



COGEN World Coalition Webinar - 18 July 2023

Organization name: Punjab Renewable Energy Systems Pvt. Ltd. Project Title: PRES CLEAN AND GREEN ENERGY PVT LTD C/O Sun Pharmaceutical Industries Pvt. Ltd. PRESPL- SPIL (1x13 TPH) Boiler, TOANSA

Presented by: Lt Col Monish Ahuja (Retd), CMD PRESPL, Chairman CBEII, President The CLEAN Network Date: 18th July 2023



- Pioneering the Biomass-Based Bio-Energy Sector in India by Energising the Rural Sector through Sustainable Development Goals - India's Largest Biomass SCM Company
- Contributor in Biomass Supply Chain Management, in India, since 2011.
- Unique Rural Entrepreneurship Model
- Aligned to growth in next Gen Fuels
- Spread awareness about Carbon Neutrality, Biomass fuels, projects and industrial benefits under the ambit of Government policies and world institutions and treaties where India is a signatory.



PRESPL's JOURNEY





PRESPL – BUSINESS VERTICALS









KEY MANAGEMENT PERSONNEL



t Col Monish A	huja (Veteran)
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Col Sumeet Malhan, SM (Veteran)

Offg. CEO & CTO - Mumbai

CMD - Mumbai





Mr. Chandan Goswami

CSBO - Mumbai



Cdr Gurkeerat Singh Sekhon (Veteran) EVP (NZ) - Chandigarh







Sr. VP (EZ) - Kolkata





PRESPL's STRENGTH





AWARD WINNING BUSINESS MODEL























PRESPL BIOMASS FUEL COLLECTION CENTRES







PRESPL FUEL COLLECTION AT BRIQUETTING PLANTS



PRESPL SUPPLY TO PLANTS FOR ENERGY GENERATION











BRIEF ABOUT THE PROJECT

PRES CLEAN AND GREEN ENERGY PVT LTD

C/O Sun Pharmaceutical Industries Pvt. Ltd.

PRESPL- SPIL (1x13 TPH BOILER), TOANSA





PREVIEW

- Energy Service Company (ESCO)
- Methodology for Energy Conversion
- Energy Return on Investment (EROI)
- EROI Calculations for SPIL, Taonsa
- Energy Savings
- \succ CO₂Emission reduction in last 2 yrs. operation
- Plant economical impact
- Plant social impact
- Plant environmental impact



Who Are ESCOs?

- > Energy Service Companies (ESCOs) are service providers who:
 - Identifies EE Opportunities
 - Recommends the solutions
 - Designs & Install.
 - Provides operation & maintenance support
- ESCOs operate by providing a savings guarantee, risk management in the implementation of the energy efficiency projects and also perform Measurement & Verification (M&V) activities to quantify actual energy savings post implementation of Energy Efficiency projects etc.





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PRESPL







ENERGY RETURN ON INVESTMENT

Energy Return on Investment (EROI) is a ratio of the amount of energy obtained (expected return) from an energy resource to the amount of energy expended(investment) to produce that energy.

ENERGY RETURN ON INVESTMENT (EROI) FOR FO

By refereeing to various technical papers and citations, we conclude that the EROI of Fossil fuel from **"Source to the Point of use"** varies in the range of **3.5:1 to 7:1.** For calculation of energy consumption, we have considered a conservative average **EROI value of 6:1 for Furnace Oil.**









EROI - LOOSE BIOMASS

Sr. No.	Particulars	иом	Value	Remark		
Α	Assumptions for calculation.					
	Biomass Harvested in 3 Years, 9,32,375 MT / 3 Year	MT / Year	3,10,792	Average value taken as per Research Paper		
	Energy potential of Biomass – 3,10,792 MT in 1 Year	Mn kcal	11,18,850	Biomass x GCV		
В	Energy expended for Sourcing of Biomass					
	Energy expended for Sourcing of 3,10,792 MT Biomass in 1 Year (Stalk Shredding, Chopping, Bailing, Transportation &. Labour)	Mn kcal	11,534	Addition of Proportional average values of Energy taken from Research Paper		
с	Energy Expended in Manufacturing of Briquettes					
C1	Energy consumed for production of 3,10,792 MT of Briquette	Mn kcal	0	For Loose Biomass used in SPIL		
D	Calculation of EROI - SPIL					
B+C1	Energy expended for Sourcing of Biomass – 3,10,792 MT in 1 Year	Mn kcal	<mark>11,534</mark>	Addition of all Processes. (Input Energy)		
А	Energy potential of Biomass – 3,10,792 MT in 1 Year	Mn kcal	11,18,850	As mentioned in Assumptions. (Output Energy)		
	EROI for Biomass Fuel		<mark>97.0</mark>	Dividing Output Energy by Input Energy.		



ENERGY SAVINGS - SPIL

Sr. No.	Parameters	UOM	FO Boiler	FV Biomass Boiler	REMARKS
	EROI - Energy Return on Investment.	Ratio	6	97	Calculated based on Research Papers.
Α	Energy Consumption (Fuel) (During Generation of Steam)	Mn Kcal / Yr.	62,093	56,447	SFR BASIS
В	Energy Consumption (Power) (During Generation of Steam)	Mn Kcal / Yr.	1,328	1,859	AS PER ELEC LOAD
с	Energy Consumption. (From Source of fuel to Point of use)	Mn Kcal / Yr.	11,760	685	FROM EROI
D	Total Kcal Consumed per year (D=A+B+C)	Mn Kcal / Yr.	75,181	58,992	
	Energy Savings in Comparison with Proposed Biomass Boiler.	Mn Kcal / Yr.	16,190		
		%		22%	

PRESPL CO₂ Emission reduction in FY 20-21 & 21-22 by using Biomass as fuel

Life cycle GHG Emissions (tCO2)					
	FY 2020- 21	FY 2021- 22	Total (2 Yrs)		
Steam Gen from Biomass fired Boiler	93,127	89102	1,82,229	MT	
Biomass Consumed	21,688	22845	44,533	MT	
FO Consumption offset	7,761	7,425	15,186	MT	
Emission Reduction by using Biomass in replacement of FO	24,135	23,092	47,227	Considering Emission factor for FO 3.11 kg CO ₂ /kg of Fuel	
Emission Reduction in last 2 yrs.			47,227	M t <i>CO</i> 2	
FO Cost for 2 Yrs.		60.74	Cr Rs		
Biomass Cost for 2 Yrs.			15.59	Cr Rs	
Cost reduction by FO Offset			45.16	Cr Rs	



- Fuel Cost reduction of 2 Yrs. is Rs 45.16 Cr (75%), by offsetting FO and implementing Biomass as fuel.
- Rs 15.59 Cr added in rural economy and cost benefit to Local VLEs from sale of Argi residue.
- Generates 100 + Green Jobs of varied nature in last 2 Yrs.
- Job creation and earning to plant nearby 60 Km of villages area.



- > 16 + Village Level Entrepreneurs (VLEs) are Partners / Channel Partners engaged from last two years.
- This plant helps to reduce the amount of GHG that give more impact to global warming and climate change.
- These contribute to the bioeconomy by consuming biomass quantities either in terms of Agri waste or by-product
- By using sustainable alternative to fossil fuels contributes to Sustainable development.



- > Avoid burning of this biomass in Agri land and reduce pollution.
- Ash produced from boiler is compostable component, used by nearby horticulturalists for compost or landfills
- Online SPM (Suspended particulate Matter) monitoring and auto control in Boiler ensures nearby area as smoke control



Jai Hind!

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