

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Introduction

Qualifications Pack- Supervisor R&D Testing

SECTOR: AUTOMOTIVE

SUB-SECTOR: R&D

OCCUPATION: TESTING AND VALIDATION

JOB ROLE: SUPERVISOR R & D TESTING

REFERENCE ID: ASC/Q6504

ALIGNED TO: NCO-2004/Nil

Brief Job Description: Individuals at this job need to be responsible for the indoor testing and validation activities in R&D for developing final products conforming to the customer requirements

Personal Attributes: This job requires the individual to be able to coordinate internally and externally within the organization. The individual should be result oriented, and possess strong observation & interpretation skills. The individual should also be able to demonstrate skills for mathematical reasoning, customer orientation, lateral thinking and communication.

Job Details

Qualifications Pack Code	ASC/Q 6502		
Job Role	Supervisor -R&D Testing		
Credits(NSQF) [OPTIONAL]	TBD	Version number	1.1
Sector	Automotive	Drafted on	13/09/13
Sub-sector	R&D Support	Last reviewed on	27/09/13
Occupation	Testing and Validation	Next review date	30/09/15

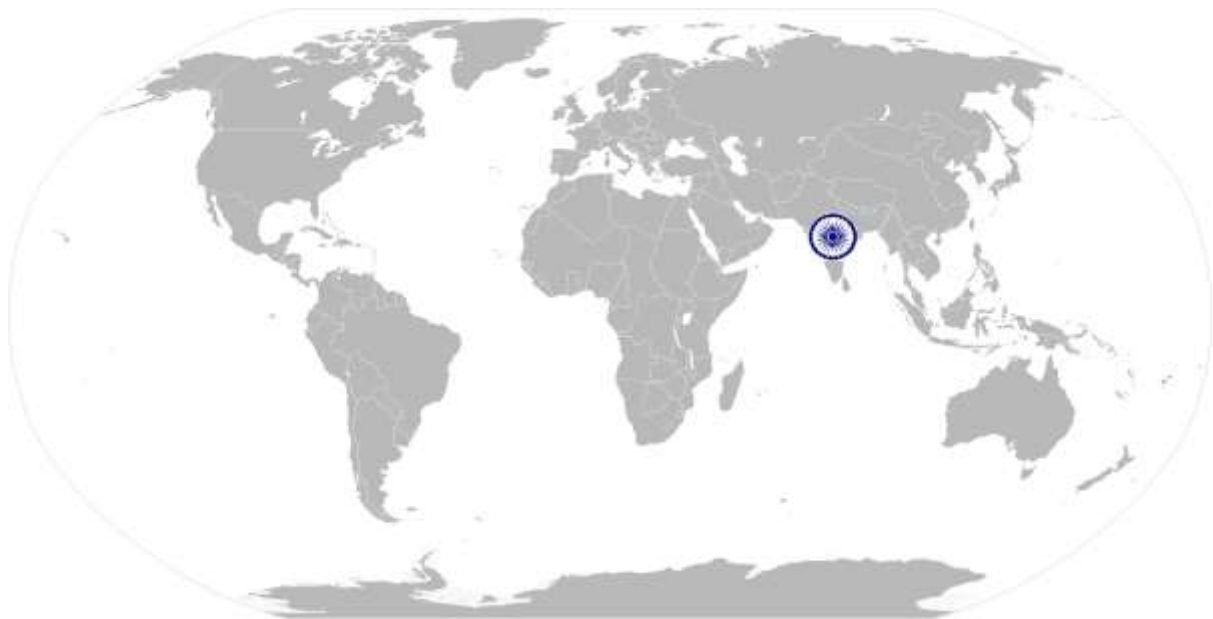
Job Role	Supervisor-R&D Testing
Role Description	testing and validation for development of products meeting customer specifications
NSQF level	5
Minimum Educational Qualifications*	B. Tech/Diploma in Mechanical/Electrical/Electronics Engineering
Maximum Educational Qualifications*	Not Applicable
Training (Suggested but not mandatory)	<ul style="list-style-type: none"> Compulsory: PLM database application, NA Lab View software for lab testing, stress analysis techniques ,testing and validation techniques like FEA, product/components testing methods – Bench & Vehicle, knowledge of TS16949/ISO14001/EMS systems Voluntary: Information flow systems like ERP/SAP
Experience	<ul style="list-style-type: none"> ASDC Level 4 design or testing or minimum 10 years in R&D department
Applicable National Occupational Standards (NOS)	<p>Compulsory:</p> <p>ASC/N6508. Perform testing and validation of prototypes</p> <p>ASC/N6509. Monitor R&D lab testing activities</p> <p>ASC/N0006. Maintain a safe, clean and secure working environment</p> <p>ASC/N0022 Ensure implementation of 5S activities at the shop floor & the office area</p> <p>Optional: N.A.</p>
Performance Criteria	As described in the relevant OS units

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or an area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Sub-function	Sub-functions are sub-activities essential to fulfill the achieving the objectives of the function.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance criteria are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (OS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding	Knowledge and understanding are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.

Core Skills/ Generic Skills	Core skills or generic skills are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Keywords /Terms	Description
NOS	National Occupational Standard(s)
NVQF	National Vocational Qualifications Framework
NSQF	National Qualifications Framework
NVEQF	National Vocational Education Qualifications Framework
QP	Qualifications Pack
HSE	Health , Safety and Environment
EMS	Environmental Management System
FEA	Finite Element Analysis
CAD	Computer Aided Design
CAE	Computer Aided Engineering
PRO-E	Pro-Engineer

ASC/N6508. Perform testing and validation of prototype

National Occupational Standards



Overview

This unit is about performing testing and validation of prototype for the product and individual components in R&D department

ASC/N6508. Perform testing and validation of prototype

National Occupational Standard

Unit Code	ASC/N6508
Unit Title (Task)	Perform testing and validation of prototype
Description	This OS unit is about the individual testing and validating the prototype for product/individual components
Scope	<p>The unit/ task covers the following:</p> <ul style="list-style-type: none"> • testing and validation of prototype • resource management for testing and validation
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Testing and Validation	<p>To be competent, the user/individual on the job must be able to</p> <p>PC1. monitor and gather data related to field failures , warranty issues etc. from Marketing , Manufacturing, Quality department to formulate & co –relate test cycles with real life data</p> <p>PC2. collate all the data and identify the patterns like the failures pertaining to frequent material failures for the individual components, abuse of the final product, type of frequent failures etc.</p> <p>PC3. simultaneously identify the the requirements and specifications which need to be validated for prototype of product /various components from SOR , discussions with R & D /NPD teams etc.</p> <p>PC4. identify testing required for systems like styling, vibration, painting , electronics, design, chassis, electrical, powertrain & classify the same to be done on bench, vehicle etc.</p> <p>PC5. safeguard the facilities for building physical prototypes and then execute tests and/or assigning resources to develop models and run simulations</p> <p>PC6. translate design requirements into a set of test cases with loads and constraints that can be digitally and/or physically measured & /or have a basis in the International/National test standards</p> <p>PC7. additionally, develop new test configurations (which may be mechanical, electrical, and/or software-based) given the latest engineering design (e.g., modifications to geometry, materials, substituted components) using techniques like Design of Experiments (DOE)</p> <p>PC8. As required, design fixture and rigs/facilities to support testing</p> <p>PC9. setup and execute the digital simulation model or the physical tests across all functional domains using standard operating procedures</p> <p>PC10. use physical test data for defining material properties, boundary conditions and initial conditions for simulations for analysis software. .</p> <p>PC11. use physical test data to create functional model of product</p>

ASC/N6508. Perform testing and validation of prototype

	<p>PC12. document the results of the physical or digital tests in reports, indicating the satisfaction of requirements and specifications</p> <p>PC13. correlate the physical data with simulation results</p> <p>PC14. use physical test to validate or calibrate simulation results, such as pressure, flow, stress, strain, vibration and force from analysis software</p> <p>PC15. perform stress analysis on the material of prototype using techniques like 2D , 3D modeling through Finite Element Analysis (FEA) simulation methodology in coordination with Metallurgy department</p> <p>PC16. document the correlation between simulation and physical tests</p> <p>PC17. analyze the results obtained to identify passed/failed requirements</p> <p>PC18. suggest and implement recommendations for failures that were encountered in concurrence with R&D team members.</p> <p>PC19. in case of development of the new product , share the findings of the testing and validation of prototype with the NPD department</p>
Resource management	<p>To be competent , the user/individual on the job must be able to:</p> <p>PC20.ensure the procurement of new test equipments/facilities/rigs etc. in coordination with Sourcing department from the approved vendors</p> <p>PC21.seek approval for recruitment of sufficient amount of staff in coordination with HR department for carrying out the various testing and validation activities</p> <p>PC22.ensure that the new joiners are trained by the existing staff members in an efficient and timely manner</p> <p>PC23.prepare the annual budget and seek approval from senior management</p> <p>PC24.prepare MIS report for R&D testing and validation on monthly basis</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. product portfolio of organization</p> <p>KA2. the manufacturing processes of organization</p> <p>KA3. policies and procedures for preservation of test facilities</p> <p>KA4. policies , compliances and systems followed for HSE</p> <p>KA5. TS-16949/ISO14001/any other EMS system guidelines followed in the organization</p> <p>KA6. New Product development protocol and methodology</p>
B. Technical Knowledge	<p>The individual on the job needs to have knowledge of:</p> <p>KB1. manufacturing process being followed for each product</p> <p>KB2. testing and validation procedures for R&D</p> <p>KB3. stress analysis techniques application knowledge</p> <p>KB4. simulation softwares used for validation</p> <p>KB5. data analysis tools like 8Ds , five why analysis etc.</p> <p>KB6. documentation requirements for testing and validation</p> <p>KB7. documentation requirements for TS-16949/QMS system followed</p> <p>KB8. standard room parameters and requirements</p>

ASC/N6508. Perform testing and validation of prototype

	<p>KB9. testing equipments operational knowledge</p> <p>KB10. information systems like SAP, ERP etc.</p>
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Reading and Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. understand the drawings for physical prototype and interpret the key characteristics like dimensions, profile, material etc</p> <p>SA2. prepare the dimension testing reports for the prototype</p> <p>SA3. understand the inspection reports of the Metallurgy departments</p> <p>SA4. interpret the validation simulation results</p> <p>SA5. prepare the testing and validation reports</p>
	Communication skills
	<p>The user/ individual on the job needs to know and understand how to communicate with:</p> <p>SA6. the concerned departments for collating data pertaining to field failures , warranty issues</p> <p>SA7. senior management for updating the progress and seeking support</p> <p>SA8. team members for reviewing the progress of day to day activities</p>
	Teamwork and multitasking
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA9. distribute workload for ensuring smooth progress of prototype validation and inspection activity within the desired timelines</p> <p>SA10.coordinate with various departments like Metallurgy, Manufacturing, process Quality etc. based on the requirement</p> <p>SA11.share operation knowledge with colleagues</p>
B. Professional Skills	Problem Solving
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1.think through and devise the countermeasure for resolution for any issue related to mismatch between physical test and simulation data</p> <p>SB2. work on actions to be taken on immediate basis in case of frequent failures during the usage of product/individual component in field</p> <p>SB3. resolve issues related to FEA analysis implementation</p> <p>SB4. devise and implement interim/permanent countermeasures for the non-conformities observed during the product and the process audit based on the severity</p> <p>SB5. brainstorm the reasons for abnormal special causes identified in SPC analysis for the unstable processes and devise their countermeasures</p>
	Critical thinking
	<p>The user/individual on the job needs to know how to:</p> <p>SB6. identify problems (technical and non-technical), disruptions and delays</p>

ASC/N6508. Perform testing and validation of prototype

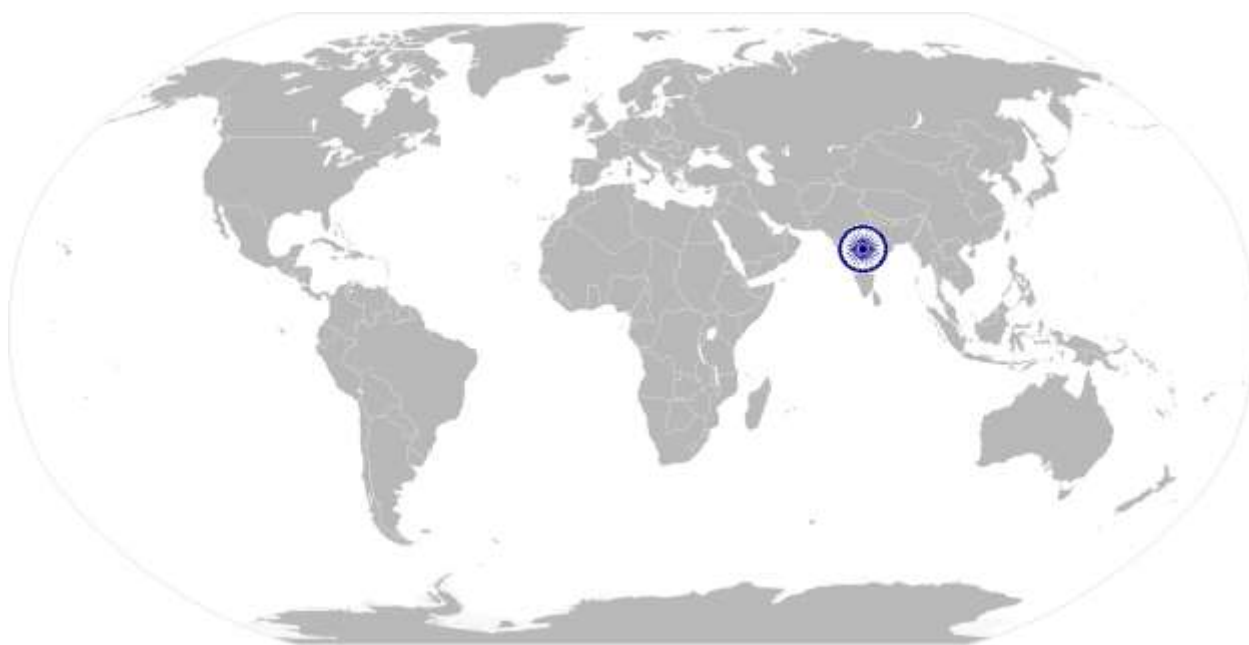
	SB7. analyze the interim countermeasures taken for the resolution of non-conformities observed in the product & process audit and accordingly devise the permanent countermeasures for prevention from re-occurrence
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NOS Code	ASC/N6508		
Credits(NSQF) [OPTIONAL]	TBD	Version number	1.0
Industry	Automotive	Drafted on	13/09/13
Industry Sub-sector	R&D Support	Last reviewed on	27/09/13
Occupation	Testing and Validation	Next review date	30/09/15

NOS Version Control

ASC/N6509. Monitor R&D lab testing activities

National Occupational Standards



Overview

This unit is about monitoring the testing and validation activities performed in the R&D test laboratories for development of new products

ASC/N6509. Monitor R&D lab testing activities

National Occupational Standard

Unit Code	ASC/N6509
Unit Title (Task)	Monitor R&D lab testing activities
Description	This OS unit is about the individual monitoring the R&D test lab activities
Scope	<p>This unit/ task covers the following:</p> <ul style="list-style-type: none"> • monitoring the R&D test lab equipments • test facility planning and procurement • internal QMS audit
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
R&D testing lab	<p>To be competent , the user/individual on the job must be able to:</p> <p>PC1. maintain a laboratory for testing and validation of prototypes for development of new products for various processes like vehicle , engine , chassis, suspension, brakes, fuel systems, computer testing, materials testing etc.</p> <p>PC2. ensure that all the laboratories are well equipped with the testing equipments and the equipments are maintained on daily basis</p> <p>PC3. monitor the ambient working conditions in the various testing laboratories and ensure compliance to the standard HSE requirements</p> <p>PC4. ensure that the standard operating procedures for all the inspection and testing activities are displayed inside the laboratories</p> <p>PC5. train the associates working in the laboratories about the testing properties and procedures along with the HSE compliances to be followed</p> <p>PC6. ensure that the lab associates are adhering to usage of PPEs while performing the testing activities</p> <p>PC7. ensure that there is a schedule prepared for doing the activities and is being strictly adhered to</p> <p>PC8. remotely monitor the calibration of the gauges and equipments used in testing laboratories by co-ordinating with the Standards' Room</p> <p>PC9. ensure that the records & documentation for testing are complete and updated on regular basis, &/or are part of Knowledge Management; with support from IT teams etc. for special requirements viz. large files, tested samples etc.</p> <p>PC10. ensure that the software programs coding, modification , updation etc. in the computer testing laboratory for equipments is being done as per requirement</p> <p>PC11. ensure restricted access to the software programs by authorizing one person</p>

ASC/N6509. Monitor R&D lab testing activities

	<p>responsible for software coding and modification among team members of R&D testing</p> <p>PC12. in case of receipt of new equipments , coordinate with the incharge and ensure safe , receipt , physical inspection of the packaged equipments</p> <p>PC13. ensure preparation of reports and other support documentation pertaining to QMS/TS16949/ISO14001/EMS systems</p>
Test facility planning and procurement	<p>To be competent , the user/individual on the job must be able to:</p> <p>PC14. monitor the testing facilities working condition on periodic basis in coordination with the lab incharge</p> <p>PC15. discuss with team about the received customer specifications viz. SOR , International/ National Testing specifications applicable to the products/ vehicles manufactured by the organization and analyze the testing methodology for the new/modified specifications</p> <p>PC16. based on the review , finalize the requirements for the testing facilities/rigs and communicate to the team to arrange for the finalization of test facility manufacturers in coordination with Sourcing department</p> <p>PC17. remotely monitor the testing design and development activities by participating with the team and facility manufacturers to resolve any discrepancies .</p> <p>PC18. in case of a test facility requiring CAPEX , as per SOP seek approval from top management</p> <p>PC19. monitor the validation results of prototypes from the new test facility and discuss with the team about the countermeasures for the deviations observed</p>
Internal QMS Audit	<p>To be competent , the user/individual on the job must be able to:</p> <p>PC20. be a certified Internal auditor for ISO/IEC 17025/any other QMS system by undergoing the training for internal audit</p> <p>PC21. internally audit the R&D testing lab</p> <p>PC22. discuss with testing process owners and take appropriate actions for meeting the requirements.</p> <p>PC23. if required , be an auditee for the testing processes for the external audit by certification agency</p> <p>PC24. ensure the smooth conduct of external audit and ensure the identified NCs are closed and signed off as per the timelines</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. complete knowledge about the product portfolio of the organization</p> <p>KA2. in-depth knowledge of the manufacturing processes of the organization</p> <p>KA3. certification agency for ISO/IEC17025 certification</p>

ASC/N6509. Monitor R&D lab testing activities

B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. testing facilities for validation of different prototypes</p> <p>KB2. prototype manufacturing techniques</p> <p>KB3. the knowledge requirements for internal auditor certification</p> <p>KB4. guidelines for the QMS system followed for R&D laboratory testing</p> <p>KB5. internal auditor training methodology</p> <p>KB6. internal auditor's checklist</p> <p>KB7. QMS/ISO-IEC17025 system guidelines and requirements</p> <p>KB8. testing done for validation of prototypes</p>
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Communication skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. communicate with the incharge and Sourcing department for monitoring the testing facility design and development activities in-house</p> <p>SA2. coordinate with team members and laboratory incharge for progress updates of testing laboratories' activities execution</p> <p>SA3. communicate through telcon/video conferences/meetings with the Sourcing , Marketing , external customer ,SCM department etc. based on requirement</p>
	Teamwork and multitasking
	<p>SA4. distribute workload among team members for performing R&D laboratory testing and validation activities in an efficient and timely manner</p> <p>SA5. coordinate with team and gather inputs pertaining to reliability analysis, testing facility/rigs development, new product validation etc.</p> <p>SA6. share operation knowledge with colleagues</p>
	Presentation skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA7. present in front of the top management the results of testing and validation activities for R&D laboratories for their review</p> <p>SA8. seek support from senior management as per requirement by sharing presentations/excel sheets for data pertaining to R&D testing and validation</p>
B. Professional Skills	Interpretation skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB1. understand the documentation done by testing facility vendor complying to ISO/IEC17025 system guidelines</p> <p>SB2. understand the testing and validation data mentioned and accordingly devise strategies for addressal of concerns</p> <p>SB3. interpret the testing and validation reports performed in laboratories</p>
	Critical thinking
	<p>The user/individual on the job needs to know and understand:</p> <p>SB4. problems (technical and non-technical), disruptions and delays</p> <p>SB5. escalation procedures</p> <p>SB6. to work with a fall back action plan in the event of any issue</p>

ASC/N6509. Monitor R&D lab testing activities

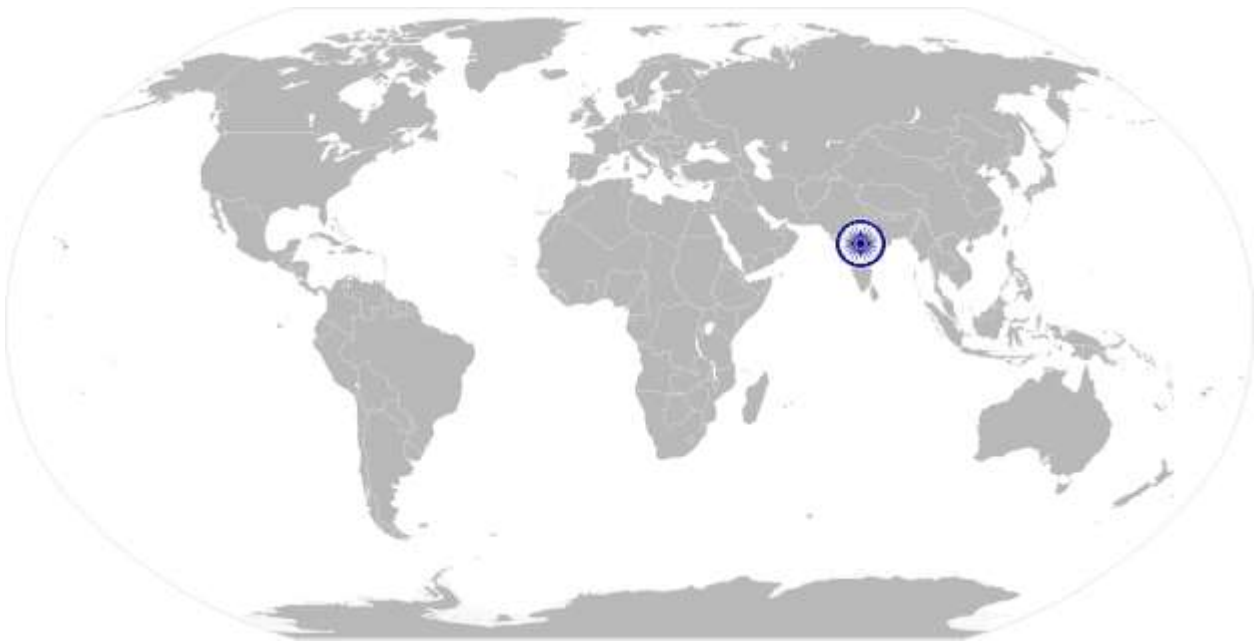
	Decision Making
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB7. decide with respect to HSE compliance violations by the team members/gauge vendors</p> <p>SB8. based on the process owners feedback , review and analyze the countermeasures effectiveness for NC closure</p>

NOS Version Control

NOS Code	ASC/N6509		
Credits(NSQF) [OPTIONAL]	TBD	Version number	1.0
Industry	Automotive	Drafted on	13/09/13
Industry Sub-sector	R&D Support	Last reviewed on	23/09/13
Occupation	Testing and Validation	Next review date	30/09/15

ASC/N0006. Maintain a safe, clean and secure working environment

National Occupational Standards



Overview

This unit is about establishing a Safe, Healthy and Environment friendly workplace at the organization.

ASC/N0006. Maintain a safe, clean and secure working environment

National Occupational Standard	Unit Code	ASC/N0006
	Unit Title (Task)	Maintain a healthy , safe and secure working environment
	Description	This OS unit is about creating a Safe and Healthy work place, adhering to the safety guidelines in the working area of the organization, following practices which are not impacting the environment in a negative manner
	Scope	<p>This unit/task covers the following:</p> <p>Types of processes:</p> <ul style="list-style-type: none"> • R&D testing and validation • test lab <p>Types of products</p> <ul style="list-style-type: none"> • prototypes for product • prototype for individual components • tools/gauges/equipments
	Performance Criteria (PC) w.r.t. the Scope	
	Element	Performance Criteria
	Identify and report the risks identified	<p>To be competent , the user/individual on the job must be able to :</p> <p>PC1. identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals ,loud noise</p> <p>PC2. inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc</p> <p>PC3. inform the concerned authorities about damages which can potentially harm man/ machine during operations</p> <p>PC4. create awareness amongst other by sharing information on the identified risks</p>
	Create and sustain a Safe, clean and environment friendly work place	<p>PC5. follow the instructions given on the equipment manual describing the operating process of the equipments</p> <p>PC6. follow the Safety, Health and Environment related practices developed by the organization</p> <p>PC7. operate the machine using the recommended Personal Protective Equipments (PPE)</p> <p>PC8. maintain a clean and safe working environment near the work place and ensure there is no spillage of chemicals, waste, oil, solvents etc</p> <p>PC9. maintain high standards of personal hygiene at the work place</p> <p>PC10. ensure that the waste disposal takes place in the designated area as per organization SOP</p> <p>PC11. inform appropriately the medical officer/ HR in case of self or an employee's illness of contagious nature so that preventive</p>

ASC/N0006. Maintain a safe, clean and secure working environment

	actions can be planned for others
Knowledge and Understanding (K) w.r.t. the scope	
Element	Knowledge and Understanding
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. relevant standards, procedures and policies related to Health, Safety and Environment followed in the company
A. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. basic knowledge of Safety procedures(fire fighting, first aid) within the organization KB2. basic knowledge of various types of PPEs and their usage KB3. basic knowledge of risks associated with each occupation in the organization KB4. knowledge of personal hygiene and how an individual can contribute towards creating a highly safe and clean working environment
Skills (S) w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. write basic level notes and observations
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA2. read safety instructions put up in R&D department premises SA3. read safety precautions mentioned in equipment manuals and panels to understand the potential risks associate with the equipment
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA4. effectively communicate information to team members and Inform employees in the plant and concerned functions about potentials Safety, Health and Environment related risks observed SA5. question associates in order to understand the safety related issues SA6. attentively listen with full attention and comprehend the information given by the speaker during safety drills and training programs
B. Professional Skills	Judgmental Thinking
	The user/individual on the job needs to know and understand how to: SB1. use common sense and make judgments during day to day basis SB2. use reasoning skills to identify and resolve basic problems

ASC/N0006. Maintain a safe, clean and secure working environment

NOS Version Control

NOS Code	ASC/N0006		
Credits(NVEQF/NVQF/NSQF)	TBD	Version number	1.0
Industry	Automotive	Drafted on	13/09/13
Industry Sub-sector	R&D Support	Last reviewed on	23/09/13
Occupation	Testing and Validation	Next review date	30/09/15

ASC/N0022 Ensure implementation of 5 S activities in the workplace & office area

National Occupational Standard

Overview

This unit is about the implementing the various principles of 5S and ensure that the given guidelines are followed to ensure a clean and efficient working environment in the organization

ASC/N0022 Ensure implementation of 5 S activities in the workplace & office area

National Occupational Standard	Unit Code	ASC/N0022
	Unit Title (Task)	Ensure implementation of 5S activities at the shop floor & the office area
	Description	This NOS is about overseeing the implementation of all 5 S activities both at the shop floor and the office area by the team members and training the team in implementation of the 5S principles
	Scope	The individual needs to <ul style="list-style-type: none"> Ensure sorting, streamlining/ organizing, storage and documentation, systematic cleaning, standardization and sustenance across the plant and office premises of the organization as given in the organization guidelines
	Performance Criteria (PC) w.r.t. the Scope	
	Element	Performance Criteria
	Ensure proper sorting of items at the work place	PC1. Ensure all recyclable materials are put in designated containers PC2. Ensure no Tools, fixtures & jigs are lying on workstations unless in use and no un-necessary items is lying on workbenches or work surfaces unless in use PC3. Ensure that the operators and other team members are segregating the waste in hazardous/ Non Hazardous waste as per the sorting work instructions PC4. Ensure that all the operators are following the technique of waste disposal and waste storage in the designated bins PC5. Segregate the items which are labelled at red tag items for the process area and keep them in the correct places PC6. Ensure that all the tools/ equipment/ fasteners/ spare parts are arranged as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions PC7. Check for return of any type of extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area PC8. Oversee removal of unnecessary equipment, storage, furniture, unneeded inventory, supplies, parts and material PC9. Ensure that areas of material storage areas are not overflowing PC10. Ensure proper stacking and storage of the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required
	Ensure proper documentation and storage – streamlining & organizing the workplace	PC11. Ensure that the team follows the given instructions and checks for labelling of fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc. PC12. Make sure that all material and tools are stored in the designated

ASC/N0022 Ensure implementation of 5 S activities in the workplace & office area

	<p>places and in the manner indicated in the 5S instructions</p> <p>PC13. Ensure that organizing the workplace takes place with due considerations to the principles of wasted motions, ergonomics, work & method study .</p>
Ensure cleaning of self and the work place	<p>PC14. Ensure that the area has floors swept, machinery clean and is generally neat and tidy. In case of cleaning, ensure that correct displays are maintained on the floor which indicate potential safety hazards</p> <p>PC15. Ensure workbenches and work surfaces are clean and in good condition</p> <p>PC16. Ensure adherence to the cleaning schedule for the lighting system to ensure proper illumination</p> <p>PC17. Ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene</p>
Ensure standardization	<p>PC18. Ensure that daily cleaning standards and schedules to create a clean working environment are followed across the plant</p> <p>PC19. Oversee that various cleaning and organizing tasks have been developed and assigned for the work area</p> <p>PC20. Ensure logical and user friendly documentation and file management for all activities across the plant and create guidelines around standardization of processes</p> <p>PC21. Ensure timely creation and sharing of the 5S checklists</p> <p>PC22. Ensure that the 5S manual are available as per the timelines</p>
Ensure sustenance	<p>PC23. Ensure team cooperation during the audit of 5 S activities</p> <p>PC24. Ensure that workmen are periodically trained to address challenges related to 5S</p> <p>PC25. Participate actively in employee work groups on 5S and encourage team members for active participation</p> <p>PC26. Oversee that the staff/operators are trained and fully understand 5s procedures</p> <p>PC27. Ensure that all the guidelines for What to do and What not to do to build sustainability in 5S are mentioned in the 5S check lists/ work instructions and are easily searchable</p> <p>PC28. Ensure continuous training of the team members on 5S in order to increase their awareness and support implementation</p> <p>PC29. Ensure that all visual controls, notice boards, symbols etc. at the manufacturing place are created, working and are put up as per the requirement</p>
Knowledge and Understanding (K) w.r.t. the scope	
Element	Knowledge and Understanding
A. Organizational Context (Knowledge of the company / organization and its	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant standards, procedures and policies related to 5S followed in the company</p>

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processes)	
B. Technical Knowledge	<p>The user/individual on the job needs to :</p> <p>KB5. have basic knowledge of 5S procedures</p> <p>KB6. know various types 5s practices followed in various areas</p> <p>KB7. understand the 5S checklists provided in the department/ team</p> <p>KB8. have skills to identify useful & non useful items</p> <p>KB9. have knowledge of labels , signs & colours used as indicators</p> <p>KB10. Have knowledge on how to sort and store various types of tools, equipment, material etc.</p> <p>KB11. know , how to identify various types of waste products</p> <p>KB12. understand the impact of waste/ dirt/ dust/unwanted substances on the process/ environment/ machinery/ human body</p> <p>KB13. have knowledge of best and environment protective ways of cleaning & waste disposal</p> <p>KB14. understand the importance of standardization in processes</p> <p>KB15. understand the importance of sustainability in 5S</p> <p>KB16. have knowledge of TQM process</p> <p>KB17. have knowledge of various materials and storage norms</p> <p>KB18. understand visual controls, symbols, graphs etc.</p>
Skills (S)w.r.t. the scope	
Element	Skills
A. Core Skills/ Generic Skills	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA7. write basic level notes and observations</p> <p>SA8. note down observations (if any) related to the process</p> <p>SA9. write information documents to internal departments/ internal teams</p>
	Reading Skills
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA10. read 5S instructions put up across the plant premises</p>
	Oral Communication (Listening and Speaking skills)
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA11. effectively communicate information to team members inform employees in the plant and concerned functions about 5S</p> <p>SA12. question the process head in order to understand the 5S related issues</p> <p>SA13. attentively listen with full attention and comprehend the</p>

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	information given by the speaker during 5S training programs
B. Professional Skills	Judgmental Thinking
	The user/individual on the job needs to know and understand how to: SB3. use common sense and make judgments during day to day basis SB4. use reasoning skills to identify and resolve basic problems using 5S
	Persuasion
	The user/ individual on the jobs needs to know and understand how to: SB5. persuade team members to follow 5 S SB6. ensure that the team members understand the importance of using 5 S tool
	Creativity
	The user/individual on the job needs to know and understand how to : SB7. use innovative skills to perform and manage 5 S activities at the work desk and the shop floor SB8. exhibit inquisitive behaviour to seek feedback and question on the existing set patterns of work emerge, techniques in CA/CI around 5 S work practices
	Self -Discipline
	The user/individual on the job needs to know and understand how to: SB9. do what is right, not what is a popular practice SB10. follow shop floor rules& regulations and avoid deviations SB11. lead by example in the plant premises while performing activities related to 5S SB12. ensure self-cleanliness on a daily basis SB13. demonstrate the will to keep the work area in a clean and orderly manner
	Ownership
	The user/individual on the job needs to know and understand how to: SB14. accept additional responsibility for self and the team SB15. encourage self and other to take greater responsibilities for managing 5S SB16. identify obstacles and bottlenecks in the process and find basic level solutions for removing these obstacles
	Decision making
	The user/individual on the job needs to know and understand how to: SB17. use previous experience in resolving problems and taking decisions SB18. make timely and independent decisions on the line/ shift within the boundaries of the delegation matrix of the organization

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NOS Code	ASC/N0022		
Credits(NSQF)	TBD	Version number	1
Industry	Automotive	Drafted on	1/03/2014
Industry Sub-sector	Manufacturing/ R&D	Last reviewed on	15/03/2014
Occupation	All	Next review date	15/03/2016

NOS Version Control

Qualification Pack for Supervisor R & D Testing -Indoor , Product

Criteria for assessment of Trainees
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JOB ROLE	Supervisor R & D testing
Qualification Pack	ASC/Q 6502
No. Of NOS	2 Role specific ,2 generic

NOS Title/ NOS Elements	NOS & Performance Criterion Description	Marks allocation	
ASC/N 6508	Testing & validation of prototypes	Viva	Practical
Testing and Validation	To be competent, the user/individual on the job must be able to		
	PC1. monitor and gather data related to field failures , warranty issues etc. from Marketing , Manufacturing, Quality department to formulate & co –relate test cycles with real life data	20	30
	PC2. collate all the data and identify the patterns like the failures pertaining to frequent material failures for the individual components, abuse of the final product, type of frequent failures etc.		
	PC3. simultaneously identify the the requirements and specifications which need to be validated for prototype of product /various components from SOR , discussions with R & D /NPD teams etc.	30	50
	PC4. identify testing required for systems like styling, vibration, painting , electronics, design, chassis, electrical, powertrain & classify the same to be done on bench, vehicle etc.		
	PC5. safeguard the facilities for building physical prototypes and then execute tests and/or assigning resources to develop models and run simulations		
	PC6. translate design requirements into a set of test cases with loads and constraints that can be digitally and/or physically measured & /or have a basis in the International/National test standards		
	PC7. additionally, develop new test configurations (which may be mechanical, electrical, and/or software-based) given the latest engineering design (e.g., modifications to geometry, materials, substituted components) using techniques like Design of Experiments (DOE)	20	30
	PC8. As required, design fixture and rigs/facilities to support testing		
	PC9. setup and execute the digital simulation model or the		

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	<p>physical tests across all functional domains using standard operating procedures</p> <p>PC10. use physical test data for defining material properties, boundary conditions and initial conditions for simulations for analysis software. .</p> <p>PC11. use physical test data to create functional model of product</p> <p>PC12. document the results of the physical or digital tests in reports, indicating the satisfaction of requirements and specifications</p> <p>PC13. correlate the physical data with simulation results</p> <p>PC14. use physical test to validate or calibrate simulation results, such as pressure, flow, stress, strain, vibration and force from analysis software</p> <p>PC15. perform stress analysis on the material of prototype using techniques like 2D , 3D modeling through Finite Element Analysis (FEA) simulation methodology in coordination with Metallurgy department</p> <p>PC16. document the correlation between simulation and physical tests</p> <p>PC17. analyze the results obtained to identify passed/failed requirements</p> <p>PC18. suggest and implement recommendations for failures that were encountered in concurrence with R&D team members.</p> <p>PC19. in case of development of the new product , share the findings of the testing and validation of prototype with the NPD department</p>	50	20
Resource management	<p>To be competent , the user/individual on the job must be able to:</p> <p>PC20. ensure the procurement of new test equipments/facilities/rigs etc. in coordination with Sourcing department from the approved vendors</p> <p>PC21. seek approval for recruitment of sufficient amount of staff in coordination with HR department for carrying out the various testing and validation activities</p> <p>PC22. ensure that the new joiners are trained by the existing staff members in an efficient and timely manner</p> <p>PC23. prepare the annual budget and seek approval from senior management</p> <p>PC24. prepare MIS report for R&D testing and validation on monthly basis</p>	30	10

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	subtotal	150	140
ASC/N 6509	Monitor test activities	Viva	Practical
R&D testing lab	<p>To be competent , the user/individual on the job must be able to:</p> <p>PC1. maintain a laboratory for testing and validation of prototypes for development of new products for various processes like vehicle , engine , chassis, suspension, brakes, fuel systems, computer testing, materials testing etc.</p> <p>PC2. ensure that all the laboratories are well equipped with the testing equipment and the equipment are maintained on daily basis</p> <p>PC3. monitor the ambient working conditions in the various testing laboratories and ensure compliance to the standard HSE requirements</p> <p>PC4. ensure that the standard operating procedures for all the inspection and testing activities are displayed inside the laboratories</p> <p>PC5. train the associates working in the laboratories about the testing procedures along with the HSE compliances to be followed</p> <p>PC6. ensure that the lab associates are adhering to usage of PPEs while performing the testing activities</p> <p>PC7. ensure that there is a schedule prepared for doing the activities and is being strictly adhered to</p> <p>PC8. remotely monitor the calibration of the gauges and equipments used in testing laboratories by co-ordinating with the Standards' Room</p> <p>PC9. ensure that the records & documentation for testing are complete and updated on regular basis, &/or are part of Knowledge Management; with support from IT teams etc. for special requirements viz. large files, tested samples etc.</p> <p>PC10. ensure that the software programs coding, modification , updation etc. in the computer testing laboratory for equipments is being done as per requirement</p> <p>PC11. ensure restricted access to the software programs by authorizing one person responsible for software coding and modification among team members of R&D testing</p> <p>PC12. in case of receipt of new equipments , coordinate with the incharge and ensure safe , receipt , physical</p>	<p>20</p> <p>30</p> <p>20</p>	<p>50</p> <p>70</p> <p>20</p>

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	inspection of the packaged equipments PC13. ensure preparation of reports and other support documentation pertaining to QMS/TS16949/ISO14001/EMS systems		
Test facility planning and procurement	<p>To be competent , the user/individual on the job must be able to:</p> <p>PC14. monitor the testing facilities working condition on periodic basis in coordination with the lab incharge</p> <p>PC15. discuss with team about the received customer specifications viz. SOR , International/ National Testing specifications applicable to the products/ vehicles manufactured by the organization and analyze the testing methodology for the new/modified specifications</p> <p>PC16. based on the review , finalize the requirements for the testing facilities/rigs and communicate to the team to arrange for the finalization of test facility manufacturers in coordination with Sourcing department</p> <p>PC17. remotely monitor the testing design and development activities by participating with the team and facility manufacturers to resolve any discrepancies .</p> <p>PC18. in case of a test facility requiring CAPEX , as per SOP seek approval from top management</p> <p>PC19. monitor the validation results of prototypes from the new test facility and discuss with the team about the countermeasures for the deviations observed</p>	30	30
Internal QMS Audit	<p>To be competent , the user/individual on the job must be able to:</p> <p>PC20. be a certified Internal auditor for ISO/IEC 17025/any other QMS system by undergoing the training for internal audit</p> <p>PC21. internally audit the R&D testing lab</p> <p>PC22. discuss with testing process owners and take appropriate actions for meeting the requirements.</p> <p>PC23. if required , be an auditee for the testing processes for the external audit by certification agency</p> <p>PC24. ensure the smooth conduct of external audit and ensure the identified NCs are closed and signed off as per the timelines</p>	20	30
		30	--
	subtotal	150	200
ASC/N 0006	Maintain safe , healthy environment friendly workplace	Viva	Practical

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Identify and report the risks identified	<p>To be competent , the user/individual on the job must be able to :</p> <p>PC1. identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals ,loud noise</p> <p>PC2. inform the concerned authorities about the potential risks identified in the processes, workplace area/ layout, materials used etc</p> <p>PC3. inform the concerned authorities about damages which can potentially harm man/ machine during operations</p> <p>PC4. create awareness amongst other by sharing information on the identified risks</p>	20	50
Create and sustain a Safe, clean and environment friendly work place	<p>PC5. follow the instructions given on the equipment manual describing the operating process of the equipments</p> <p>PC6. follow the Safety, Health and Environment related practices developed by the organization</p> <p>PC7. operate the machine using the recommended Personal Protective Equipments (PPE)</p> <p>PC8. maintain a clean and safe working environment near the work place and ensure there is no spillage of chemicals, waste, oil, solvents etc</p> <p>PC9. maintain high standards of personal hygiene at the work place</p> <p>PC10. ensure that the waste disposal takes place in the designated area as per organization SOP</p> <p>PC11. inform appropriately the medical officer/ HR in case of self or an employee's illness of contagious nature so that preventive actions can be planned for others</p>	50	40
	subtotal	70	90
ASC / N 0022	Ensure implementation of 5 S activities at the workplace	Viva	practical
Ensure proper sorting of items at the work place	<p>PC1. Ensure all recyclable materials are put in designated containers</p> <p>PC2. Ensure no Tools, fixtures & jigs are lying on workstations unless in use and no un-necessary items is lying on workbenches or work surfaces unless in use</p> <p>PC3. Ensure that the operators and other team members are segregating the waste in hazardous/ Non Hazardous waste as per the sorting work instructions</p> <p>PC4. Ensure that all the operators are following the technique of waste disposal and waste storage in the designated bins</p> <p>PC5. Segregate the items which are labelled at red tag items for the process area and keep them in the correct places</p>	10	20

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	<p>PC6. Ensure that all the tools/ equipment/ fasteners/ spare parts are arranged as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions</p> <p>PC7. Check for return of any type of extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area</p> <p>PC8. Oversee removal of unnecessary equipment, storage, furniture, unneeded inventory, supplies, parts and material</p> <p>PC9. Ensure that areas of material storage areas are not overflowing</p> <p>PC10. Ensure proper stacking and storage of the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required</p>	10	20
Ensure proper documentation and storage – streamlining & organizing the workplace	<p>PC11. Ensure that the team follows the given instructions and checks for labelling of fluids, oils. lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc.</p> <p>PC12. Make sure that all material and tools are stored in the designated places and in the manner indicated in the 5S instructions</p> <p>PC13. Ensure that organizing the workplace takes place with due considerations to the principles of wasted motions, ergonomics, work & method study .</p>	20	10
Ensure cleaning of self and the work place	<p>PC14. Ensure that the area has floors swept, machinery clean and is generally neat and tidy. In case of cleaning, ensure that correct displays are maintained on the floor which indicate potential safety hazards</p> <p>PC15. Ensure workbenches and work surfaces are clean and in good condition</p> <p>PC16. Ensure adherence to the cleaning schedule for the lighting system to ensure proper illumination</p> <p>PC17. Ensure self-cleanliness - clean uniform, clean shoes, clean gloves, clean helmets, personal hygiene</p>	10	20
Ensure standardization	<p>PC18. Ensure that daily cleaning standards and schedules to create a clean working environment are followed across the plant</p> <p>PC19. Oversee that various cleaning and organizing tasks have been developed and assigned for the work area</p> <p>PC20. Ensure logical and user friendly documentation and file management for all activities across the plant and create guidelines around standardization of processes</p> <p>PC21. Ensure timely creation and sharing of the 5S checklists</p>	10	20

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	PC22. Ensure that the 5S manual are available as per the timelines		
Ensure sustenance	PC23. Ensure team cooperation during the audit of 5 S activities PC24. Ensure that workmen are periodically trained to address challenges related to 5S PC25. Participate actively in employee work groups on 5S and encourage team members for active participation PC26. Oversee that the staff/operators are trained and fully understand 5s procedures PC27. Ensure that all the guidelines for What to do and What not to do to build sustainability in 5S are mentioned in the 5S check lists/ work instructions and are easily searchable PC28. Ensure continuous training of the team members on 5S in order to increase their awareness and support implementation PC29. Ensure that all visual controls, notice boards, symbols etc. at the manufacturing place are created, working and are put up as per the requirement	20	30
	Sub total	80	120
	Total	450	550