Model Curriculum

QP Name: Automotive Plastic Moulding Assistant

QP Code: ASC/Q4402

QP Version: 2.0

NSQF Level: 2

Model Curriculum Version: 1.0

Automotive Skills Development Council | 153, Gr Floor, Okhla Industrial Area, Phase – III, Leela Building, New Delhi – 110020

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Training Parameters

Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Plastic Moulding Operation
Country	India
NSQF Level	2
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8142.9900
Minimum Educational Qualification and Experience	8th Class
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 years
Last Reviewed On	31/08/2021
Next Review Date	31/08/2024
NSQC Approval Date	31/08/2021
QP Version	2.0
Model Curriculum Creation Date	31/08/2021
Model Curriculum Valid Up to Date	31/08/2024
Model Curriculum Version	1.0
Minimum Duration of the Course	270 Hours 00 Minutes
Maximum Duration of the Course	270 Hours 00 Minutes

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Support the plastic moulding technician in preparatory activities such as lifting of workpiece, inspection of tools and equipment etc.
- Support the plastic moulding technician during moulding and post-moulding activities.
- Work effectively and efficiently as per schedules and timelines.
- Implement safety practices.
- Optimize the use of resources to ensure less wastage and maximum conservation.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module	**05:00**	**00:00**			**05:00**
Module 1: Introduction to the role of an Automotive Plastic Moulding Assistant	5:00	0:00			5:00
ASC/N9803 – Organize work and resources (Manufacturing) **NOS Version No. – 1.0** **NSQF Level – 3**	**15:00**	**30:00**			**45:00**
Module 2: Organize work and resources according to safety and conservation standards	15:00	30:00			45:00
ASC/N9802 – Interact effectively with colleagues, customers and others **NOS Version No. – 1.0** **NSQF Level - 3**	**15:00**	**25:00**			**40:00**
Module 3: Communicate effectively and efficiently	15:00	25:00			40:00
ASC/N4404 – Support the plastic moulding operator /technician in routine moulding activities **NOS Version No. – 2.0** **NSQF Level - 2**	**60:00**	**120:00**			**180:00**
Module 4: Prepare for plastic moulding process	30:00	60:00			90:00
Module 5: Support in moulding and post-moulding operations	30:00	60:00			90:00
Total Duration	**95:00**	**175:00**			**270:00**

Module Details

Module 1: Introduction to the role of an Automotive Plastic Moulding Assistant

Bridge module

Terminal Outcomes:

- Discuss the role and responsibilities of an Automotive Plastic Moulding Assistant.

Duration: *<05:00>*	**Duration**: *<00:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the role and responsibilities of an Automotive Plastic Moulding Assistant. • Discuss the job opportunities of an Automotive Plastic Moulding Assistant in an automobile industry. • Explain about Indian automotive market. • List various automobile Original Equipment Manufacturers (OEMs) and different products/ models manufactured by them. • Discuss the standards and procedures involved in the different processes of plastic moulding. • Identify the standard checklists and schedules recommended by OEM.	
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	

Module 2: Organize work and resources according to safety and conservation standards

Mapped to ASC/N9803, v1.0

Terminal Outcomes:

- Employ appropriate ways to maintain safe and secure working environment.
- Perform work as per the quality standards.
- Apply conservation practices at the workplace.

Duration: *<15:00>*	**Duration**: *<30:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the potential workplace related risks and hazards, their causes and preventions. • Identify PPE to be used at workplace. • Identify various warning signs used at the workplace. • Describe appropriate strategies to deal with emergencies and accidents at the workplace. • Outline the organizational structure to be followed to report about health, safety and security breaches to the concerned authorities. • Discuss the importance of keeping work area clean and tidy. • Discuss the significance of conforming to basic hygiene practices such as washing hands, using alcohol based hand sanitizers or soap. • Discuss organizational hygiene and sanitation guidelines and ways of reporting breaches/gaps if any to the concerned authorities. • Discuss the ways of dealing with stress and anxiety. • Discuss how to complete the given work within the stipulated time period. • Explain how to maintain a proper balance between team and individual goals. • Explain 5S guidelines at workplace. • List the various materials used at the workplace. • Explain organisational recommended procedure for storage of tools, equipment and material after completion of work. • Explain the ways to optimize usage of resources. • Discuss various methods of waste management and its disposal.	• Apply appropriate safety practices to ensure safety of people at the workplace • Display the correct way of wearing and removing PPE such as face masks, hand gloves, face shields, PPE suits, etc. • Demonstrate the use of fire extinguisher. • Apply basic first aid procedure in case of emergencies. • Perform routine cleaning of tools, equipment and machines. • Employ various techniques for checking malfunctions in the equipment as per Standard Operating Procedure (SOP). • Show how to sanitize and disinfect one's work area regularly. • Demonstrate the correct way of washing hands using soap and water. • Demonstrate the correct way of sanitizing hands using alcohol-based hand rubs. • Demonstrate how to evacuate the workplace in case of an emergency. • Demonstrate sorting of materials, tools and equipment and spare parts after completion of work. • Demonstrate the steps involved in storage of tools, equipment and material after completion of work. • Perform basic checks to identify any spills and leaks and that need to be plugged /stopped. • Demonstrate different disposal techniques depending upon types of waste. • Employ different ways to check if equipment/machines are functioning as per requirements and report malfunctioning, if observed. • Employ ways for efficient utilization of material and water.

• List the different categories of waste for the purpose of segregation • Differentiate between recyclable and non-recyclable waste • State the importance of using appropriate colour dustbins for different types of waste. • Discuss common practices for conserving electricity at workplace. • Discuss the common sources of pollution and ways to minimize it.	
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
• Housekeeping material: Cleaning agents, cleaning cloth, waste container, dust pan and brush set, liquid soap, hand towel, fire extinguisher • Safety gears: Safety shoes, ear plug, goggles, gloves, helmet, first-aid kit	

Module 3: Communicate Effectively and Efficiently

Mapped to ASC/N9802, v1.0

Terminal Outcomes:

- Use effective communication and interpersonal skills.
- Apply sensitivity while interacting with different genders and people with disabilities.

Duration: *<15:00>*	**Duration**: *<25:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the organizational structure for communicating with colleagues, seniors and others. • Discuss the ways to adjust the communication styles to reflect sensitivity towards gender and persons with disability (PwD). • Explain the importance of respecting personal space of colleagues. • State the procedure to receive work instructions and report problems to the supervisor. • List the various organizational policies and procedures to be followed at the workplace. • Describe different ways to rectify commonly occurring errors. • Explain the importance of complying with the instructions/guidelines and procedures while performing tasks related to the job specifications. • Discuss the importance of PwD and gender sensitization.	• Employ different means of communication depending upon the requirement while interacting with others. • Demonstrate using new ways to maintain good relationships with colleagues and supervisor. • Prepare a sample report to send the work status to the supervisor. • Demonstrate how to communicate with different genders and persons with disability (PwD) in a sensitive manner.
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
Sample of escalation matrix, organisation structure.	

Module 4: Prepare for plastic moulding process

Mapped to ASC/N4404, v2.0

Terminal Outcomes:

- Identify tools and equipment required for plastic moulding process.
- Perform the steps to carry out preparatory activities such as lifting of workpiece, collection and inspection of tools and equipment etc.

Duration: *<30:00>*	**Duration**: *<60:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe different types of moulding processes. • Describe basic process followed for moulding of the pieces. • List tools, equipment, consumables and input materials required during pressing work. • List various parts of moulding machine apparatus. • List different types of dies to be used for moulding operations. • Describe setting up mechanism of dies into moulding machine. • Discuss the organisational process of collecting, arranging and storing the tools, equipment, consumables and input material from the store. • Summarise the steps to be performed for checking the tools, moulding apparatus, dies, coolant and input materials before use. • Discuss the importance of correct ratio of granules and additives in the hopper. • List the steps to be performed for pre-heat the hygroscopic plastic granules. • Discuss various plastic moulding machine parameters such as heater temperature, hydraulic pressure/air pressure/vacuum pressure, rotating speed of the screw, operating current and voltage, injection time, refilling time etc. and their impact on output.	• Demonstrate the standard operating procedure to use tools, equipment, additives, dies, coolant and input materials required during plastic moulding work. • Show how to collect the required tools, equipment, additives, dies, coolant and input materials from the store. • Apply appropriate ways of checking the tools, moulding apparatus, dies, coolant and input materials before use. • Show how to clean the dies, tools and moulding apparatus before use. • Apply appropriate ways to measure the quantity of granular input material and additives. • Demonstrate how to support the plastic moulding technician during pre-heating of the plastic granules for removing the moisture content.
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
• PPT's, teaching aids, drawing / blue print, work order • Injection moulding machine with PLC control, hydraulic oil, cooling tower, toolbox with different sizes of round and open-ended spanner, work table with vice, hammer plastic/steel,	

allen key set, moulds simple and complex ones, clamps for mounting moulds, bolt and spacer block, grease, silicon spray, rail girder with chain pulling block, raw material PE, PVC, polystyrene, nylon 6/6, over for drying, cutter and blade for flash removal, extruder with die, blow moulding and lower welding machine, vernier calliper, micrometer, height gauge, surface plate, CMM

- **Lifting devices:** Hoists, cranes, bins, part trolleys, pallet trucks
- **Safety materials**: Fire extinguisher, safety gloves, aprons, safety glasses, helmet, safety shoe and first-aid kit
- **Cleaning material**: Wire brush (M.S.), cleaning agents, cleaning cloth, waste container, dust pan and brush set, liquid soap, hand towel

Module 5: Support in moulding and post-moulding operations

Mapped to ASC/N4404, v2.0

Terminal Outcomes:

- Demonstrate how to support technician during moulding processes.
- Perform steps to carry out post-moulding activities.

Duration: *<30:00>*	**Duration**: *<60:00>*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss correct way of holding tools during the pressing operations. • List consumables and accessories required during the pressing work. • Discuss the process of unloading and placing the work pieces on the designated place as per the work instructions. • Discuss the safety practices to avoid any hazard and accident during moulding process. • Discuss post-moulding activities like inspection, cleaning, maintenance etc. • List the steps to be performed for de-gating and de-flashing processes. • Discuss the information needed to be mentioned on the labels of the moulded pieces. • Summarise the commonly occurring defects in the moulded pieces. • Discuss the impact of defects on the quality of moulded pieces. • Explain the inspection methods for identifying the defects and checking the quality of moulded pieces as per the control plan. • Discuss the process of segregating, tagging and storing of damaged and ok workpieces as per organisational guidelines. • Discuss various cleaning methods to clean the tools, equipment and work area. • List different methods for disposing off waste material. • Discuss ways for maintenance of injection/extrusion machinery and dies and make them ready for next cycle of operation. • Discuss the selection criteria of lubricant for injection/extrusion machinery and dies.	• Show how to feed the plastic granules into the hopper. • Show how to hold the tools during pressing operations in the correct manner and safely. • Perform the steps of unloading work pieces from moulding machine and placing them on the designated place to cool down by using lifting tools. • Demonstrate cooling process to cool the moulded pieces. • Demonstrate how to support the technician during de-gating and de-flashing processes for removing the runners/gates or extra materials. • Show how to stamp the moulded pieces as per SOP and organisational standards. • Demonstrate how to support the technician in inspection for identifying the defects and checking the quality of moulded pieces. • Show how to support technician in segregating, tagging and storing of the moulded pieces as per organisational guidelines. • Show how to arrange the goods into designated packing boxes, bin, trolley etc. as per organisational guidelines. • Apply appropriate ways to clean the work area. • Show how to dispose waste as per organisational guidelines. • Apply appropriate ways to inspect the injection/extrusion machinery and dies for left over plastic or other impurities after moulding operations. • Show how to remove the waste plastic material from the injection/extrusion machinery and dies by using cleaning agents.

	• Display how to lubricate the machine and die by using grease/oil and make them ready for next cycle of operation. • Apply appropriate ways to check that machinery and mould/dies are clean, smooth and coated as per the specification and ready for next cycle of operation.
Classroom Aids:	
Whiteboard, marker pen, projector	
Tools, Equipment and Other Requirements	
• PPT's, teaching aids, drawing / blue print, work order • Injection moulding machine with PLC control, hydraulic oil, cooling tower, toolbox with different sizes of round and open-ended spanner, work table with vice, hammer plastic/steel, allen key set, moulds simple and complex ones, clamps for mounting moulds, bolt and spacer block, grease, silicon spray, rail girder with chain pulling block, raw material PE, PVC, polystyrene, nylon 6/6, over for drying, cutter and blade for flash removal, extruder with die, blow moulding and lower welding machine, vernier calliper, micrometer, height gauge, surface plate, CMM • **Lifting devices:** Hoists, cranes, bins, part trolleys, pallet trucks • **Safety materials**: Fire extinguisher, safety gloves, aprons, safety glasses, helmet, safety shoe and first-aid kit • **Cleaning material**: Wire brush (M.S.), cleaning agents, cleaning cloth, waste container, dust pan and brush set, liquid soap, hand towel	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
ITI	Turner/Fitter/ Electrician	2	Turner/ Fitter/Electrician	1	Turner/ Fitter/Electrician	NA
ITI	Turner/Fitter/ Electrician	3	Turner/Fitter/ Electrician	0	Turner/Fitter/ Electrician	NA
Diploma	Mechanical	1	Mechanical	1	Mechanical	NA
Diploma	Mechanical/	2	Mechanical	0	Mechanical	NA

Trainer Certification	
Domain Certification	**Platform Certification**
"Automotive Plastic Moulding Assistant, ASC/Q4402, version 2.0". Minimum accepted score is 80%.	"Trainer, MEP/Q2601 v1.0" Minimum accepted score is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
ITI	Turner/ Fitter/Electrician	3	Turner/ Fitter/Electrician	1	Turner/ Fitter/Electrician	NA
ITI	Turner/Fitter/ Electrician	4	Turner/Fitter/ Electrician	0	Turner/Fitter/ Electrician	**NA**
Diploma	Mechanical	2	Mechanical/Electrical/ Automobile	1	Mechanical	**NA**
Diploma	Mechanical	3	Mechanical/Electrical/ Automobile	0	Mechanical	**NA**

Assessor Certification	
Domain Certification	**Platform Certification**
"Automotive Plastic Moulding Assistant, ASC/Q4402, version 2.0". Minimum accepted score is 80%.	"Assessor; MEP/Q2701 v1.0" Minimum accepted score is 80%.

Assessment Strategy

1. Assessment System Overview:
   - Batches assigned to the assessment agencies for conducting the assessment on SDMS/SIP or email
   - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
   - Assessment agency deploys the ToA certified Assessor for executing the assessment
   - SSC monitors the assessment process & records

2. Testing Environment:
   - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
   - Check the duration of the training.
   - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
   - If the batch size is more than 30, then there should be 2 Assessors.
   - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
   - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
   - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
   - Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:
   - Question papers created by the Subject Matter Experts (SME)
   - Question papers created by the SME verified by the other subject Matter Experts
   - Questions are mapped with NOS and PC
   - Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
   - Assessor must be ToA certified & trainer must be ToT Certified
   - Assessment agency must follow the assessment guidelines to conduct the assessment

4. Types of evidence or evidence-gathering protocol:
   - Time-stamped & geotagged reporting of the assessor from assessment location
   - Centre photographs with signboards and scheme specific branding
   - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
   - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:
   - Surprise visit to the assessment location
   - Random audit of the batch
   - Random audit of any candidate

6. Method for assessment documentation, archiving, and access
   - Hard copies of the documents are stored
   - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
   - Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
SOP	Standard Operating Procedure
WI	Work Instructions
PPE	Personal Protective equipment