



National Occupational Standards

Overhead gantry crane operator

Unit Code: CSC/N1205

Version: 1.0

NSQF Level: 4

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Description

Operate gantry crane equipment safely and efficiently to lift, move and position heavy materials or containers according to work orders and instructions.

Scope

The scope covers the following :

- Prepare for safe crane operation
- Perform pre-use checks
- Operate crane as per SOP
- Perform maintenance on Electric Wire Rope Hoist as required

Elements and Performance Criteria

Carrying out crane operation safely

To be competent, the user/individual on the job must be able to:

- PC1.** follow the manufacturer's instructions and workplace safety guidelines while working on heavy machinery, tools and equipment
- PC2.** obtain necessary permit to work
- PC3.** start and stop the travelling motion at low speed to prevent the load from swinging excessively
- PC4.** raise the load high enough to prevent it from hitting objects during travel
- PC5.** perform task safely and recognize any hazards
- PC6.** ensure SWL data plates are clearly visible to the operator at all times
- PC7.** operate the crane with care and consideration
- PC8.** monitor the operation and be ready to press emergency switch whenever required
- PC9.** move in appropriate direction
- PC10.** ensure to attend all the suspended loads
- PC11.** ensure to not lower the hook so far that the ropes become slack
- PC12.** park the crane or hoist in a designated maintenance position
- PC13.** follow the appropriate health and safety regulations and procedures
- PC14.** ensure not to use the overload protection for weighing the load
- PC15.** use the proper pushbuttons intended for controlling the hoist
- PC16.** ensure to avoid short, jerky motions and unnecessary short starts as it causes the hoisting motor to overheat quickly
- PC17.** check the first aid box to ensure it is updated with the relevant first aid supplies
- PC18.** check and test the firefighting and various safety equipment to ensure they are in usable condition
- PC19.** ensure all portable fire extinguishers and stowage locations are numbered in place and inspection dated for safety reasons
- PC20.** coordinate with the supervisor for the repair and replacement of firefighting and safety equipment

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- PC21.** check the work conditions, assess the potential health and safety risks, and take appropriate measures to mitigate them
- PC22.** select and use the appropriate Personal Protective Equipment (PPE) relevant to the task and work conditions
- PC23.** follow the recommended techniques while lifting and moving heavy objects to avoid injury

Prepare for crane operation

To be competent, the user/individual on the job must be able to:

- PC24.** ensure the equipments are in good working order
- PC25.** pay particular attention to the rope and hook
- PC26.** ensure that the hoist is always operated within its rated capacity (SWL - Safe working load)
- PC27.** check the sling angle is more than 45°
- PC28.** ensure that no one is working on the crane track, crane platform (if fitted) or where they could be struck by the crane/ hoist

Operating the crane as per Standard Operating Procedures

To be competent, the user/individual on the job must be able to:

- PC29.** ensure to operate the crane with care and consideration
- PC30.** start the crane as per set guidelines or user manual
- PC31.** provide clear directions while operating crane
- PC32.** load the crane safely as required or mentioned in work order sheet
- PC33.** transfer the load to the desired location in a safe manner using crane
- PC34.** remove the load at the designated location and park the crane properly
- PC35.** centre the hoist over the load before lifting

Perform inspection and maintenance on wire rope hoist

To be competent, the user/individual on the job must be able to:

- PC36.** check the wire rope for kinking, corrosion, broken wires and broken strands visually
- PC37.** check the rope lays in the grooves of the drum and in rope sheaves
- PC38.** examine wire rope/ chain by walking 360 degrees around hook block
- PC39.** ensure there is no reduction in rope diameter
- PC40.** inspect there are no broken wires
- PC41.** check the hook moves freely in every allowed direction
- PC42.** ensure the presence of safety latch and its functioning
- PC43.** inspect free and smooth rotation of rope sheaves
- PC44.** check there is no structural damage
- PC45.** ensure there are no cracks on any component
- PC46.** inspect the presence of capacity marking of equipments
- PC47.** ensure the sheave guards are intact, unbroken and sheaves are smooth
- PC48.** check the sheave ropes rotate freely
- PC49.** inspect the limit switches operate properly
- PC50.** check the pushbutton controller for cracks, signs of wear in the housing and for loose or broken buttons
- PC51.** ensure the emergency button is working properly

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- PC52.** clean the parts of the equipment
- PC53.** replace damaged parts
- PC54.** clean of corrosion and apply protective treatment

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** applicable documentation requirement in the job role
- KU2.** use of relevant PPE
- KU3.** applicable health, safety and environmental regulations and guidelines
- KU4.** the concepts and benefits of industry 4.0 and Industrial IOT
- KU5.** how to minimize various hazards associated with the crane operations
- KU6.** the importance of keeping the work area clean and hazard free
- KU7.** how to read and interpret safe crane operations
- KU8.** how to extract information/data and related information related to crane operations
- KU9.** how to use imperial and metric systems of measurement
- KU10.** use of different types of lifting hooks
- KU11.** use of relevant accessories like rope, hook, sling, belt etc.
- KU12.** the importance of following the manufacturer instructions and workplace safety guidelines while working on heavy machinery, tools and equipment
- KU13.** safety aspects related to crane operation and material handling
- KU14.** ratings of motors and precautions to taken while dealing with electrical equipment
- KU15.** different types of hazards associated with the use of various machinery, tools, implements, equipment and materials

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** maintain work-related notes and records
- GS2.** read the relevant literature to get the latest updates about the field of work
- GS3.** communicate politely and professionally
- GS4.** listen attentively to understand the information being shared
- GS5.** plan and prioritise tasks to ensure timely completion
- GS6.** identify possible disruptions to work and take appropriate preventive measures
- GS7.** take quick decisions to deal with workplace emergencies/ accidents
- GS8.** evaluate all possible solutions to a problem to select the best one
- GS9.** coordinate with the co-workers to achieve the work objectives

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Carrying out crane operation safely</i>	5	10	-	-
PC1. follow the manufacturer's instructions and workplace safety guidelines while working on heavy machinery, tools and equipment	-	-	-	-
PC2. obtain necessary permit to work	-	-	-	-
PC3. start and stop the travelling motion at low speed to prevent the load from swinging excessively	-	-	-	-
PC4. raise the load high enough to prevent it from hitting objects during travel	-	-	-	-
PC5. perform task safely and recognize any hazards	-	-	-	-
PC6. ensure SWL data plates are clearly visible to the operator at all times	-	-	-	-
PC7. operate the crane with care and consideration	-	-	-	-
PC8. monitor the operation and be ready to press emergency switch whenever required	-	-	-	-
PC9. move in appropriate direction	-	-	-	-
PC10. ensure to attend all the suspended loads	-	-	-	-
PC11. ensure to not lower the hook so far that the ropes become slack	-	-	-	-
PC12. park the crane or hoist in a designated maintenance position	-	-	-	-
PC13. follow the appropriate health and safety regulations and procedures	-	-	-	-
PC14. ensure not to use the overload protection for weighing the load	-	-	-	-
PC15. use the proper pushbuttons intended for controlling the hoist	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC16. ensure to avoid short, jerky motions and unnecessary short starts as it causes the hoisting motor to overheat quickly	-	-	-	-
PC17. check the first aid box to ensure it is updated with the relevant first aid supplies	-	-	-	-
PC18. check and test the firefighting and various safety equipment to ensure they are in usable condition	-	-	-	-
PC19. ensure all portable fire extinguishers and stowage locations are numbered in place and inspection dated for safety reasons	-	-	-	-
PC20. coordinate with the supervisor for the repair and replacement of firefighting and safety equipment	-	-	-	-
PC21. check the work conditions, assess the potential health and safety risks, and take appropriate measures to mitigate them	-	-	-	-
PC22. select and use the appropriate Personal Protective Equipment (PPE) relevant to the task and work conditions	-	-	-	-
PC23. follow the recommended techniques while lifting and moving heavy objects to avoid injury	-	-	-	-
<i>Prepare for crane operation</i>	7	15	-	-
PC24. ensure the equipments are in good working order	-	-	-	-
PC25. pay particular attention to the rope and hook	-	-	-	-
PC26. ensure that the hoist is always operated within its rated capacity (SWL - Safe working load)	-	-	-	-
PC27. check the sling angle is more than 45°	-	-	-	-
PC28. ensure that no one is working on the crane track, crane platform (if fitted) or where they could be struck by the crane/ hoist	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Operating the crane as per Standard Operating Procedures</i>	7	16	-	-
PC29. ensure to operate the crane with care and consideration	-	-	-	-
PC30. start the crane as per set guidelines or user manual	-	-	-	-
PC31. provide clear directions while operating crane	-	-	-	-
PC32. load the crane safely as required or mentioned in work order sheet	-	-	-	-
PC33. transfer the load to the desired location in a safe manner using crane	-	-	-	-
PC34. remove the load at the designated location and park the crane properly	-	-	-	-
PC35. centre the hoist over the load before lifting	-	-	-	-
<i>Perform inspection and maintenance on wire rope hoist</i>	15	25	-	-
PC36. check the wire rope for kinking, corrosion, broken wires and broken strands visually	-	-	-	-
PC37. check the rope lays in the grooves of the drum and in rope sheaves	-	-	-	-
PC38. examine wire rope/ chain by walking 360 degrees around hook block	-	-	-	-
PC39. ensure there is no reduction in rope diameter	-	-	-	-
PC40. inspect there are no broken wires	-	-	-	-
PC41. check the hook moves freely in every allowed direction	-	-	-	-
PC42. ensure the presence of safety latch and its functioning	-	-	-	-
PC43. inspect free and smooth rotation of rope sheaves	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC44. check there is no structural damage	-	-	-	-
PC45. ensure there are no cracks on any component	-	-	-	-
PC46. inspect the presence of capacity marking of equipments	-	-	-	-
PC47. ensure the sheave guards are intact, unbroken and sheaves are smooth	-	-	-	-
PC48. check the sheave ropes rotate freely	-	-	-	-
PC49. inspect the limit switches operate properly	-	-	-	-
PC50. check the pushbutton controller for cracks, signs of wear in the housing and for loose or broken buttons	-	-	-	-
PC51. ensure the emergency button is working properly	-	-	-	-
PC52. clean the parts of the equipment	-	-	-	-
PC53. replace damaged parts	-	-	-	-
PC54. clean of corrosion and apply protective treatment	-	-	-	-
NOS Total	34	66	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	CSC/N1205
NOS Name	Overhead gantry crane operator
Sector	Capital Goods
Sub-Sector	Plastics Manufacturing Machinery, Electrical and Power Machinery, Process Plant Machinery, Light Engineering Goods, Machine Tools, Dies, Moulds and Press Tools, Textile Manufacturing Machinery, Defence Equipment, Ship Building & Repair, Fire-Fighting & Safety Equipment, Homeland Security
Occupation	Shop Floor Management
NSQF Level	4
Credits	1
Minimum Educational Qualification & Experience	10th grade pass with 2 year NTC plus 1 year NAC OR 12th Class OR 10th Class OR Previous relevant Qualification of NSQF Level (3.5)
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024
Reference code on NQR	NG-04-CG-02168-2024-V1-CGSC
NQR Version	1
CCN Category	1