acquired and used to enhance learning. 1.3 New or upgraded equipment are identified, classified and used where appropriate, for the benefit of the organization.
2. Apply functions of technology to assist in solving organizational problems	2.1 Testing of new or upgraded ***equipment*** is conducted according to the specification manual. 2.2 Features of new or upgraded equipment are applied within the organization 2.3 Features and functions of new or upgraded equipment is used for solving organizational problems 2.4 ***Sources of information*** is accessed and used relating to new or upgraded equipment
3. Evaluate new or upgraded technology performance	3.1 New or upgraded equipment is evaluated for performance, usability and against OHS standards**.** 3.2 ***Environmental considerations*** are determined from new or upgraded equipment. 3.3 ***Feedback*** is sought from users where appropriate.

Variable	Range
Environmental Considerations	May include but is not limited to recycling, safe disposal of packaging (e.g. cardboard, polystyrene, paper, plastic) and correct disposal of waste materials by an authorized body
Feedback	May include surveys, questionnaires, interviews and meetings.

Evidence Guide	
Critical Aspects of Competence	Competence must confirm the ability to transfer the application of existing skills and knowledge to new technology
Underpinning Knowledge and Attitudes	• Broad awareness of current technology trends and directions in construction industry (e.g. systems/procedures, services, new developments, new protocols) • Knowledge of vendor product directions • Assess and analyze value chain • Ability to locate appropriate sources of information regarding building construction and new technologies • Current industry products/services, procedures and techniques with knowledge of general features • Information gathering techniques
Underpinning Skills	• Research skills for identifying broad features of new technologies • Ability to assist in the decision making process • Literacy skills in regard to interpretation of technical manuals • Ability to solve known problems in a variety of situations and locations • Evaluate and apply new technology to assist in solving organizational problems • General analytical skills in relation to known problems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test / Oral Questioning • Observation / Demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

TOP

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Manage and Maintain Small/Medium Business Operations**
Unit Code	**IND CPS4 17 0111**
Unit Descriptor	This unit covers the operation of day-to-day business activities in a micro or small business. The strategies involve developing, monitoring and managing work activities and financial information, developing effective work habits, and adjusting work schedules as needed.

Elements	Performance Criteria
1. Identify daily work requirements	1.1 Work requirements for a given time period are identified taking into consideration ***resources*** and constraints 1.2 Work activities are prioritized based on business needs, requirements and deadlines 1.3 If appropriate, work is allocated to relevant staff or contractors to optimize efficiency
2. Monitor and manage work	2.1 People, resources and/or equipment are coordinated to provide optimum results 2.2 Staff, clients and/or contractors are communicated within a clear and regular manner, to monitor work in relation to ***business goals*** or timelines 2.3 ***Problem solving techniques*** are applied to work situations to overcome difficulties and achieve positive outcomes
3. Develop effective work habits	3.1 Work and personal priorities are identified and a balance is achieved between competing priorities using appropriate ***time management strategies*** 3.2 Input from ***internal and external sources*** is sought and used to develop and refine new ideas and approaches 3.3 Business or inquiries are responded to promptly and effectively 3.4 Information is presented in a format appropriate to the industry and audience
4. Interpret financial information	4.1 Relevant documents and reports are identified 4.2 Documents and reports are read and understood and any implications discussed with appropriate persons 4.3 Data and numerical calculations are analyzed, checked, evaluated, organized and reconciled 4.4 Daily financial records and cash flow are maintained correctly and in accordance with legal and accounting

	requirements 4.5 Invoices and payments are prepared and distributed in a timely manner and in accordance with legal requirements 4.6 Outstanding accounts are collected or followed-up on
5. Evaluate work performance	5.1 Opportunities for improvements are monitored according to business demands 5.2 Work schedules are adjusted to incorporate necessary modifications to existing work and routines or changing needs and requirements 5.3 Proposed changes are clearly communicated and recorded to aid in future planning and evaluation 5.4 Relevant codes of practice are used to guide an ethical approach to workplace practices and decisions

Variable	**Range**
Resources may include:	• staff • money • time • equipment • space
Business goals may include:	• sales targets • budgetary targets • team and individual goals • production targets • reporting deadlines
Problem solving techniques may include:	• gaining additional research and information to make better informed decisions • looking for patterns • considering related problems or those from the past and how they were handled • eliminating possibilities • identifying and attempting sub-tasks • collaborating and asking for advice or help from additional sources
Time management strategies may include:	• prioritizing and anticipating • short term and long term planning and scheduling • creating a positive and organized work environment • clear timelines and goal setting that is regularly reviewed and adjusted as necessary • breaking large tasks into smaller tasks • getting additional support if identified and necessary
Internal and external sources may include:	• staff and colleagues • management, supervisors, advisors or head office • relevant professionals such as lawyers, accountants, management consultants • professional associations

Evidence Guide	
Critical Aspects of Competence	A person must be able to demonstrate: • ability to identify daily work requirements and allocate work appropriately • ability to interpret financial documents in accordance with legal requirements
Underpinning Knowledge and Attitudes	• Federal and Local Government legislative requirements affecting business operations, especially in regard to occupational health and safety (OH&S), equal employment opportunity (EEO), industrial relations and anti-discrimination • technical or specialist skills relevant to the business operation • relevant industry code of practice • planning techniques to establish realistic timelines and priorities • identification of relevant performance measures • quality assurance principles and methods • relevant marketing, management, sales and financial concepts • methods for monitoring performance and implementing improvements • structured approaches to problem solving, idea management and time management
Underpinning Skills	• literacy skills to interpret legal requirements, company policies and procedures and immediate, day-to-day demands • communication skills including questioning, clarifying, reporting, and giving and receiving constructive feedback • numeracy skills for performance information, setting targets and interpreting financial documents and reports • technical and analytical skills to interpret business documents, reports and financial statements and projections • ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities • problem solving skills to develop contingency plans • using computers and software packages to record and manage data and to produce reports • evaluation skills for assessing work and outcomes • observation skills for identifying appropriate people, resources and to monitor work
Resource Implications	The following resources should be provided: • Access to relevant workplace documentation, financial records, and equipment
Methods of Assessment	Competence may be assessed through: • Interview / Written exam • Observation/Demonstration with Oral questioning
Context for Assessment	Competence may be assessed in the workplace or in a simulated work environment

Occupational Standard: Cement Technical Production Supervision Level IV	
Unit Title	**Manage Continuous Improvement System**
Unit Code	**IND CPS4 18 1012**
Unit Descriptor	This unit describes the performance outcomes, skills and knowledge required to sustain and develop an environment in which continuous improvement, innovation and learning are promoted and rewarded.

Elements	Performance Criteria
1. Review programs, systems and processes	1.1 Establish strategies to monitor and evaluate performance of key systems and processes 1.2 Undertake detailed analyses of supply chains, operational and product/service delivery systems 1.3 Identify performance measures, and assessment tools and techniques, and evaluate their effectiveness 1.4 Analyze performance reports and variance from plans for all key result areas of the organization 1.5 Identify and analyze changing trends and opportunities relevant to the organization 1.6 Seek advice from specialists, where appropriate, to identify technology and electronic commerce opportunities
2. Develop options for continuous improvement	2.1 Brief groups on performance improvement strategies and innovation as an essential element of competition 2.2 Foster ***creative climate*** and ***organizational learning*** through the promotion of interaction within and between work groups 2.3 Encourage, test and recognize new ideas and entrepreneurial behavior where successful 2.4 Accept failure of an idea during trialing, and recognize, celebrate and embed success into systems 2.5 Undertake ***risk management*** and ***cost benefit analyses*** for each option/idea approved for trial 2.6 Approve innovations through agreed organizational processes
3. Implement innovative processes	3.1 Promote continuous improvement as an essential part of doing business 3.2 Address impact of change and consequences for people, and implement transition plans 3.3 Ensure objectives, timeframes, measures and communication plans are in place to manage

	implementation 3.4 Implement contingency plans in the event of non-performance 3.5 Follow-up failure by prompt investigation and analysis of causes 3.6 Manage emerging challenges and opportunities effectively 3.7 Evaluate continuous improvement systems and processes regularly 3.8 Communicate costs and benefits of innovations and improvements to all relevant groups and individuals

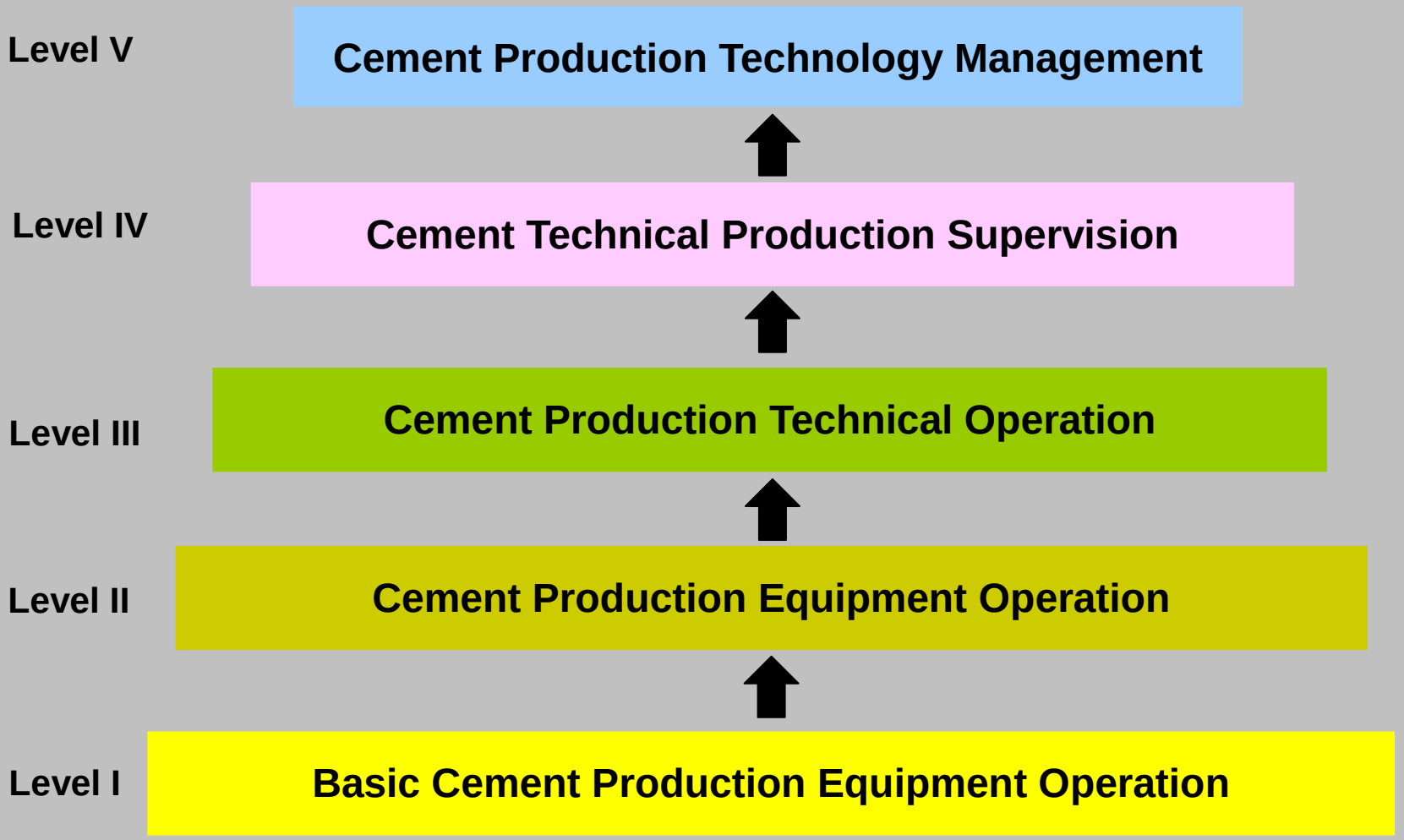
Variable	**Range**
Sustainability may include:	• addressing environmental and resource sustainability initiatives, such as environmental management systems, action plans, green office programs, surveys and audits • applying the waste management hierarchy in the workplace • complying with regulations and corporate social responsibility considerations for sustainability to enhance the organization's standing in business and community environments • determining organization's most appropriate waste treatment, including waste to landfill, recycling, re-use, recoverable resources and wastewater treatment • implementing ecological footprint • implementing environmental management systems, e.g. ISO 14001:1996 Environmental management systems life cycle analyses • implementing government initiatives, • improving resource and energy efficiency • initiating and maintaining appropriate organizational procedures for operational energy consumption • introducing a green office program - a cultural change program • introducing green purchasing • introducing national and international reporting initiatives, • introducing product stewardship • reducing emissions of greenhouse gases • reducing use of non-renewable resources • referencing standards, guidelines and approaches, such as sustainability covenants and compacts or triple bottom line reporting • supporting sustainable supply chain
Supply chains include:	• network of facilities that procures raw materials, transforms them into intermediate products or services and then

	finished goods or service, and delivers them through a distribution system • procurement, production and distribution, viewed as interlinked not as discrete elements
Performance reports may include:	• budget or cost variance • customer service • environmental • financial • OHS • quality • other operating parameters

Evidence Guide	
Critical Aspects of Competence	Evidence of the following is essential: • demonstration of consultation processes to introduce or evaluate an existing continuous improvement process or system, including suggested actions or an action plan • generation of an idea or concept which exhibits creative thinking and which offers the possibility of advantaging the organization • how the concept or idea was introduced, tested and evaluated - the idea or concept does not have to have been shown to work or to be adopted by the business • knowledge of quality management and continuous improvement theories
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • quality management and continuous improvement theories • creativity/innovation theories/concepts • risk management • cost-benefit analysis methods • creativity and innovation theories and concepts • organizational learning principles • quality management and continuous improvement theories • risk management • sustainability practices
Underpinning Skills	Demonstrates skills to: • analytical skills to identify improvement opportunities in relation to • the services/products delivered or concepts/ideas developed • flexibility and creativity skills to think laterally • leadership skills to foster a commitment to quality and an openness to innovation • teamwork and leadership skills to foster a commitment to quality and an openness to innovation

Resources Implication	Access may be required to: • workplace procedures and plans relevant to work area • appropriate documentation and resources normally used in the workplace
Methods of Assessment	Competence in this unit may be assessed by using a combination of the following to generate evidence: • demonstration in the workplace • suitable simulation • oral or written questioning to assess knowledge of principles and techniques associated with change management • evaluation of strategies established to monitor and evaluate performance of key systems and processes • review of briefing of groups on performance improvement strategies and innovation Those aspects of competence dealing with improvement processes could be assessed by the use of suitable simulations and/or a pilot plant and/or a range of case studies and scenarios. In all cases, practical assessment should be supported by questions to assess essential knowledge and those aspects of competence which are difficult to assess directly.
Context of Assessment	Competence may be assessed in the work place or in a simulated workplace setting / environment.

Sector: Industry Development
Sub-Sector: Cement Production



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