

Project title- MINIMIZATION OF COAL MILL REJECTION

Area- BOILER

Methodology- DMAIC

SBU Head- BIRAJA SHANKAR MUND

Project Mentor- SUSHEEM KUMAR BEHERA

Team Leader- UPENDRA KUMAR PATHY

Team members- SUDHANSU SEKHAR PANDA (SSL)
MANOJ KUMAR NAYAK (SSL)

Support taken from M/S AIA Engineering

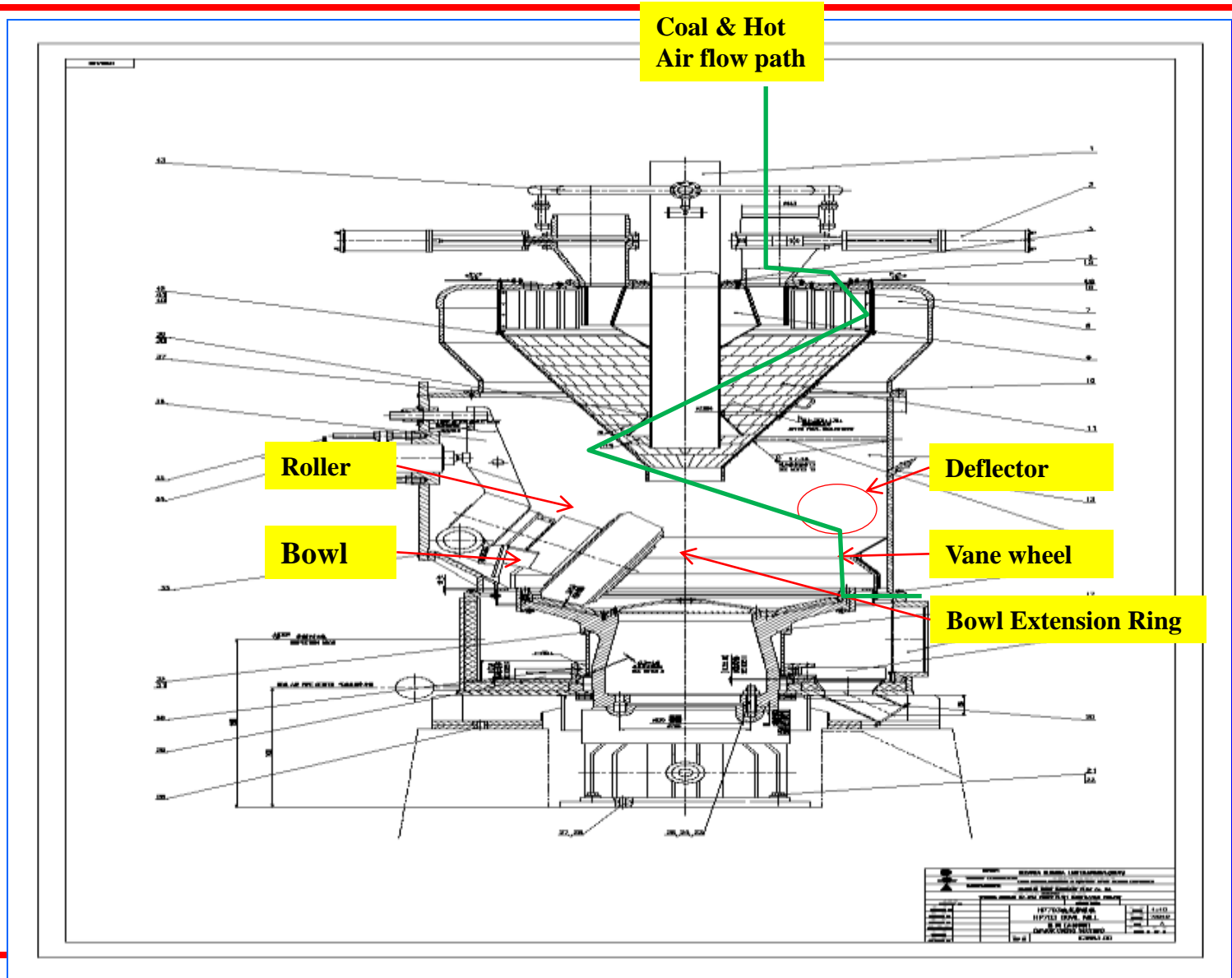
PROJECT CHARTER						
<i>(Tick / fill all that apply)</i>						
Project Title	Minimization of Coal mill rejection					
Mentor	Susheem kumar Behera					
Project Leader	Upendra Pathy	SBU Head	Biraja Shankar Mund			
PROBLEM STATEMENT(why are we doing this project?)						
What needs to be improved -	Reduction in coal mill rejection, increase in mill Grindability, no clinker formation in Primary air inlet to Mill					
Current Performance Level -	Coal rejection is 1.3 % of coal feeding					
Target Performance-	Reduction in coal rejection by 0.3 %					
The Tangible(Rs/ Annum) and/or intangible impact due to this project are:-	Savings of 12 Lacs/ annum per coal mill Increase in Mill outlet temperature Improvement in Mill loading					
PROJECT TEAM MEMBERS						
Sl. No.	Name of the Team Member	GRADE	Function	MOBILE NUMBER		
1	Sudhansu Sekhar panda	M6	Area in charge	9777049307		
2	Manoj Nayak	M6	Support member	9937298735		
PROJECT TIMELINES						
Project Deadlines:	DEFINE	MEASURE	ANALYSE	IMPROVE	CONTROL	PROJECT CLOSURE
(indicate the Date and month)	10.12.2013	15.12.2013	27.12.2013	10.01.2014	05.03.2014	15.03.2014
FINANCIAL BENEFITS						
Projected Financial Benefits:	Rs. 12 lacs / annum					
Cost of Project:	Rs.3 lacs					
SUBMITTED BY						
Project Leader: Upendra Pathy				SBU Head: Biraja Shankar Mund		

COAL MILL OVERVIEW

Mill –HP
703 ,Bowl
Mill

capacity:
26 TPH,

Power:280
KW



Problem statement (waste or loss identified)- High coal reject in Mill rejection system

Scope for improvement-

- Reduction in rejection quantity
- Increase in Grindability
- Increase in mill outlet temperature
- Reduced spare consumption and increase in Grinding roller life period

Current performance state-

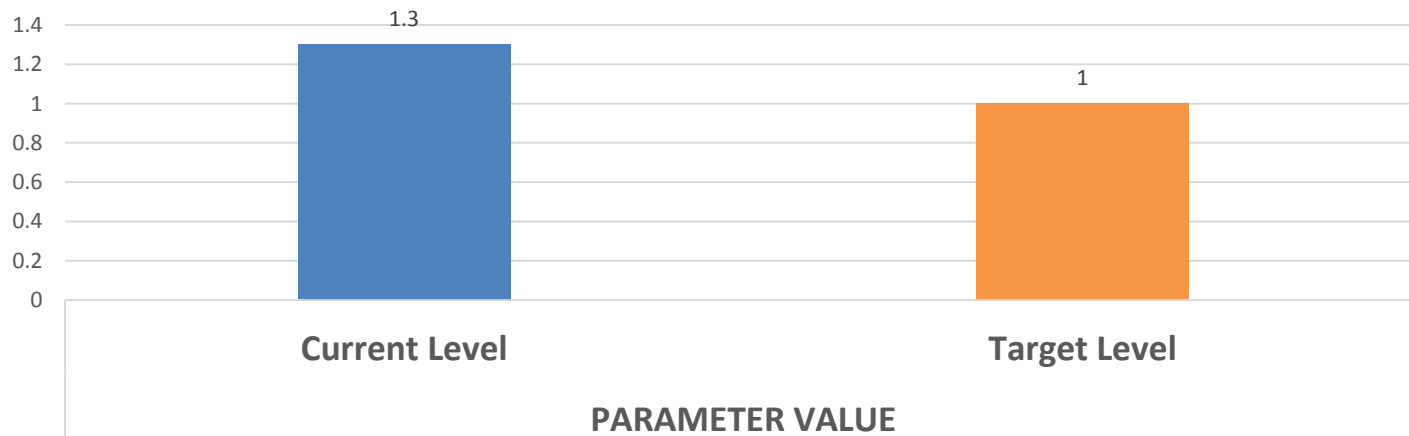
Coal rejection is 1.3 % of coal feeding

Target performance state-

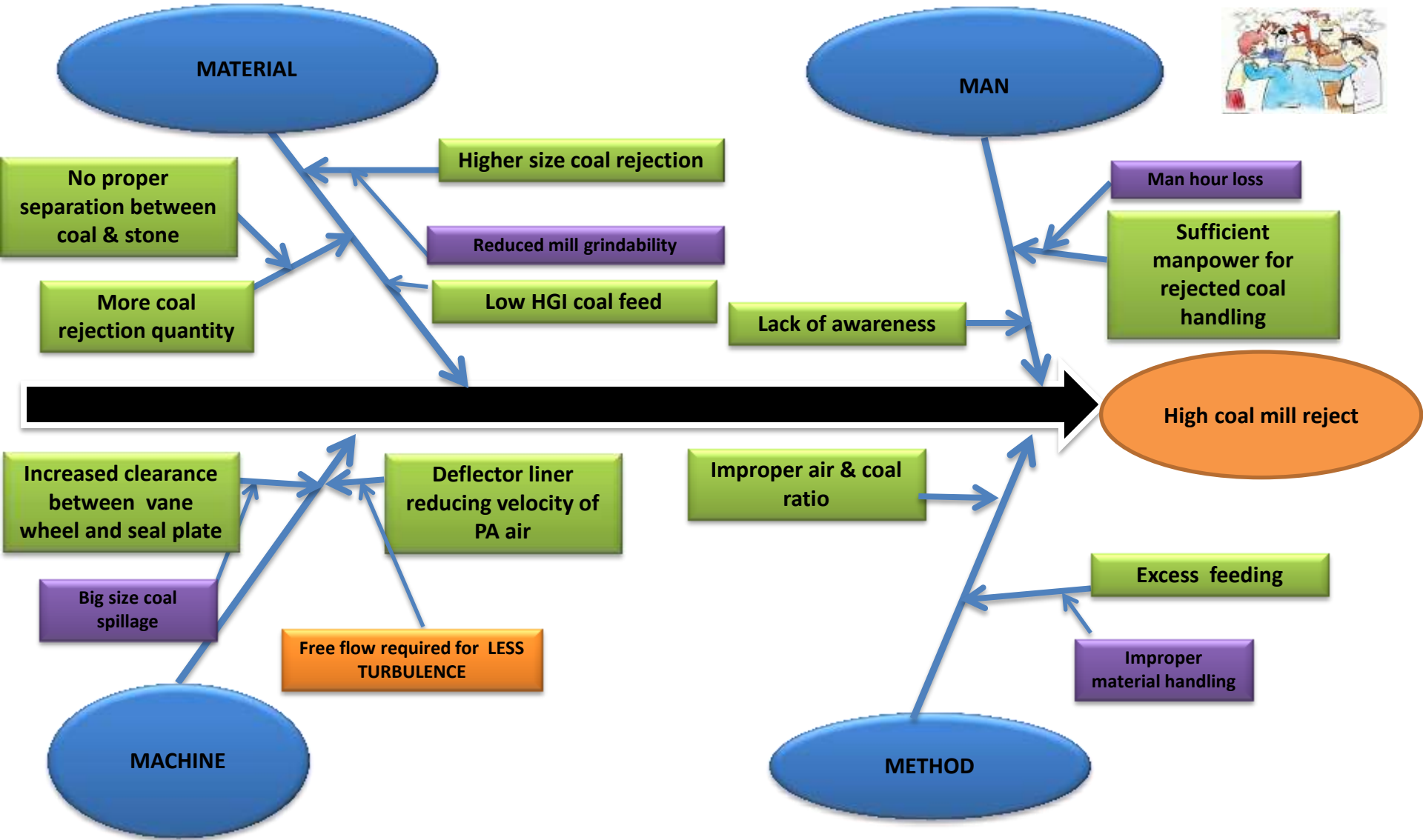
Minimizing coal rejection by 0.3 %

Coal consumption per day: 480 Ton/day (20 TPH)
% of coal reject :1.3 %
Coal consumption per annum : 175200 T
Mill power capacity : 280 KW
Cost of coal : Rs. 1950/ Ton
Amount of coal in rejection : 6.2 T / day
Mill Current @ 20 T load : 30 Amp
Target rejection % : 1 %
Saving in coal : 525 Ton (saving by 0.3 % rejection coal)
Saving in Cost: Rs.1020000 /-
CHP running hrs : 4 hrs / day
For 1 hour running of CHP , power consumed :500 KW

Coal Mill Rejection



QC Tool-Fish Bone Diagram



Increase in length of centre feed pipe

Slope provision in hot air inlet duct to reduce clinker formation

MOC of grinding roll changed from Hi-chrome to sinter cast

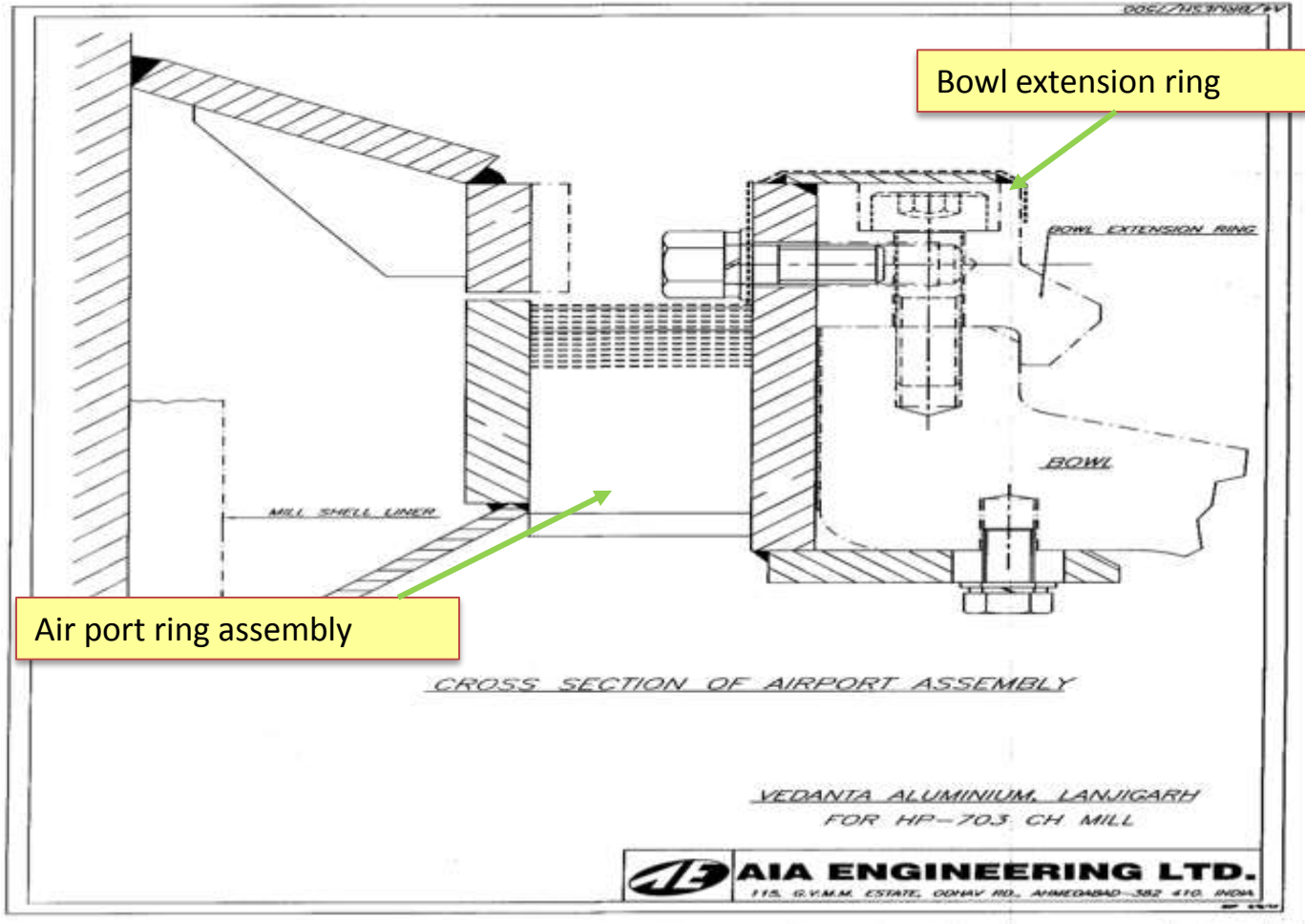
Restrict higher size coal feeding at mill inlet

Reduction in turbulence in coal mill

Reduction in bowl depth to increase Grindability

Air port Ring assembly installation in stead of Conventional vane wheel assembly

Air Port Ring Assembly :- Airport ring assembly(Vane Wheel) is designed to minimize turbulence in the mill and allow smooth entry of hot air. Airport ring shall be fabricated from SAILMA plates, which shall be hard faced at critical locations to enhance the service life



Mile Stones	Task to be done	Target Date	Actual Date	Remarks
1	Planning & procurement of resources	15.02.2014	20.02.2014	Liners,Air port Ring, Welding Electrode
2	Provision for installation & MOC signed off	25.01.2014	20.01.2014	Decided to install in coal mill-2D
3	Machining of Bowl extension Ring	10.01.2014	20.01.2014	Bowl extension ring depth reduced from 140 mm to 90 mm
4	Fabrication of Air port ring assembly inside Mill	28.02.2014	02.03.2014	Removed the existing vane wheel assembly and installed the air port ring and liners
5	Commissioning of Air port ring assembly	05.03.2014		Commissioned successfully



Deflector liner

Bowl extension ring

Before

Body Liners

After



OEM Vane wheel Assembly

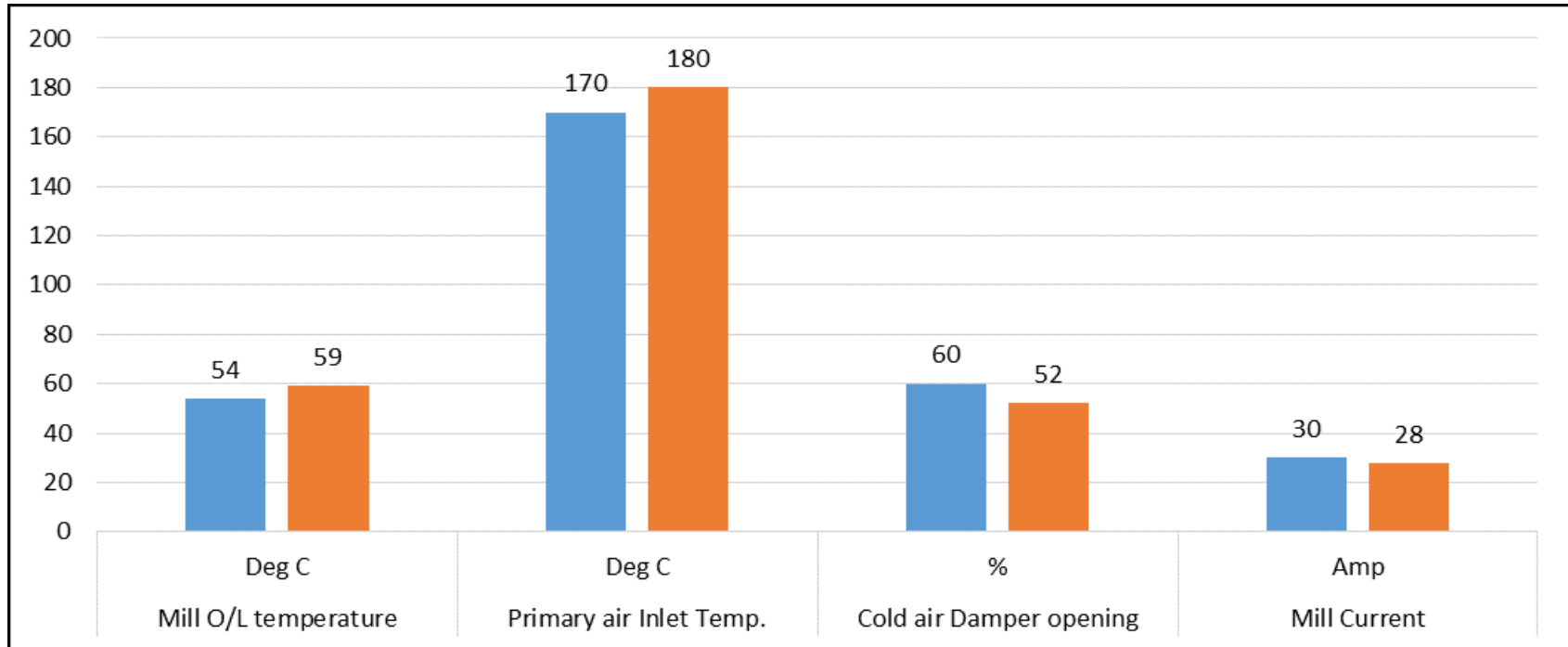


Airport Ring assembly



Side Ring

IMPLEMENTATION & IMPROVE PHASE



By comparing two Mills of Existing & modified system operation data

Sl no	Parts to be inspected	Check points	Inspection Frequency	Remarks
1	Mill fineness	% through 200 mesh , 74-78 micron	Daily	Maintained
2	Mill rejection Monitoring	Quantity of mill rejection and its percentile from amount of coal consumption	Every day	Training provided to operators
3	Wear out of Mill Body Liner	Mother plate condition	In every PM	Included in Mill PM SMP
4	Wear out of Airport Ring	1.Condition of welding part 2.Condition of plate	In every PM	Included in mill PM SMP

Tangible Benefits :

- Savings towards coal : 525 Ton per annum
- Saving in cost @ Rs. 1950 per Ton : 10.2 lacs
- Saving in power due to reduction in mill current :240 KWH / day & 87600 KWH/ Annum
- Considering power cost @ Rs.2.10/kwh , Total cost : Rs. 183960 /-
- **Total savings Rs. 12 lacs per annum**

Intangible Benefits :

- Consistent & Better coal fineness
- Increase in mill outlet temperature
- Reduction in amount of cold air supply
- Even distribution of air-coal mixture and reduction of turbulent flow in the mill results in lower wear on the mill components and more uniform wear on grinding elements.

Total investment : 3 lacs

Cost saving is calculated per Mill modification.

THANK YOU