

KNOWLEDGE EXCHANGE PLATFORM

BEST PRACTICES ADOPTED IN JSPL, RAIGARH

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WHRB FD FAN SUCTION DUCT MODIFICATION



- Area :PP-2;Ph-3;2 FD Fan(1W+1S)/Boiler;4 Boilers.
- Static pressure before IGV , at the suction ; Reduced from -114 mmwc to -25 mmwc .
- Discharge Static Pressure remain same in both cases i.e 809 mmwc.
- Total Static Pressure head reduced from 923 to 834 mmwc.
- Reduction in power consumption 11.40 kW from one FD Fan (80.80 kW-69.4kW) .
- Modification done in 7 remaining FD Fans ; Expected savings $(11.40 \times 24 \times 330 \times 4)$ 361152 kWh/yr.

BLAST FURNACE PRESSURE RECOVERY TURBINE At BF-1



- *Less space utilization as compared to Separate Electric Blower & TRT*
- *Less capital investment as compared to Separate Electric Blower & TRT.*
- *Adjustable stator blades in blower, to regulate the volume of air flow.*
- *Adjustable stator blades with Turbine that helps in controlling the BF top pressure.*
- *Total power saving up to 3 MW at pressure of 2.5 kg/cm² (A).*
- *Electrical Power reduction up to 40%.*
- *No energy conversion losses (6%)*

Energy Efficiency In lighting System

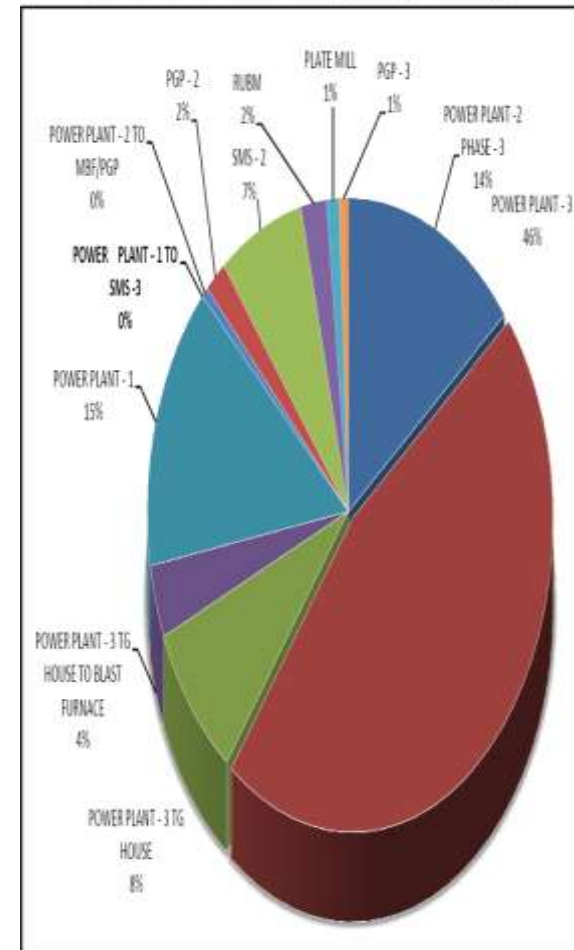
- *60kVA lighting energy saver at Sinter Plant,SAF*
- *Energy Savings: 34153.8 kWh/Yr and 23653.7kWh/Yr from Sinter Plant ,SAF respectively*
- *Installation at other locations-DRI,RUBM,SAF is U/P.*
- *Stoppage of Indent of 25,40 ,60,100 W Pin type Lamp.*
- *Replacement of 36 W,40 W ,T12 Tube light with 18 W T8 LED.*
- *Savings achieved is 18 W / fitting.*
- *Replacement of 70 W HPSV Lamp with 36 W LED Well glass under progress*
- *Expected Saving is 34 W/Fittings.*
- *Replacement of 36*2 W CFL with 18*2 W (4pin) LED . Light for office fittings under progress*
- *Expected Savings is 36 W/Fitting.*



Energy Efficiency Measures in Steam Traps and Steam System

- *Steam traps in process steam routes are mostly neglected.*
- *Detailed Audit of steam Trap and steam system :PP-1;PP-2;PP2-Ph-3;PP- 3;BF-1&2;RUBM;PM;SMS-2&3;PGP-2,3.*
- *Study of 192 Steam Traps w.r.t working condition ,selection , size etc.*
- *Instruments: Ultrasound leak detector, Infrared thermometer and visual inspection.*
- *24 Isolated Steam Traps ; Maint./Taken in line.*
- *38 steam traps were found chocked and cleaning U/P.*
- *64 steam traps were found leaking; Live steam losses were identified by UNFCCC methodology.*
- *22 steam traps location to be changed.*
- *Estimated LP steam saving by maintenance of leaking steam traps is 3116 kg/hr.*

Unit Wise Live Steam Losses through Leaking Steam Traps

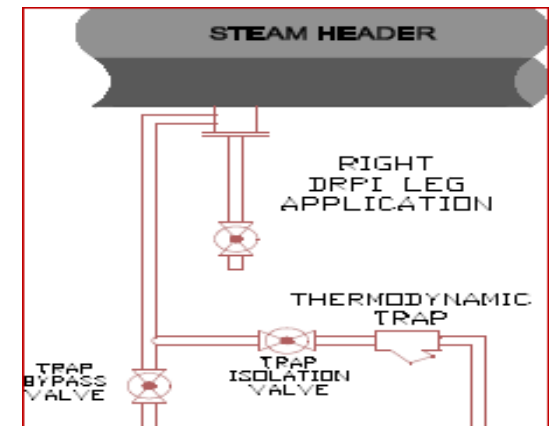


Energy Efficiency Measures in Steam Traps and Steam System

- **Modification for condensate pocket**
- ❑ At SMS-2;WHRB-1-PP1 and PP-2 Ph-3 tapping for steam trap was taken directly from main steam header.
- ❑ Modification was proposed for providing condensate pocket at bottom of steam line and take drainage line (Trap line) from side of pocket and provide another drainage line with valve to flash out materials from the pocket.
- ❑ Advantages after modification:
 - No condensate carry over.
 - No accumulation of line carrying materials.
 - Reduction in chocking of Traps and lines.
- **Interchanging Steam Traps as per Application**
- At TG house PP-1mechanical(Inverted bucket) type and at WHRB-1 PP-1mechanical(Ball and Float) type steam Trap in Steam Header condensate drain line .



Location: SMS – II, NEAR SLAG YARD



Energy Efficiency Measures in Steam Traps and Steam System

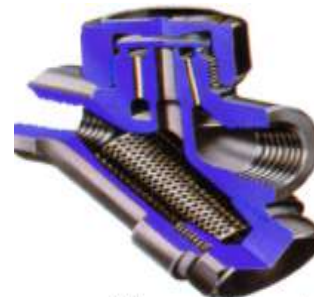
- *At RUBM and PGP-3 Thermodynamic steam Trap was used for furnace oil heating and Coal Tar Steam heating application.*
- *Thermodynamic steam traps are specifically designed to discharge the condensate from steam header and Mechanical type steam traps are specially designed to discharge the condensate from steam heating applications .*
- *It was proposed to interchange these steam traps.*
- *Advantages:
Less Failure , Proper Design , Cost Reduction.*



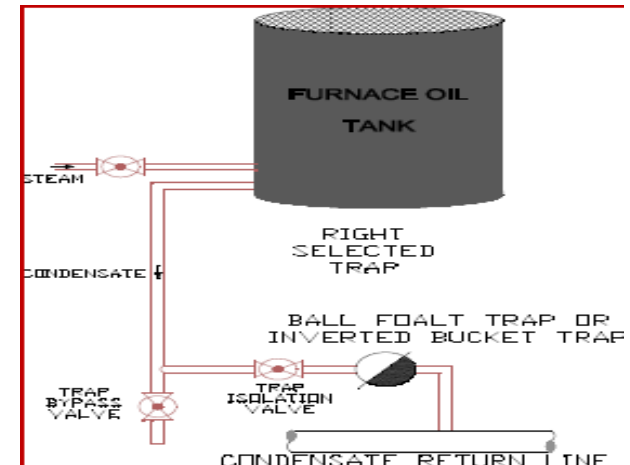
**Inverted Bucket
Steam Trap**



**Ball Float
Steam Trap**

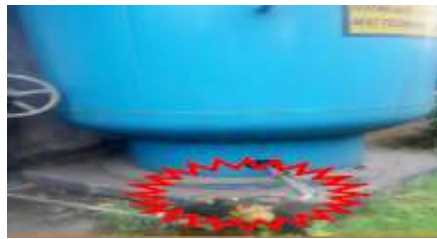


**Thermodynamic
Steam Trap**



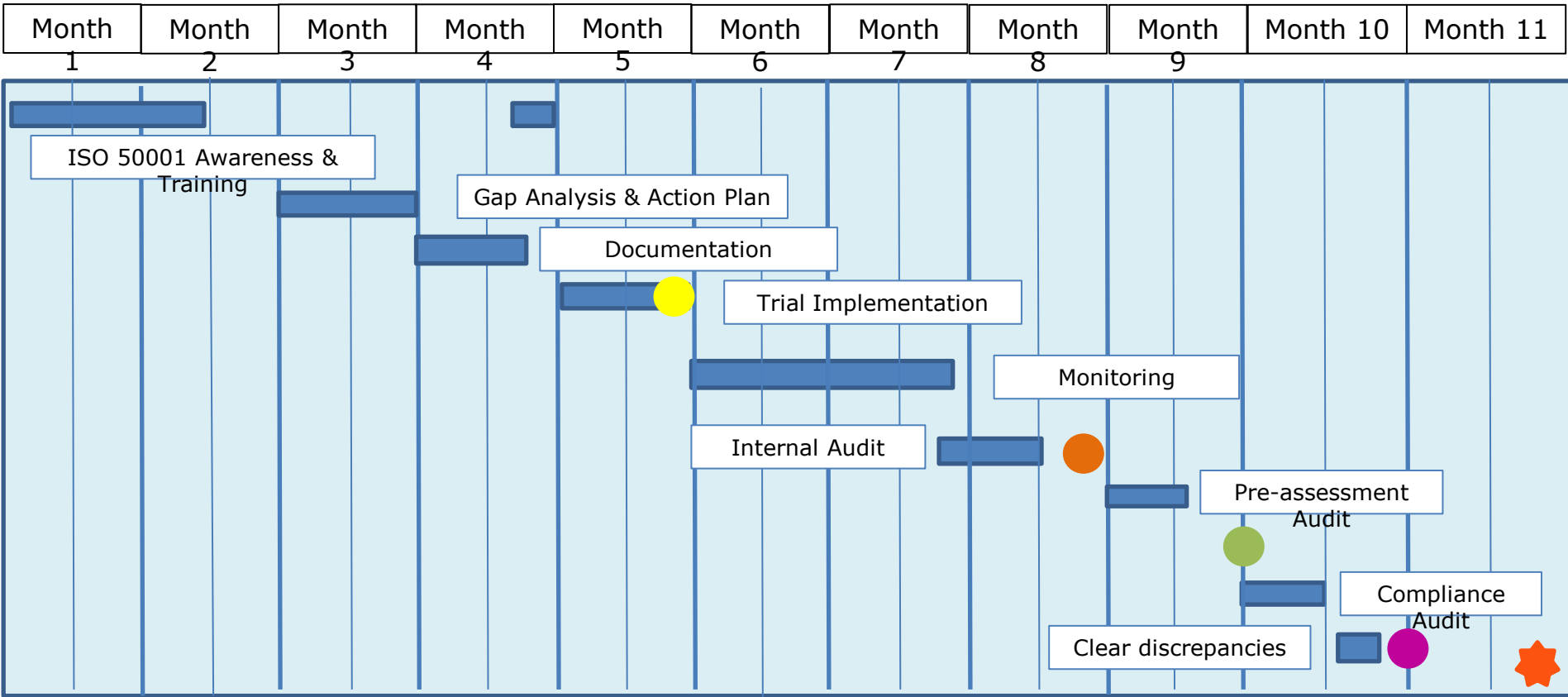
Energy Efficiency Measures in Steam Traps and Steam System

- Replacement of manual air Vent with thermostatic type Automatic air vent in steam network at SMS-2.
 - Advantage: Reduction in Direct Steam Loss.
- Arresting Gland leakage /Replacement of conventional gate/globe valves with Piston valve.
 - Advantages :Durable than Gland sealing.
- Removal/Installation of strainer from Thermodynamic /ball float type steam trap(Cost reduction , proper maint.)
- Repair of choked /out of service steam traps in PP-1.
 - No Condensate carryover ; No Water hammering ; Steam quality improvement ;SSC reduction
- Installation of automatic condensate discharge facility (Ball float type trap)in place of manual drain valve or timer based compressed air condensate drain facility.



Sr No	<u>Other Projects/ Achievements/Initiatives</u>	
1	Modernisation of RH Furnace in Rubm (regenerative burners /BF gas (In place of Furnace oil)/ automatic ON/Off Valves	Saving Anticipated:0.40 Gcal/T;.050Gcal/Tcs.
2	190 kW HT -132 kW LT with VFD in ID Fan 3A,3B in AFBC-3; 112 kW to 65 kW	744 mWh/yr.
3	Air leak Audit.	174 leak;668cfm; 1170 mWh/yr.
4	IFC in PP-1 Compressor house.	607mWh/yr
5	Achievement of SEC reduction target and Eligibility for EsCerts.	0.16Gcal/tcs more sec reduction
6	Mandatory Energy audit completion –Nov15	Form-2:112203 Gcal/yr
7	EnMS & ISO 50001 kick off meeting 10 Aug-2015	
8	Planning of PDCA	

Schedule for ISO 50001 Certification Preparedness



AWARENESS

PREPAREDNESS

CERTIFICATION

EnMS implemented for Trial

EnMS rolled out companywide

Apply for Certification

Final submission

Final Certification (likely)

THANKING YOU ALL !!