



# Model Curriculum

## Fluid Management Operator: Rolling Mills

**SECTOR: IRON & STEEL**  
**SUB-SECTOR: STEEL, RE-ROLLERS**

**OCCUPATION: COLD ROLLING MILL**  
**REF ID: ISC/Q0703**  
**NSQF LEVEL: 4**



  

# 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: 'Fluid Management Operator: Rolling Mills' QP No. 'ISC/Q0703 NSQF Level 4'

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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# Fluid Management Operator: Rolling Mills

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Fluid Management Operator: Rolling Mills”, in the “Iron & Steel” Sector/Industry and aims at building the following key competencies amongst the learner.

<b>Program Name</b>	<b>Fluid Management Operator: Rolling Mills</b>		
<b>Qualification Pack Name &amp; Reference ID.</b>	<b>Fluid Management Operator: Rolling Mills ISC/Q0703</b>		
<b>Version No.</b>	1.0	<b>Version Update Date</b>	01-04-2017
<b>Pre-requisites to Training</b>	Minimum qualification – 12 <sup>th</sup> (Science) Pass		
<b>Training Outcomes</b>	<b>After completing this programme, participants will be able to:</b> <ul style="list-style-type: none"> <li>• Carry out laboratory activities</li> <li>• Carry out fluid system maintenance &amp; management</li> <li>• Carry out fluid inventory management including disposal of waste fluids from process</li> <li>• Use basic health and safety practices at the work place</li> <li>• Works effectively with others</li> </ul>		

This course encompasses 5 out of 5 National Occupational Standards (NOS) of “Fluid Management Operator: Rolling Mills” Qualification Pack issued by “Indian Iron & Steel Sector Skill Council”.

<b>Sr. No.</b>	<b>Module</b>	<b>Key Learning Outcomes</b>	<b>Equipment Required</b>
1	<b>Over view of Iron &amp; Steel Industry</b>  <b>Theory Duration</b> (hh:mm) 04:00 <b>Practical Duration</b> (hh:mm) 00:00  <b>Corresponding NOS Code</b>	<ul style="list-style-type: none"> <li>• Understanding Iron &amp; steel industry</li> <li>• Understanding types of Iron &amp; Steel Industry</li> <li>• Understanding products of Iron &amp; Steel industry</li> <li>• Activities in Iron &amp; Steel Industry</li> </ul>	PPTs of Iron and steel manufacturing, Charts showing the same
2	<b>Occupational, Health and Safety (OHAS)</b>  <b>Theory Duration</b> (hh:mm) 08:00	<ul style="list-style-type: none"> <li>• Understanding the Occupational health &amp; Safety</li> <li>• Understand What is hazard</li> <li>• Documentation for Health and safety</li> <li>• Working at Heights, confined spaces</li> <li>• Remedies for fire at work place</li> </ul>	PPTs for OHAS related to Job Role, Display Material for PPEs related to Job Role, Safety



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<b>Practical Duration</b> (hh:mm) 12:00  <b>Corresponding NOS Code</b> ISC/N0008		Material
3	<b>5S &amp; House keeping</b>  <b>Theory Duration</b> (hh:mm) 06:00  <b>Practical Duration</b> (hh:mm) 06:00  <b>Corresponding NOS Code</b> ISC/N0008	<ul style="list-style-type: none"> <li>• Identification of bottlenecks in functioning of work place</li> <li>• Various methods of housekeeping both pre-work &amp; post-work as well</li> </ul>	PPTs of 5S, Display Charts of 5S, Audit Checklists of 5S
4	<b>Carry out laboratory activities</b>  <b>Theory Duration</b> (hh:mm) 20:00  <b>Practical Duration</b> (hh:mm) 70:00  <b>Corresponding NOS Code</b> ISC/N0701	<ul style="list-style-type: none"> <li>• Collect liquid samples from respective sampling points as per SOP and submit to laboratory</li> <li>• Collect interim product samples for assessing mill performance</li> <li>• Test the samples (fluid/solid) for assessment of quality as per standard SPI</li> </ul>	PPTs for various types of drawings, Gauges, relevant machines, valves and equipment, oil
5	<b>Carry out fluid system maintenance &amp; management</b>  <b>Theory Duration</b> (hh:mm) 35:00  <b>Practical Duration</b> (hh:mm) 110:00  <b>Corresponding NOS Code</b> ISC/N0702	<ul style="list-style-type: none"> <li>• Monitor physical parameters like pressure, temperature, flow, tank volume</li> <li>• Prepare the right fluid for the purpose and top up where necessary</li> <li>• Optimally use online systems (e.g. Magnetic separators, Catch pans, Valves, Filter beds etc.) for maintaining fluid quality through filtration</li> <li>• Periodically clean the system elements to ensure flow passage is clean and free from contamination</li> </ul>	Gauges, relevant machines, valves and equipment, oil
6	<b>Carry out Fluid Inventory Management including disposal of waste fluids from process</b>	<ul style="list-style-type: none"> <li>• Ensure correctness of accompanying documents &amp; receiving procedures complied</li> <li>• Draw samples and send to laboratory for testing according to Specs</li> <li>• Managing the stock, receipt and</li> </ul>	Gauges, relevant machines, valves and equipment, oil



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>Theory Duration</b> (hh:mm) 35:00</p> <p><b>Practical Duration</b> (hh:mm) 110:00</p> <p><b>Corresponding NOS Code</b> ISC/N0703</p>	<p>consumption and flag alert for ordering</p> <ul style="list-style-type: none"> <li>Collection of used fluid from different points and /or arrange to transfer to treatment facility, flagging alert for timely removal of collected waste fluid</li> </ul>	
7	<p><b>Use basic health and safety practices at the workplace</b></p> <p><b>Duration</b> (hh:mm) 04:00</p> <p><b>Practical Duration</b> (hh:mm) 08:00</p> <p><b>Corresponding NOS Code</b> ISC/N0008</p>	<ul style="list-style-type: none"> <li>Health and safety procedures</li> <li>Fire safety procedures</li> <li>Emergencies, rescue and first aid procedures</li> </ul>	<p>PPE, Different Type of Safety Sign, First Aid Box, Safety instrument and clothing, Step Ladder, Sample Accident reports, Fire Extinguishers, Items required for fire extinguisher and fire Safety</p>
8	<p><b>Work effectively with others</b></p> <p><b>Duration</b> (hh:mm) 06:00</p> <p><b>Practical Duration</b> (hh:mm) 06:00</p> <p><b>Corresponding NOS Code</b> ISC/N0009</p>	<ul style="list-style-type: none"> <li>Ensure appropriate communication with superiors, peers and others as applicable at work place</li> <li>Demonstrate appropriate behaviour and etiquette at work place</li> </ul>	<p>Communication skills PPTs, Posters Team management posters</p>
	<p><b>Total Duration</b></p> <p><b>Theory Duration</b> <b>118:00</b></p> <p><b>Practical Duration</b> <b>322:00</b></p>	<p><b>Unique Equipment Required:</b></p> <ul style="list-style-type: none"> <li>Mechanical Drawings, Blueprints,</li> <li>Basic Tools and Equipment's,</li> <li>measuring tools&amp; gauges</li> <li>Lubricant and coolant</li> <li>Material and Equipment for cleaning, lifting machines</li> <li>PPE, Safety Sign, First Aid Box, Fire Extinguishers</li> </ul>	

Grand Total Course Duration: **440Hours, 0 Minutes**

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



## Trainer Prerequisites for Job role: “Fluid Management Operator: Rolling Mills” mapped to Qualification Pack: “ISC/Q0703”

Sr. No.	Area	Details
1	<b>Description</b>	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “ISC/Q0703”.
2	<b>Personal Attributes</b>	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	<b>Minimum Educational Qualifications</b>	Min. ITI pass and preferably CTI/ATI cleared/ Diploma Mechanical
4a	<b>Domain Certification</b>	Certified for Job Role: “Fluid Management Operator: Rolling Mills” mapped to QP: “ISC/Q0703”. Minimum accepted score is 80%
4b	<b>Platform Certification</b>	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/1402”. Minimum accepted score is 80%
5	<b>Experience</b>	Min. 5 years industry experience and minimum 2 years’ experience as Trained or un trained for same Job Role/ Trade



## Annexure: Assessment Criteria

<b>Assessment Criteria</b>	
<b>Job Role</b>	<b>Fluid Management Operator: Rolling Mills</b>
<b>Qualification Pack</b>	<b>ISC/Q0703</b>
<b>Sector Skill Council</b>	<b>Indian Iron &amp; Steel Sector Skill Council</b>

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance 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.

Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
<b>ISC/N0701: Carry out laboratory activities</b>	PC1. Collect fluid samples from designated points following all safety requirement and adhering to time schedules	<b>200</b>	20	0	20
	PC2. Submit the samples to the laboratory for actual testing		10	0	10
	PC3. Collect in-process steel samples following SOP and adhering to time schedules		20	0	20
	PC4. Prepare samples for the relevant tests (like pH, Conductivity, Emulsion stability, Iron content, Oil concentration etc.)		80	30	50





Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC5. Conduct the appropriate tests and upload and/or record the results in system		70	20	50
	<b>NOS Total Marks</b>	<b>Total</b>	<b>200</b>	<b>55</b>	<b>150</b>
<b>ISC/N0702: Carry out fluid system maintenance &amp; management</b>	PC1. Periodically measure all relevant parameters like temperature, level, flow & tank volume of fluid	<b>350</b>	35	5	30
	PC2. Take corrective actions to restore the system health		20	5	15
	PC3. Report issues precisely to supervisor in case the problem is beyond his scope		15	5	10
	PC4. Transfer from stock the right quality and quantity of fluid and add water of right quality & quantity as per SOP		50	10	40
	PC5. Based on Tank Volume, top up/transfer to the working tanks		25	0	25
	PC6. Understand and operate the Magnetic Separators		60	20	40
	PC7. Operate the filtration units		40	10	30
	PC8. Operate all other equipment in the fluid system like Steam Valve, Catch pans, heat exchanger etc.		60	10	50
	PC9. In off-line operation, clean tanks, headers, nozzles, mixers during scheduled shut down, Mill stoppage etc. following SOPs		45	5	40
	<b>NOS Total Marks</b>	<b>Total</b>	<b>350</b>	<b>70</b>	<b>280</b>
<b>ISC/N0703: Carry out Fluid Inventory Management including</b>	PC1. Understand and interpret the details in the incoming documents (weighbridge records, permission from appropriate authority for unloading, compliance to	<b>200</b>	30	10	20



Assessment outcome (nos)	Assessment criteria	Total marks	Marks allocation		
			Out of	Theory	Skills practical
<b>disposal of waste fluids from process</b>	delivery schedule etc.)				
	PC2. Follow the SOP for proper collection, labelling of samples and sending to laboratory for compliance checking		30	10	20
	PC3. Record levels in storage tank, match it with daily receipts & consumption		35	10	25
	PC4. Flag alert for replacement in time		10	0	10
	PC5. Use steam heating system for liquefying the solidified waste during winter for proper pumping		40	10	30
	PC6. Collect used fluid from points such as discharge from mag-separators, waste filter papers & transfer to the designated storage area		20	0	20
	PC7. Transfer waste fluid in sump pits to Treatment facility using slurry pump		25	0	25
	PC8. Flag alert for timely removal of the waste fluid collected to respective agency		10	0	10
	<b>NOS Total Marks</b>	<b>Total</b>	<b>200</b>	<b>40</b>	<b>160</b>
<b>ISC/N0008: Use basic health and safety practices at the workplace</b>	PC1. Use protective clothing/equipment for specific tasks and work conditions	<b>150</b>	10	5	5
	PC2. State the name and location of people responsible for health and safety in the workplace		5	0	5
	PC3. State the names and location of documents that refer to health and safety in the workplace		1	0	1



Assessment outcome (nos)	Assessment criteria	Total marks	Marks allocation		
			Out of	Theory	Skills practical
	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
	PC14. Demonstrate rescue techniques applied during fire hazard		10	5	5



Assessment outcome (nos)	Assessment criteria	Total marks	Marks allocation		
			Out of	Theory	Skills practical
	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
	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



Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC26. Demonstrate correct method to move injured people and others during an emergency		1	0	1
	<b>NOS Total Marks</b>	<b>Total</b>	<b>150</b>	<b>45</b>	<b>105</b>
<b>ISC/N0009: Work effectively with others</b>	PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	<b>100</b>	10	5	5
	PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt		10	5	5
	PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand		10	0	10
	PC4. Display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible		10	5	5
	PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	5	5
	PC6. Display appropriate communication etiquette while working		10	0	10
	PC7. Display active listening skills while interacting with others at work		10	0	10
	PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		10	5	5
	PC9. Demonstrate responsible and disciplined behaviors at the workplace		15	5	10



Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC10. Escalate grievances and problems to		5	0	5
	<b>NOS Total Marks</b>	<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>
	<b>Grand Total</b>	<b>1000</b>	<b>1000</b>	<b>235</b>	<b>765</b>
	<b>Percentage Weightage:</b>			<b>50%</b>	<b>50%</b>
	<b>Minimum Pass% to qualify (aggregate):</b>			<b>60%</b>	