

## ECO Systems Fuel Saving Project for Locomotives

### Pilot Project Report

Project start date - April 15, 2015

Project by UPHILL Fueltech Private Limited, Delhi



Raigarh location has 15 locomotives. Each locomotive runs approximate 5,000 hours annually and consumes approximately 50,000 liters of diesel annually. Coal is transported at Raipur facility by network of Rail system comprising of 15 Locomotives with Cummins engines. All these engines run on diesel fuel. Based on three months of testing, fuel savings were 7.18% and smoke was reduced almost 50%.

#### Based on the pilot test, here is the summary for LOCO#13

- Fuel savings 7.18%
- Fuel savings for LOCO #13 Rs.1,59,000 annually
- Payback time for investment 8.34 months
- Return on investments 144%
- Engine performance will be improved
- It will extend life of Locomotive
- 8,100 Kg of Carbon emissions reduced annually.

#### UPHILL Fueltech Technology

ECO System technology is patented and proven US technology which has been in existence since 2000 and has been even approved by USA federal government agencies thru GSA. ECO systems technology helps in reducing fuel consumption 5%-12% and reduces carbon emissions up to 50% depending upon the engine type and other variable factors such as fuel type, age, condition of engine, load and driving conditions. Eco Systems work with Diesel, petrol and natural gas.

## How ECO System Technology works?

Technology works on simple principle of making the fuel more combustibile by converting complex fuel molecules in to smaller molecules while increasing REED vapor pressure.

## Initial impact of ECO System

As soon as the ECO system was installed, smoke coming out of the exhaust hood was reduced about 50% and could be visually observed.

## Pre installation data for Loco #13

Source- Raigarh plant

### Running Hours & Diesel Consumption (Before Installation of ECO System)

FY2014-15		Loco-13		
Month	Running Hours (In Hours)	Diesel Consumed (In Liters)	Average (In Liters/Hour)	
APR,2014	262	2,600	9.92	
MAY,2014	419	4,150	9.90	
JUN,2014	483	4,890	10.12	
JUL,2014	524	5,050	9.64	
AUG,2014	461	4,600	9.98	
SEP,2014	310	3,100	10.00	
OCT,2014	281	2,800	9.96	
NOV,2014	350	3,400	9.71	
DEC,2014	678	6,500	9.59	
JAN,2015	415	4,100	9.88	
FEB,2015	427	4,200	9.84	
MAR,2015	452	4,500	9.96	
<b>TOTAL</b>	<b>5062</b>	<b>49,890</b>	<b>9.856</b>	

## Base line – Fuel consumption for LOCO #13

3 Months (May, June, July -2014) Total fuel used =14,090 liters

3 Months (May, June, July -2014) total Hours engine operated = 1,426

**Base line Fuel consumption for LOCO #13= 9.88 liters/Hour**

## Post installation data for LOCO #13

### Running Hours & Diesel Consumption (After Installation of ECO System)

FY2015-16		Loco-13	
Month	Running Hours (In Hours)	Diesel Consumed (In Liters)	Average (In Liters/Hour)
APR,2015	568	5,375	9.46
MAY,2015	482	4,375	9.08
JUN,2015	330	3,050	9.24
JUL,2015	461	4,250	9.22
AUG,2015	0	0	
SEP,2015	0	0	
OCT,2015	0	0	
NOV,2015	0	0	
DEC,2015	0	0	
JAN,2016	0	0	
FEB,2016	0	0	
MAR,2016	0	0	
<b>TOTAL</b>	<b>1841</b>	<b>17,050</b>	<b>9.251</b>

### Fuel consumption Analysis for 3 months\*

	Total fuel used in liters	Total # of Hours	Average Liters/Hour
<b>Before installing ECO</b> 2014- May/June/July	14,090	1,426	9.88
<b>After installing ECO</b> 2015 - May/June/July	11,675	1273	9.17
<b>Savings</b>	2,415		0.71
<b>% Fuel saving</b>			<b>7.18%</b>

\*Three months of 2015 (May, June, July) data is being used because pilot started Mid April in 2015 and we do not have partial data for 15 days of April, 2015.

## Result

**Fuel savings by ECO-System 7.18% based on 3 months**

**For more information, please contact: 09811019388**