

Energy saving in Departmental Laundry

1.	Name of Innovation	Energy saving in Departmental Laundry
2.	Name of Railway	North Central Railway
3.	Name of unit in which innovation has been effected	Gwalior Coaching Depot
4.	Date of commissioning of innovation	31.03.2019
5.	Month of award for best innovation for division/workshop	March'2019
6.	Date of letter number of circulation of innovation to other division/workshop	JHS/M/130/CW/Laundry, dated 01.04.2019
7.	Quarter of award for best innovation	Fourth Quarter of 2018-19
8.	Date and letter number of circulation of innovation to other Zones/Pus	Pertaining to HQ.
9.	Name/Designation group leader who effected innovation	B. P. S. Bhadoria Sr. DME/C&W/JHS
10.	Name/Designation of group member who effected innovation	Pradeep Yadav, CDO/JHS Sanjeev Chhaba, CDO/GWL Ravi Saraswat, DCWI/JHS Raees Khan, SSE/Laundry
11.	Cost of innovation	3 Lakhs (payback period one month)
12.	Brief description	
13.	Savings effected per month/earning increased Rs.	2.75 Lakhs per month
14.	How has savings/earning (at 13) been calculated	Cost deferential in PNG and HSD
15.	What improvement has been effected and how and how	PNG is a green fuel and cheaper comparison to HSD.
16.	Enclose photographs of the innovation	Enclosed
17.	Certify that the innovation is a first in Indian Railways and not copied from another Unit of Indian Railway	Yes
18.	Effectiveness of innovation	<ul style="list-style-type: none"> • Green initiative which will reduce carbon footprint. • Monthly saving of 3.27 Lakhs per month with a payback period of 1 month. • Safer to operate. •
18.1	Has it been duplicate anywhere in same Railway	No
18.2	Has it been duplicate anywhere in different Railway	No

Brief write up of Innovation



PNG pipe line and regulator at Mechanized laundry Gwalior

Departmental Mechanized laundry of Gwalior depot was commissioned in Dec'2016. Since date of commissioning till 31.03.2019, it was running on HSD fired boiler. Daily average consumption of boilers was found to be 300 liter per day. Every week 2.5 KL of diesel were being transported from Jhansi store depot which is located around 100 Kms away from GWL laundry. This also required booking of 1 helper from Jhansi Division to Mechanized laundry for handing over of HSD.

To solve above problem, city gas distributor (CGD) M/s Aavantika who has been approved by Petroleum Natural Gas regulatory board has been contacted for supply and availability of gas at laundry. After getting green signal from CGD, OEM of boiler M/s Thermax was contacted for retro-fitment of oil fired burner to gas fired burner, who has also evinced interest and came up with the retro fitment solution.

After involving all the stake holder (CDO/GWL, M/s Aavantika, M/s Thermax), permission was granted to M/s Aavantika and M/s Thermax for laying of pipeline and both firm has completed retro-fitment work of boiler, laying of gas pipe line and operation trial on 31.03.2019.

Table – 1

M/s North Central Railway Mechanized Laundry, Gwalior					
COMPARISON OF HSD and PNG				Other benefits of PNG over HSD	
ITEMS	HSD in Ltr.	ITEMS	PNG in SCM	Sr.No.	Associated issues with HSD
Quantity required per day	300	Energy Required Per day	2457000	1	Inventory Management
Base Rate	69.58	Base Rate	39.4	2	Manpower
NCV	10500	NCV	8600	3	Area required for Storage
Burning efficiency %	79	Qty Required	286	4	Handling Issues
Handling losses %	1	Burning Efficiency %	98	5	Safety Concern due to storage
Quantity considering Efficiency & losses	66	Handling Losses	0	6	Better Housekeeping
Energy Required per day	2457000	Quantity considering Efficiency & Losses	291	7	Weather effect on Fuel prop.
HSD - Cost (INR)	20874	PNG - Cost (INR)	11482		
Pay Back Calculations:					
Summary		Investment (Items)	Amount (₹)	Saving	Amount (₹)
Cost Saving Per Day	₹ 9,392	Connection Charges (Refundable)	₹ 1,00,000	Saving Per Month from PNG	₹ 281,771
Cost Saving Per Month	₹ 281,771	Security Deposit (Refundable)	₹ 389,227	Pay Back Period in Months	2

Fuel Qty.

Item	Value
HSD in Ltr.	300
PNG in SCM	291

Fuel Cost

Item	Value (INR)
HSD - Cost (INR)	20874
PNG - Cost (INR)	11482

Cost saving calculations

Cost saving due to switching To PNG from HSD as per the table-1	281771.00
Saving in transporation cost from Jhansi to Gwalior, 4 trips per month @40000/- per month	40000.00
Saving on wages of Helper (Staff) for four trip @40000 per month	5350.00
Saving on TA of Helper (Staff) for four trip @500 per trip	2000.00
Total saving per month in Rs.	329121.00
Cost of retrofitment of burner	300000.00
Payback period	Less than one month

(B. P. S. Bhadoria)
Sr. DME/C&W/JHS