

**MECHANICAL SOP**

Issue No. 01	Rev. No: 02	Effective Date: 17/10/2017	SOP/MEC/037
Issued By: M.R		Approved By: HOD-Mechanical.	
KILN OUTLET SEGMENT REPLACEMENT			

Scope:

This SOP is applicable for kiln outlet segment replacement safely.

Responsibility : Section Engineer – Mech

Accountability : Section head – Mech.

PPE:

1. Helmet,
2. Safety shoe,
3. Goggles
4. Gloves.
5. Nose mask
6. Full body harness.

Tools:

1. Spanner set
2. Hammer

Hazards:**Risks associated**

1. Body injury
2. Leg injury
3. Hand injury

Mitigating Measures

1. Safe and tested tools and tackles
2. On job training

Procedure:

1. Energy isolation of the equipment to be taken from the concern department as per above matrix.
2. Ensure use of PPE and dust mask .etc.
3. Disconnect all the burner feed connections of coal and air.
4. Take out the kiln burner pipe.
5. Provide (pre-fabricated and movable) walkway to kiln Outlet to kiln burner platform.
6. Inspect the kiln outlet segments by clearing the material accumulation at the Segments.
7. For check at next position Rotate the kiln, Platform walkway to be taken out or lift with chain block up to the sufficient height.
8. Clean the material at the fastener.
9. Open and remove the damaged segments.



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10. Clean the area where new segments are to be fixed.
11. Fix the new segments.
12. Weld the anchors for applying the castables at the new segment area.
13. Ensure that all the foreign materials and walkway is dismantled completely.
14. Fix back the kiln burner trolley, and its flexible air and coal connections.
15. Clear all the LC's taken and give clearance to process department for starting the system.

Emergency / Emergency Shut OFF:

1. If any injury takes place, provide First aid and inform to the Safety department or Call Emergency number 3108/9865152222

Records/Annexure:

1. Refer Line clearance/permit in mech department.
2. JSA is enclosed below.

JOB SAFETY ANALYSIS :(JSA)

Job Safety Analysis	Job: Kiln Outlet segment replacement.	Date: 01/09/2014	Analysis by: Section Engineer.	Reviewed by: Section Head
Title of employee doing job: Section Engineer	Supervisor: Section Head	Department: Mech	Section: PYRO	Approved by: SKB GM. Mech.
Req'd/ recommended PPE: Safety helmet, Safety shoe, Gloves, Goggles, Gloves, Nose mask & Full body harness.				
Sequence of Basic Job Steps	Potential Hazards	Recommended Safe Job Procedure	What Could Go Wrong	Corrective Action
Opening of the kiln hood door & disconnection of coal & air pipe line.	Leg and hand injury	Use proper tools and tackles so that fasteners will not slip	Fasteners may slip and tools may hit to the hand and leg	Ensure Use/working condition of TOOLS AND TACKLES.
Taken out the kiln burner pipe outside & Provide walkway to kiln Outlet from kiln burner platform.	Leg, hand & body injury	Use proper tools and tackles so that fasteners will not slip	Fasteners may slip and tools may hit to the hand and leg & negligence or	Ensure Use/working condition of TOOLS AND TACKLES.



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			improper using of full body harness may lead to accident	Use full body harness with proper training.
Inspect the kiln outlet segments by clearing the material accumulation at the Segments.	Health injury	Use goggles & nose mask	Dusty area (Clinkers fines) may leads to suffocation & eye problem	Ensure Use of goggles & nose mask
Rotate the kiln to take the position	Health, Leg, hand & body injury	Use goggles & nose mask	During rotation dust emission will be there may leads to suffocation	Ensure nobody was inside before position of kiln
Clean the material at the fastener	Health injury & hand injury	Use goggles, nose mask & proper tools	Fines may injure the eye Sharp edges in the fastener may injure the fingers	Ensure Use of goggles & proper chipping tools or wire brush
Open and remove the damaged segments	Leg and hand injury	Use proper tools and tackles so that fasteners will not slip	Fasteners may slip and tools may hit to the hand and leg	Ensure Use/working condition of TOOLS AND TACKLES.
Clean the area where new segments are to be fixed.	Health injury & hand injury	Use goggles, nose mask & proper tools	Fines may injure the eye Sharp edges in the fastener may injure the fingers	Ensure Use of goggles & proper chipping tools or wire brush
Fix the new segments	Leg and hand injury	Use proper tools and tackles so that fasteners will not slip	Fasteners may slip and tools may hit to the hand and leg	Ensure Use/working condition of TOOLS AND TACKLES.
Remove the platform & place the burner in position & connect the coal & air line connection	Leg, hand & body injury	Use proper tools and tackles so that fasteners will not slip	Fasteners may slip and tools may hit to the hand and leg & negligence or improper using of full body harness may lead to accident	Ensure Use/working condition of TOOLS AND TACKLES. Use full body harness with proper training.



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Close the kiln hood door	Leg and hand injury	Use proper tools and tackles so that fasteners will not slip	Fasteners may slip and tools may hit to the hand and leg	Ensure Use/working condition of TOOLS AND TACKLES.
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Isolation matrix:

Sl: No	Activity	Description	Electrical Energy			Other Energy	
1	kiln outlet segments replacement	Name and Tag for the Equipment	Cooler all four drives	Cooler all fans (471FN1 to 471FN7)	(471CC1) Hammer crusher	Inlet air blasters Compressor air Valve to be Closed & locked.	Air in the Header to be released and hose to be disconnected
			Primary Air fan 481FN2 & 3	(461KL1) Kiln main drive	(461AD1) Kiln aux	Hydraulic line pressure to be made zero	
			(431MD 1&MD2) Ph bucket elevator	Kiln (481BL1) and pc (451BL1) & Standby blowers	Preheater (441FN1) and ESP fan (471FN8)		