DALMIA CEMENT (B) LIMITED – DALMIAPURAM PRODUCTION DEPARTMENT			
Issue No. 02	**Rev. No: 01**	**Effective Date: 22.05.2015**	**SOP/PROD/19**
Issued By: S & P		**Approved By: Head – Production**	
SOP FOR RAW MATERIAL GRINDING AND FEEDING TO SILOS- VRM-III			

SCOPE : Raw Material Grinding And Feeding To Silos- VRM-III

RESPONSIBILITY : CCR executive.

Accountability : Section Head – VRM-III.

PPE:

1. Safety goggles,
2. Safety helmet,
3. Safety shoe,
4. Mask,
5. Cotton Gloves.
6. Safety harness(Full body)

TOOLS:

1. Poking bar,
2. Hammer.
3. showel

Hazard:

Risks associated:	**Mitigating Measures**
Fall from height,	Use of safety harness
Fall of tools;	Carry the tools in tool bags
Hit of Hammer in hand;	Trained to be engaged

Procedure:

1. Get clearance from Maintenance Crew for starting the mill if stopped for maintenance work.
2. Ensure that FLS Kiln is running at min 120 TPH raw meal feeding
3. Get clearance from LS Hopper M/A and VRM-III M/A to start the Plant. Ensure clearance is obtained as per Work Instruction.
4. Start the Raw meal silo infeed group-39N and ensure all the drives are running.
5. Start Mill auxiliary group – 34N.

6. After getting clearance from Electrical Shift In-charge (orally) for starting HT drives, start Mill fan group-34F.

7. Adjust the fan to get a draught of min 30mmWG at Mill inlet. Open recirculation damper.

8. Open the 43NLD3 damper and adjust the mill fan speed
   a. Mill inlet draught - 50mmWG
   b. Mill fan outlet draught - 15 to 20mmWG
   c. PH fan outlet draught - 10 to 30mmWG

9. Adjust the speed of Bag house fan, if required, to maintain the Bag house inlet draught at –40 to –90 mmWG and PH fan outlet draught at –10 to –30 mmWG.

10. Close the 43NLD2 damper maintaining the mill inlet draught and PH fan outlet draught at the above said levels. Close recirculation damper to maintain the above said draught levels.

11. Start mill group-34D, when the mill outlet temperature is more than 75 ° C. Ensure LRS end position is reached.

12. Set classifier speed around min 1200 rpm, depending on residue of last sample and adjust classifier speed.

13. Start mill feed group-33N, when mill outlet temperature is more than 85°C and adjust air damper depending upon the mill outlet temperature.

14. Adjust Mill fan speed, Bag house fan speed and recirculation damper such that mill total air flow is around 640 km^3/hr & PH fan outlet draught at -10 to -30 mmWG.

15. Regulate and set the total feed rate around 250 to 425 TPH, such that the differential pressure across the mill and outlet are between 600-850 mmWG and mill outlet temperature between 85-110^o C respectively.

16. Optimise the production by monitoring and controlling the operating parameters in the following suggested range.

    a. Mill feed rate = 250 – 425 TPH

    b. Mill differential pressure = 600 – 850 mm WG

    c. Mill outlet temperature = 85 – 110^o C

    d. Total air volume = 600 – 800 Km^3 /hr.

    e. Classier drive speed = 1000 - 1450 RPM

f. Mill hydraulic pressure = 55 - 80 bar

g. Mill inlet draught = -70 to –120mmWG

17. When the operating parameter goes beyond the suggested range, take necessary corrective action to bring it back to the suggested range.

18. When higher inlet temperature is required, as seen from the mill outlet temperature, start HAG for HAG operation.

19. By cutting additives, run VRM with Limestone alone to find the stacker value of Limestone whenever required.

20. Inform Laboratory about mill running.

21. Maintain quality control plan considering the following points.

22. CBA – Report on raw meal to silo feed

23. X-Ray – Lab report on raw meal to Kiln feed.

24. Type of clinker production.

a)Mill feed rate ratio between Limestone sweetener, moorum and additives (fire clay / black clay / ferrogenious material) is determined depending on the CBA report of silo feed raw meal in order to maintain quality control plan.

b) Under normal running conditions of mill changeover the mill feeding control system to RAMOS as per procedure below:

25. While starting RAMOS after long time or for the first time:

26. Enter the Raw meal Targets in Ramos plus -> Configure Product -> Create Product -> Product Name. Enter control target for LSF, SM and AM and press ok.

27. Goto Configure Sources. Enter the latest analysis values for LS, SW, CL, AD Choose the feeders. Enter latest Values by clicking Modify button. Press ok.

28. Change the feeder controls from Recipe control mode to Ramos BSA control mode in Raw Mill feeding page in advisor. In Ramos BSA control mode, Ramos will set the feeder set points as per the on line analysis of CBA.

29. When Ramos BSA is not working, change over from Ramos BSA control mode to Recipe control mode and give feeder set points manually.

30. If there is variation beyond the limit and when it is reflected in kiln feed raw meal, care should be taken to maintain kiln operation parameters and to accept / reject clinker as per quality control plan.

31. Record the results of raw meal analysis in Laboratory report and take corrective action as said above.

32. Record % residue (on 90 micron) of silo feed raw meal and alter the speed of classifier if required so that residue is maintained as per quality control plan.

33. Record the fault details of equipment in the fault register and inform the same to the concerned Supervisor in shift.

34. Monitor the roller "too low" position during normal operation of the mill. Plan for roller adjustment in the next available mill stoppage hrs. or preventive maintenance day.

35. Stop the plant as per para 5.33 for planned stoppages.

36. Release the mill for Preventive Maintenance as per schedule and or as agreed mutually with other dept. Get the clearance from concerned dept. before restarting the mill.

37. Restart the plant as per procedure after a tripping or power failure.

38. Check and monitor the total mill feed. The Production, Consumption and Stock level to be monitored if deviation is consistent and more than +/- 15% then weigh feeder to be checked for its accuracy. Record the same in fault register for corrective action.

39. Record start, stop hrs. of the mill with the probable reason in stoppage report.

40. SHUTTING DOWN THE PLANT (VRM-III)

- Stop mill feed group, if mill to be stopped for 1-2 hrs. Otherwise stop prefeeders for weighfeeders and additive feeders and stop mill feed group after ensuring the conveyors are emptied.

- Open 43NLD2 damper, Fresh air damper 34NLD3 and Recirculation damper 34NLD2.

- Close the Mill inlet damper 43NLD3 and reduce the Mill fan speed gradually.

- Wait till the rollers are lifted up and stop the mill or mill group.

- Stop the mill fan.
- Adjust the RABH fan speed to maintain PH fan outlet draught between –10 to –30 mm WG.
- Maintain the bag house inlet temperature below 250°C by adjusting the Dilution air damper 43NLD4.
- Inform electrical shift incharge about mill stoppage.
- Get the isolator key if mill is to be released for maintenance etc.
- Send the clearance slip to maintenance for taking maintenance work during P.M. or Planned stoppage.

41. RESTARTING THE MILL AFTER TRIPPING OR AFTER SHORT INTERVAL FOR MAINTENANCE PURPOSE.

Get the clearance from the maintenance.

Get the material in Buffer hopper.

Get the clearance from M/A of weigh feeders and VRM-III.

Ensure mill outlet temperature is more than 85°C.

Start the plant as per procedure – .

42. Running the HAG:

Get clearance from the VRM-III miller for HAG light up and hot air generator.

Get clearance from Coal miller and ensure that the blower air line and fine coal transport line from the coal bin is ok.

Start the 34NH-1 group and ensure that all the drives are running and Oil heaters are on.

Ensure that oil pressure and air pressure ok signals are coming.

Adjust the combustion air fan and dilution air fan speed.

Before lighting-up the HAG, ensure the following conditions are satisfied.

a)34NFD1 should be in open condition
b) 34NSH1 should be in closed position and

c)Mill running or mill outlet temperature is less than 98°C
d) 34NBD1 and 34NBD2 are in open condition.
e)34NSH3 R/M HAG bypass damper in closed condition.

43. After ensuring all the above conditions first give oil burner start command.

44. Check and ensure that the following sequence of automatic light up of HAG is carried out after start command.

    a. Ignition start command
    b. Pilot valve on
    c. Flame on
    d. Main valve on and atomizing air valve on, return oil valve close command.
    e. Pilot valve switches off

45. Open the 34NSH1 hoisting damper and ensure damper is open.

46. Once the combustion chamber temperature reaches 600'C start coal feeding to HAG from coal bin by starting 34NH Group.

47. Regulate the RPM of 42NSC3 screw and 42NPP4 screw pump.

48. Maintain the combustion chamber temperature below 975'C by regulating coal screw 42NSC3 RPM, combustion air fan and dilution air fan speed.

49. Give the oil burner stop command. Once HAG stabilized then stop the oil.

50. **Stopping the HAG:**

    a. Stop the fine coal feeding Group 34H.

    b. Ensure that 34NFD1 damper is open when flame is cut off.

    c. Close the HAG outlet hoisting damper 34NSH1.

    d. Run the combustion and dilution air fans till the HAG chamber temperature dips below 300°C.

    e. Stop the combustion and dilution fans.

    f. Empty the ash in HAG hopper manually.

SOP FOR RAW MATERIAL GRINDING AND FEEDING TO SILOS- VRM-III

Job Safety Analysis	Job: Raw Material Grinding And Feeding To Silos	Date: 01 – 09 - 2013	Analysis by: Section Incharge	Reviewed by: Section Head
Title of employee doing job:	Supervisor: Sec. Incharge	Department: Raw mill	Section: All Air slides	Approved by: Department Head
Req'd/recommended PPE:				

Sequence of Basic Job Steps	**Potential Hazards**	**Recommended Safe Job Procedure**	**What Could Go Wrong**	**Corrective Action**
Cleaning of the jam in Air slides	pipe hit to the person	Hold the Pipe properly, if there any possible tie it one end.	Pipe may hit the person while cleaning the box.	Hazards to be explain to the people who are working in that area by safety PP talk, tool box talk.
Inspecting the Air slides	Dust emission	Use safety goggles and dust mask	Proper site evacuation to be known to all person	Use proper PPE in respective areas
Cleaning of raw meal dust spillage	Hot material cause burn injury	Use hand gloves and showel for cleaning hot powder	Hot powder may entrapped into shoes	Use proper safety asphestos PPE's

Emergency Shut- off:

1. If body injury is there, First aid will be given and inform to the Safety department or Call Emergency number 233/555/9865125176/9865177444.

Records/Annexure:

1. Refer Line clearance certificates.
2. JSA as enclosed below.

HOD PRODUCTION HOD TECHNICAL