Model Curriculum

Iron & Steel – Control Room Operator for Agglomeration

SECTOR: IRON & STEEL
SUB-SECTOR: STEEL

OCCUPATION: Agglomeration
REF ID: ISC/Q0301
NSQF LEVEL: 5

Skill India

N·S·D·C National Skill Development Corporation
Transforming the skill landscape

Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

INDIAN IRON AND STEEL SECTOR SKILL COUNCIL

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: Control Room Operator QP No. ISC/Q0301 NSQF Level 5
for Agglomeration

Date of Issuance: **December 22nd , 2015**

Valid up to: **December 21st, 2016**

** Valid up to the next review date of the Qualification Pack*

Authorised Signatory
(Indian Iron and Steel Sector Skill Council)

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IRON & STEEL – CONTROL ROOM OPERATOR FOR AGGLOMERATION

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Iron & Steel – Control Room Operator for Agglomeration", in the "Iron & Steel" Sector/Industry and aims at building the following key competencies amongst the learner.

Program Name	**Iron & Steel – Control Room Operator for Agglomeration**		
Qualification Pack Name & Reference ID.	**Iron & Steel – Control Room Operator for Agglomeration ISC/Q0301**		
Version No.	1.0	**Version Update Date**	25-03-2015
Pre-requisites to Training	Minimum qualification – Diploma (Metallurgical / Mechanical) Pass		
Training Outcomes	**After completing this programme, participants will be able to:** • Carry out control room operation • Problem identification & reporting • Use basic health and safety practices at workplace • Work effectively with others andmanage team members		

This course encompasses 4 out of 4 National Occupational Standards (NOS) of "Iron & Steel – Control Room Operator for Agglomeration" Qualification Pack issued by "Indian Iron & Steel Sector Skill Council".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	**Over view of Iron & Steel Industry** **Theory Duration** (hh:mm) 04:00 **Practical Duration** (hh:mm) 05:00 **Corresponding NOS Code**	• Understanding Iron & steel industry • Understanding types of Iron & Steel Industry • Understanding products of Iron & Steel industry • Activities in Iron & Steel Industry	PPTs of Iron and steel manufacturing, Charts showing the same
2	**Occupational, Health and Safety (OHAS)** **Theory Duration** (hh:mm) 12:00 **Practical Duration** (hh:mm) 20:00	• Understanding the Occupational health & Safety • Understand What is hazard • Documentation for Health and safety • Working at Heights, confined spaces • Remedies for fire at work place	PPTs for OHAS related to Job Role, Display Material for PPEs related to Job Role, Safety Material

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Corresponding NOS Code ISC/N0008		
3	**5S & House keeping** **Theory Duration** (hh:mm) 12:00 **Practical Duration** (hh:mm) 24:00 **Corresponding NOS Code** ISC/N0004	• Identification of bottlenecks in functioning of work place • Various methods of housekeeping both pre-work & post-work as well	PPTs of 5S, Display Charts of 5S, Audit Checklists of 5S
4	**Carry out control room operation** **Theory Duration** (hh:mm) 40:00 **Practical Duration** (hh:mm) 210:00 **Corresponding NOS Code** **ISC/N0301**	• Understand all operating parameters, all equipment in pellet / sinter plant and DCS operation, logics and Interlocks • Production of pellet / sinter with good quality and low cost & power consumption • Operation of Grinding plant, Filtration plant, Mixing & balling units and controlling process parameters • Operation of Raw material Bedding & Blending, Homogenous mixing and Micro pelletizing and controlling process parameters • Communicate with operators and carry out documentation	PPTs for various types of drawings, Blue prints, respective machines Hand tools and lifting machines, various measuring instruments
5	**Problem identification & reporting** **Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 55:00 **Corresponding NOS Code** **ISC/N0302**	• Identify solutions to problems • Take corrective action • Report / escalate unresolved identified problems	Precision measuring tools, lifting tools etc. marking tools
6	**Use basic health and safety practices at the workplace** **Duration** (hh:mm) 18:00	• Health and safety procedures • Fire safety procedures • Emergencies, rescue and first aid procedures	PPE, Different Type of Safety Sign, First Aid Box, Safety instrument and clothing, Step Ladder, Sample Accident reports ,Fire Extinguishers,

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Practical Duration (hh:mm) 28:00 **Corresponding NOS Code** **ISC/N0008**		Items required for fire extinguisher and fire Safety
7	**Work effectively with others and manage team members** **Duration** (hh:mm) 17:00 **Practical Duration** (hh:mm) 28:00 **Corresponding NOS Code** **ISC/N0096**	• Ensure engagement of team members through on-the job handholding & support • Demonstrate effective behaviours for team work	Communication skills PPTs, Posters Team management posters
	Total Duration **Theory Duration** **118:00** **Practical Duration** **370:00**	**Unique Equipment Required:** • Mechanical Drawings, Blueprints, • Basic Tools and Equipment's, • measuring tools& precision measurement tools, • Assembling tools • Material and Equipment for cleaning and lifting machines • PPE, Safety Sign, First Aid Box, Fire Extinguishers	

Grand Total Course Duration: **488Hours, 0 Minutes**

*(This syllabus/ curriculum has been approved by**Indian Iron and Steel Sector Skills Council**)*

Trainer Prerequisites for Job role: "Iron & Steel – Control Room Operator for Agglomeration" mapped to Qualification Pack: "ISC/Q0301"

Sr. No.	Area	Details
1	**Description**	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack "ISC/Q0301".
2	**Personal Attributes**	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	**Minimum Educational Qualifications**	Min. ITI Fitter pass and preferably CTI/ATI cleared/ Diploma Mechanical
4a	**Domain Certification**	Certified for Job Role: "Iron & Steel – Control Room Operator for Agglomeration" mapped to QP: "ISC/Q0301". Minimum accepted score is 80%
4b	**Platform Certification**	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "SSC/1402". Minimum accepted score is 80%
5	**Experience**	Min. 5 years industry experience and minimum 2 years' experience as Trained or un trained for same Job Role/ Trade

Annexure: Assessment Criteria

Assessment Criteria	
Job Role	**Iron & Steel – Control Room Operator for Agglomeration**
Qualification Pack	**ISC/Q0301**
Sector Skill Council	**Indian Iron & Steel Sector Skill Council**

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. EachPerformance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below)
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on these criteria.
5	To pass the Qualification Pack , every trainee should score a minimum of 60% in every NOS.
6	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

				Marks allocation	
Assessment outcome (nos)	**Assessment criteria**	**Total marks**	**Out of**	**Theory**	**Skills practical**
ISC/N0301:Carry out control room operation	PC1. Understand DCS architecture, key facilities like trends, graphs, alarms, face plate reading	**550**	**15**	**5**	**10**
	PC2. Understand the quality requirements of iron ore slurry, filter cake, additives & pellets		**20**	5	15
	PC3. Understand the characteristics of raw material, additives analysis and effect of change in production & quality		**20**	5	15
	PC4. Understand control of process parameters and capable handling process deviations		**20**	5	15

				Marks allocation	
Assessment outcome (nos)	**Assessment criteria**	**Total marks**	**Out of**	**Theory**	**Skills practical**
	PC5. Understand product knowledge, environment standards.		**20**	5	15
	PC6. Understand Importance of close monitoring and control of furnace parameters		**20**	5	15
	PC7. Adjust temperatures ,process fan flows to get good quality of pellets / sinter		**15**	0	15
	PC8. Ensure Proper control of balling feed to maximum production		**15**	0	15
	PC9. Ensure proper control &nodulizing to maximise sinter production		**15**	0	15
	PC 10. Maintain documentation of process parameters, run hours, production totalizers		**20**	5	15
	PC 11. Alert operators for proper inspection of equipment, machinery		**15**	0	15
	PC 12. Understand functioning of equipment involved in AGP, Filtration, slurry handling & storage, mixing and balling units		**20**	5	15
	PC 13. Understand slurry pumping system & receiving station / storage & feeding of pressure filters.		**20**	5	15

				Marks allocation	
Assessment outcome (nos)	**Assessment criteria**	**Total marks**	**Out of**	**Theory**	**Skills practical**
	PC 14. Ensure Control of grinding parameters to get desired fineness of additives;		**20**	5	15
	PC 15. Maintain Log sheets		**10**	5	5
	PC 16. Maintain de dusting systems , ESPs, recovery of fines to process scrubber system and thickener.		**20**	5	15
	PC 17. Inspect of Critical equipment, monitoring of alarms and taking corrective measures		**20**	5	15
	PC 18. Understand functioning of equipment involved in addition, crushing raw material, bedding and blending of all heterogeneous raw materials and convert a single raw material (base mix) for Sinter making.		**20**	5	15
	PC 19. Carry out reclamation of base mix, its dispatch to sinter making unit and its storage		**20**	5	15
	PC 20. Ensure control of accurate proportioning and micro pellet formation		**20**	5	15
	PC 21. Understand implication of quality deviation of base material and other additives on sinter making process w.r.t production rate and quality		**20**	5	15
	PC 22. Monitor all dispatches and communicate with Bedding Blending plant		**20**	5	15

				Marks allocation	
Assessment outcome (nos)	**Assessment criteria**	**Total marks**	**Out of**	**Theory**	**Skills practical**
	PC 23. Ensure required ignition for temperature and pressure control from DCS /control desk		**20**	5	15
	PC 24. Understand start, progress and completion of sintering process and how to take care of any process parameters deviations as and when it arises		**20**	5	15
	PC 25. Understand all de-dusting system (Process and plant de-dusting ESP and Bag filters) and re-circulation of micro fine dust		**20**	5	15
	PC 26. Inspect of critical equipment, monitoring of alarms, its analysis and taking corrective measures		**20**	5	15
	PC 27. Acknowledge process alarms and caution field operators		**15**	5	10
	PC 28. Document process parameters, quality figures, log sheets		**15**	5	10
	PC 29. Generate of daily production report & special reports		15	5	10
	PC 30. Develop important logics for higher operation efficiency and process safety		20	5	15
	NOS Total Marks	**Total**	**550**	**130**	**420**
ISC/N0302: Problem identification & reporting	PC1. Identify defects/indicators of problems	**200**	**8**	**3**	**5**

				Marks allocation	
Assessment outcome (nos)	**Assessment criteria**	**Total marks**	**Out of**	**Theory**	**Skills practical**
	PC2. Identify any wrong practices that may lead to problems		**8**	**3**	**5**
	PC3. Identify practices that may impact the final product quality		**8**	**3**	**5**
	PC4. Identify if the problem has occurred before		**8**	**3**	**5**
	PC5. Identify other operations that might be impacted by the problem		**8**	**3**	**5**
	PC6. Ensure that no delays are caused as a result of failure to escalate problems		**8**	**3**	**5**
	PC7. Take appropriate materials and sample to conduct tests		**8**	**3**	**5**
	PC8. Evaluate results to confirm suspected reasons for non-conformance (where required)		**10**	3	7
	PC9. Consider possible reasons for identification of problems		**8**	**3**	**5**
	PC10. Consider applicable corrections and formulate corrective action		**8**	**3**	**5**
	PC11. Formulate action in a timely manner		**8**	**3**	**5**
	PC12. Communicate problem/remedial action to appropriate authorities		**8**	**3**	**5**
	PC13. Take corrective action in a timely manner		10	3	7
	PC14. Monitor corrective action		10	3	7

				Marks allocation	
Assessment outcome (nos)	**Assessment criteria**	**Total marks**	**Out of**	**Theory**	**Skills practical**
	PC15. Evaluate implementation of corrective action taken to determine if the problem has been resolved		8	3	5
	PC16. Ensure that corrective action selected is viable and practical		8	3	5
	PC17. Ensure that correct solution is identified to an identified problem		8	3	5
	PC18. Take corrective action for problems identified according to the company procedures		8	3	5
	PC19. Ensure that no delays are caused as a result of failure to take necessary action		8	3	5
	PC20. Report/document problem and corrective action in an appropriate manner		10	5	5
	PC21. Escalate problem as per laid down escalation matrix		8	3	5
	PC22. Escalate the problem within stipulated time		8	3	5
	PC23. Escalate the problem in an appropriate manner		8	3	5
	PC24. Ensure that no delays are caused as a result of failure to escalate problems		8	3	5
	NOS Total Marks	**Total**	**200**	**74**	**126**
ISC/N0008: Use basic health and safety practices at the workplace	PC1. Use protective clothing/equipment for specific tasks and work conditions	**150**	**10**	**5**	**5**
	PC2. State the name and location of people responsible for health and safety in the workplace		**5**	0	5

				Marks allocation	
Assessment outcome (nos)	**Assessment criteria**	**Total marks**	**Out of**	**Theory**	**Skills practical**
	PC3. State the names and location of documents that refer to health and safety in the workplace		**1**	0	1
	PC4. Identify job-site hazardous work and state possible causes of risk or accident in the workplace		**9**	5	4
	PC5. Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role		**10**	5	5
	PC6. State location of general health and safety equipment in the workplace		**5**	0	5
	PC7. Inspect for faults, set up and safely use steps and ladders in general use		**5**	0	5
	PC8. Work safely in and around trenches, elevated places and confined areas		**5**	0	5
	PC9. Lift heavy objects safely using correct procedures		**5**	0	5
	PC10. Apply good housekeeping practices at all times		**1**	0	1
	PC11. Identify common hazard signs displayed in various areas		**6**	5	1
	PC12. Retrieve and/or point out documents that refer to health and safety in the workplace		**4**	0	4
	PC13. Use the various appropriate fire extinguishers on different types of fires correctly		**9**	5	4

				Marks allocation	
Assessment outcome (nos)	**Assessment criteria**	**Total marks**	**Out of**	**Theory**	**Skills practical**
	PC14. Demonstrate rescue techniques applied during fire hazard		**10**	5	5
	PC15. Demonstrate good housekeeping in order to prevent fire hazards		**1**	0	1
	PC16. Demonstrate the correct use of a fire extinguisher		**4**	0	4
	PC17. Demonstrate how to free a person from electrocution		**5**	0	5
	PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.		**10**	5	5
	PC19. Demonstrate basic techniques of bandaging		**5**	0	5
	PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		**10**	5	5
	PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments		**5**	0	5
	PC22. Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases		**5**	0	5
	PC23. Demonstrate the artificial respiration and the CPR Process		**5**	0	5

				Marks allocation	
Assessment outcome (nos)	**Assessment criteria**	**Total marks**	**Out of**	**Theory**	**Skills practical**
	PC24. Participate in emergency procedures		**5**	0	5
	PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible		**9**	5	4
	PC26. Demonstrate correct method to move injured people and others during an emergency		**1**	0	1
	NOS Total Marks	**Total**	**150**	**45**	**105**
ISC/N0096: Work effectively with others &manage team members	PC1. Accurately receive, absorb and share information and instructions from the supervisor and fellow workers, getting clarification where required	**100**	**5**	0	5
	PC2. Display appropriate communication etiquette while working		**10**	0	10
	PC3. Display active listening skills while interacting with others at work		**10**	0	10
	PC4. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		**5**	0	5
	PC5. Display helpful behaviour by assisting others in performing tasks in effective manner		**10**	0	10
	PC6. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		**10**	0	10

				Marks allocation	
Assessment outcome (nos)	**Assessment criteria**	**Total marks**	**Out of**	**Theory**	**Skills practical**
	PC7. Demonstrate responsible and disciplined behaviours at the workplace		**5**	0	5
	PC8. Escalate grievances and problems to superiors		**5**	0	5
	PC9. Communicate day-to-day objectives, instructions etc. to team members		**15**	5	10
	PC10. Guide the team members to manage day-to-day issues at work		**5**	0	5
	PC11. Gather concerns, feedback from team members and convey them to appropriate authorities		**15**	5	10
	PC12. Escalate grievances and problems to superiors		**5**	0	5
	NOS Total Marks	**Total**	**100**	**10**	**90**
	Grand Total	**1000**	**1000**	**259**	**741**
	Percentage Weightage:			**50%**	**50%**
	Minimum Pass% to qualify (aggregate):			**60%**	