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B2B Meeting - 3rd EU-INDIA Conference on Advanced Biofuels



➤ EIL had developed unique expertise in the arena of:

- 2G ethanol Plants
- Bio-Jet process Plants
- Bio-CNG Process Plants

OMC	LOCATION	CAP, KLPD	FEED	LICENSOR
Detailed Feasibility Report (DFR)				
HPCL	Bhatinda	100	Rice straw	DBT-ICT
HPCL	Hardoi	100	Rice Straw	Praj
IOCL	Dahej	100	Cotton stalk	Praj
BPCL	Bina	100	Soya Stalk	DBT-ICT
BPCL	Bargarh	100	Rice Straw	Praj
MRPL	Harihar	60	Corn Cob	Praj
Engineering Procurement Construction & Management (EPCM)				
ABPRL	Numaligarh	187	Bamboo	Chempolis

- Typical products of 2G includes Ethanol & By products for typical plants from different technology licensors includes acetic acid, furfural, Technical Alcohol, Bio-CNG, Food grade CO₂, lignin etc. **Lignin valorisation stands tall in IPR turnaround.**
- Typical products of bio-jet plant includes Bio-jet Fuel, Naphtha, Diesel & Fuel Gas. Yields of bio-jet & diesel are ~ 23% (with respect to Quantity of bio-oil) and compete as products
- Bio-CNG is also a viable option with lower Capex vis-à-vis 2G ethanol plant and CNG as gaseous product and solid manure.



➤ EIL role includes:

- Technology Value addition - optimised material balance, water balance, Process Flow Diagram (PFD), equipment data sheet and OSBL with licensors
- Vendor Development - Facilitated platform of equipment suppliers and technology provider
- Cost Reduction - Higher CAPEX & OPEX of 2G ethanol plants, makes IRR of the project negative

Challenges in 2G Plants:

- Lignin based Boiler - Commercially proven boiler vendor availability in India and handling of three phases, namely lignin, stillage and gases.
- Biomass feed pre-treatment Digester - Commercially proven digester vendor availability in India
- Lignin/ Inorganic Salt / Ash disposal
- Reactor scale-up (Enzymatic reactors) & Hydrolysed Slurry Vendor development



➤ Challenges in ABRPL:

- First Implementation of commercial plant from Demonstration plant
- Working with Licensor for Development of India Specific BEDP
- Column Design for Azetropic Mixtures
- Selection of Material of Construction (for Exotic material like Titanium lined for tanks to SS or DSS)
- Indian Safety and environment regulations
- Estimation of Utilities

EIL had developed unique expertise for in 2G Technology selection and implementation. Close interaction has been done with different technology providers, equipment vendors aiding to establish/mature the technology