

MVR in Ethanol Production : A Road to Sustainability

Conference Theme: Innovative Technologies

All India Distiller's Association

Technical Seminar

Sukhraj Soni
Spray Engineering Devices Limited



CORPORATE PROFILE

Year of Inception

- 2004

Management

- Vivek Verma (Managing Director)

Type of Industry

- Thermal Energy Recycling Solutions for Sugar Refinery, Sugar, Distillery, Biofuel, Water and Jaggery Sectors

Nature of Business

- Manufacturers / Design / Process / Engineering / Consultancy / EPC/R&D for Water, Sugar, Jaggery & Bio-Fuel Sector

R & D Recognition

- Department of Scientific & Industrial Research (DSIR), GOI

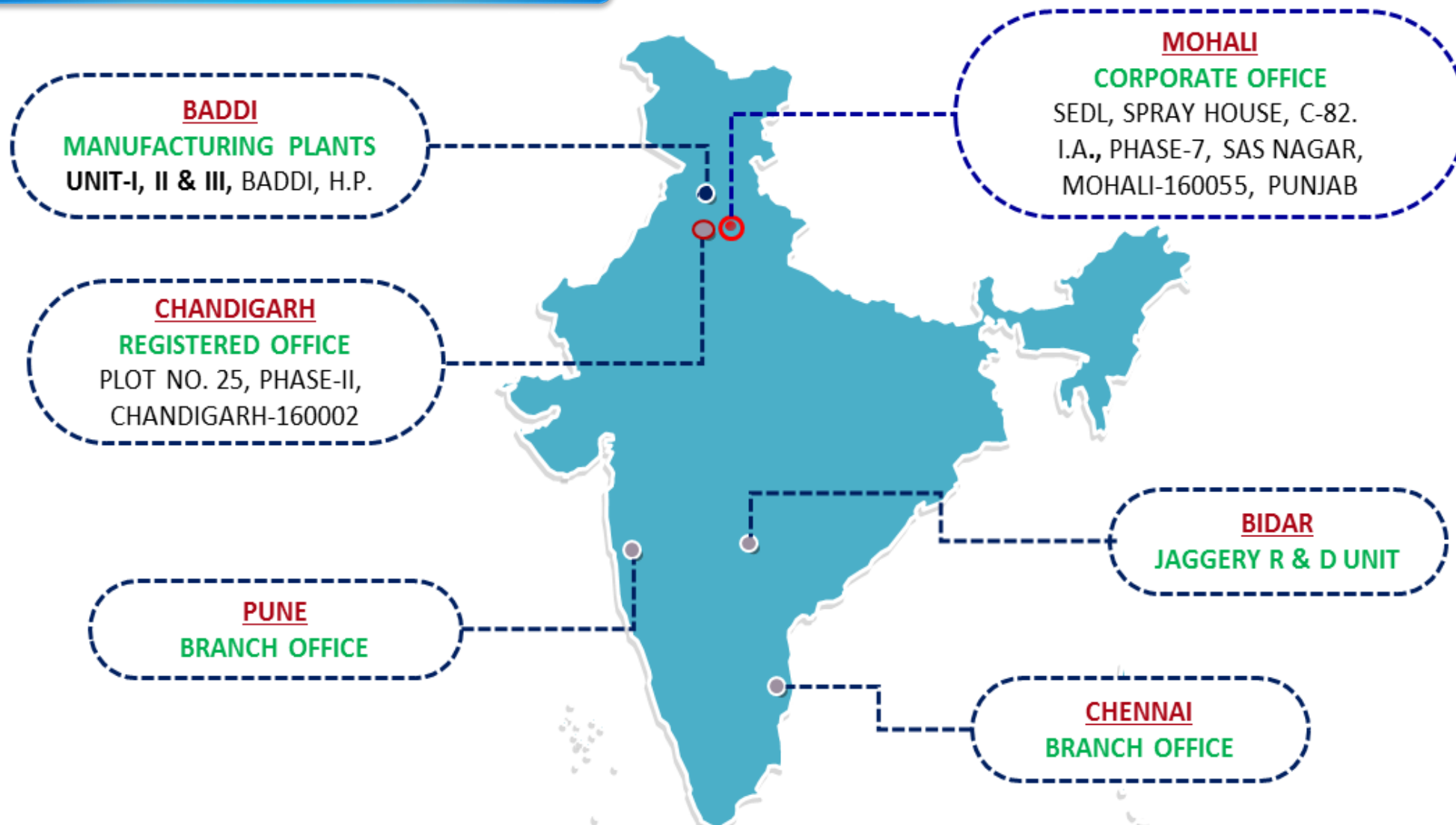
Total Employees

- 1400 Nos.

Annual Sales

- ₹ 550 Crore in FY 2023-24

OFFICES



BUSINESS AREAS



Business Verticals

Sugar

Water

Biofuel

Jaggery

Advisory Services



**Technology & Products
for Lowest Steam
Demand in Sugar Plant**



**100% Water Recovery
with ZLD & ZLI, Zero
Emission of CO, CO2**



**1G / 2G Ethanol/
Consultancy Services**



**Boiler-less MVR based
Jaggery plant with
100% bagasse saving**



**Innovative Technological
Solution and advices for
energy efficiency**

Consultancy Services

**Biofuels(Sugars / Grains) / ENA / Ethanol / Malt /
Craft Spirits /Advance Biofuels(2G)**

EPC / Project Management Services

**Performance
Optimization /
Improvement
of Existing
Distillery**

**BEDP / FEED
Documents for
Projects**

**Operation &
Maintenance**

**Techno-
Economic
Project
Feasibility
Studies**

BIOFUEL VERTICAL – Our Partners & Customers



Technology Partner for 2G Ethanol Plant ; Biomass Gasification route followed by Gas Fermentation.

Steam Free Distillation Plant on EPC mode. (Grain Based Ethanol)



PMC & Advisory Services For Ethanol/Potable Alcohol /Craft Rum/Craft Gin Plant

Projects under execution:



M/s Himalayaa Wines Pvt Ltd. ; M/s Privi Fine Sciences Ltd.
M/s Aadhar Green Industries LLP ; M/s Hempco Ventures
M/s Nav Durga Fuels, Raigarh ; M/s Rourkela Sponge LLP
M/s Bharat Bio Ethanol, Rajasthan





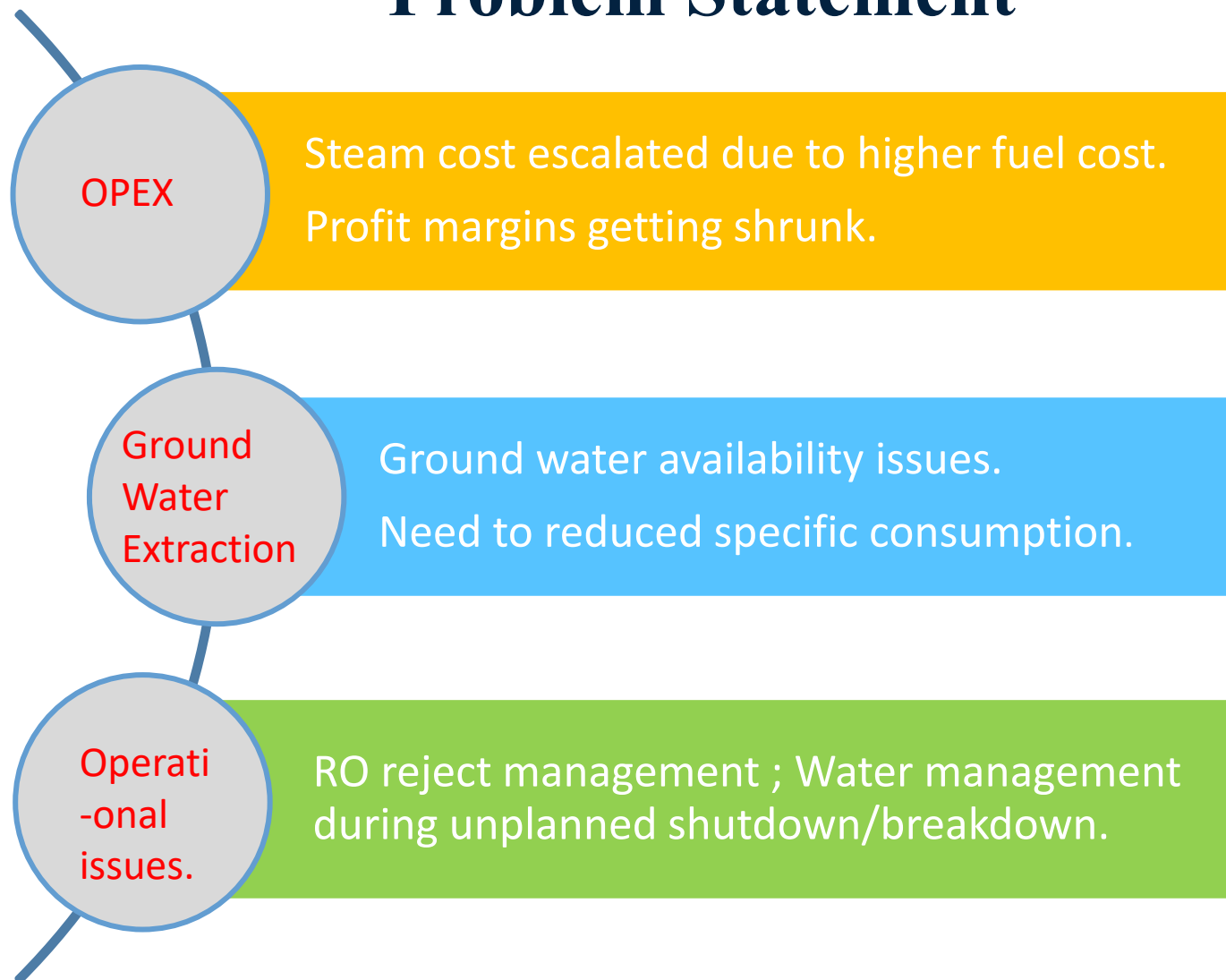
MVR IN ETHANOL PRODUCTION : **A SUSTAINABLE APPROACH USING** **THERMAL HEAT RECYCLING**





Technology Development is an
Outcome of finding
Sustainable Solution to the
Problems.....

Problem Statement



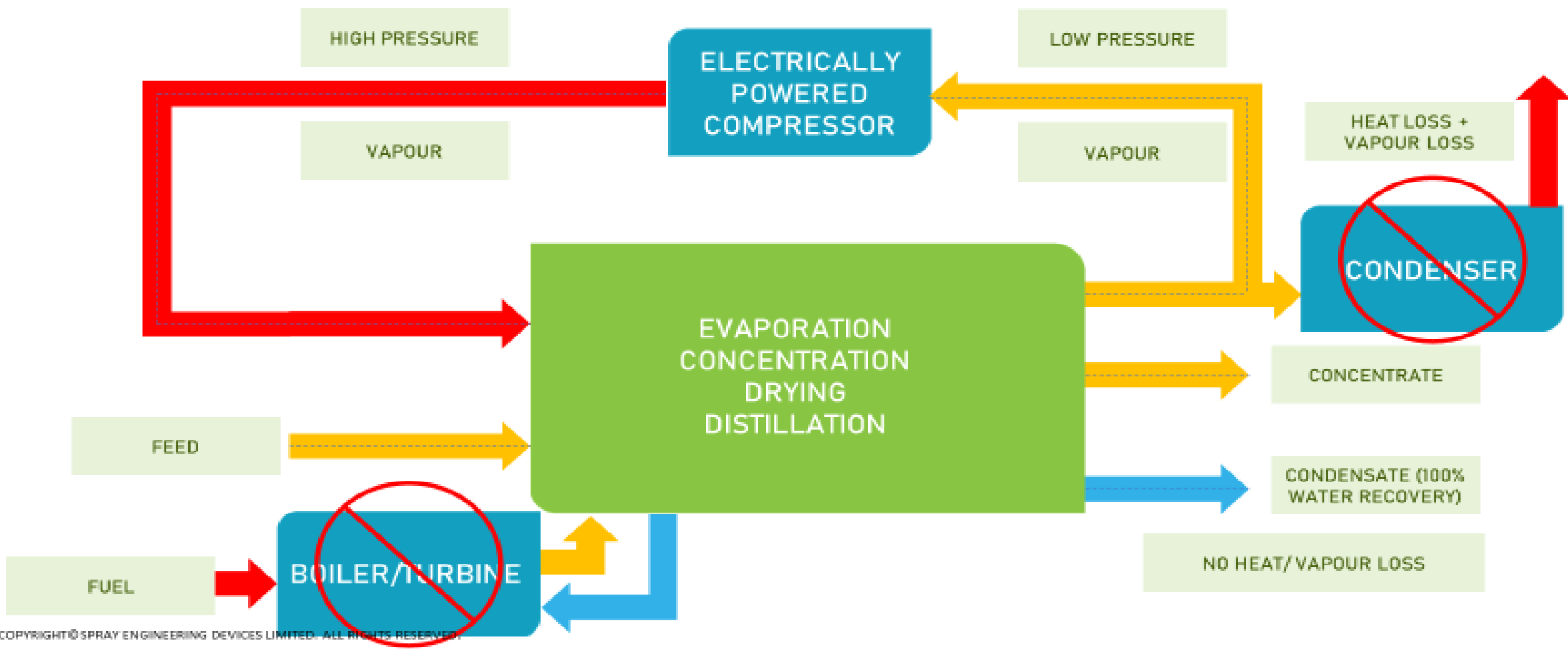
Need of an Hour

- Specific steam consumption reduction
- Alternate Energy Source
- Water Losses to be minimized.
- Alternate methodologies to be explored
- Water recycle % to be improved.
- Unit Operation improvisation.



The Transformative Technology

"Low Temperature Evaporation (LTE®) with Mechanical Vapor Recompression for Heat Recycling"



Distillery Application:

- A. Steam Free Distillery (Nil to 50% steam consumption , customisation)
Syrup / B/C Heavy / Grain Based.
- B. Concentration of Spent wash / Bio Methanated spent wash / Thin or Thick Slop,
Raw cane juice to syrup & Spent wash concentration. Dryer application.
- C. Streams with Inorganic salts (Cooling Tower Blow down, DM water reject, CPU reject
water recovery) systems..(1 % TDS concentrated to 25-28 % ,Solids to have >90 % water
recycled)



- **Raw Material** : Broken Rice / Maize
- **Plant Capacity** : 170 KLPD RS / Ethanol
- **Status** : Commissioned & Under Optimization

Steam Free MVR Based Grain Ethanol Plant Dalmia Bharat Sugars, Unit : Jawaharpur

USP:

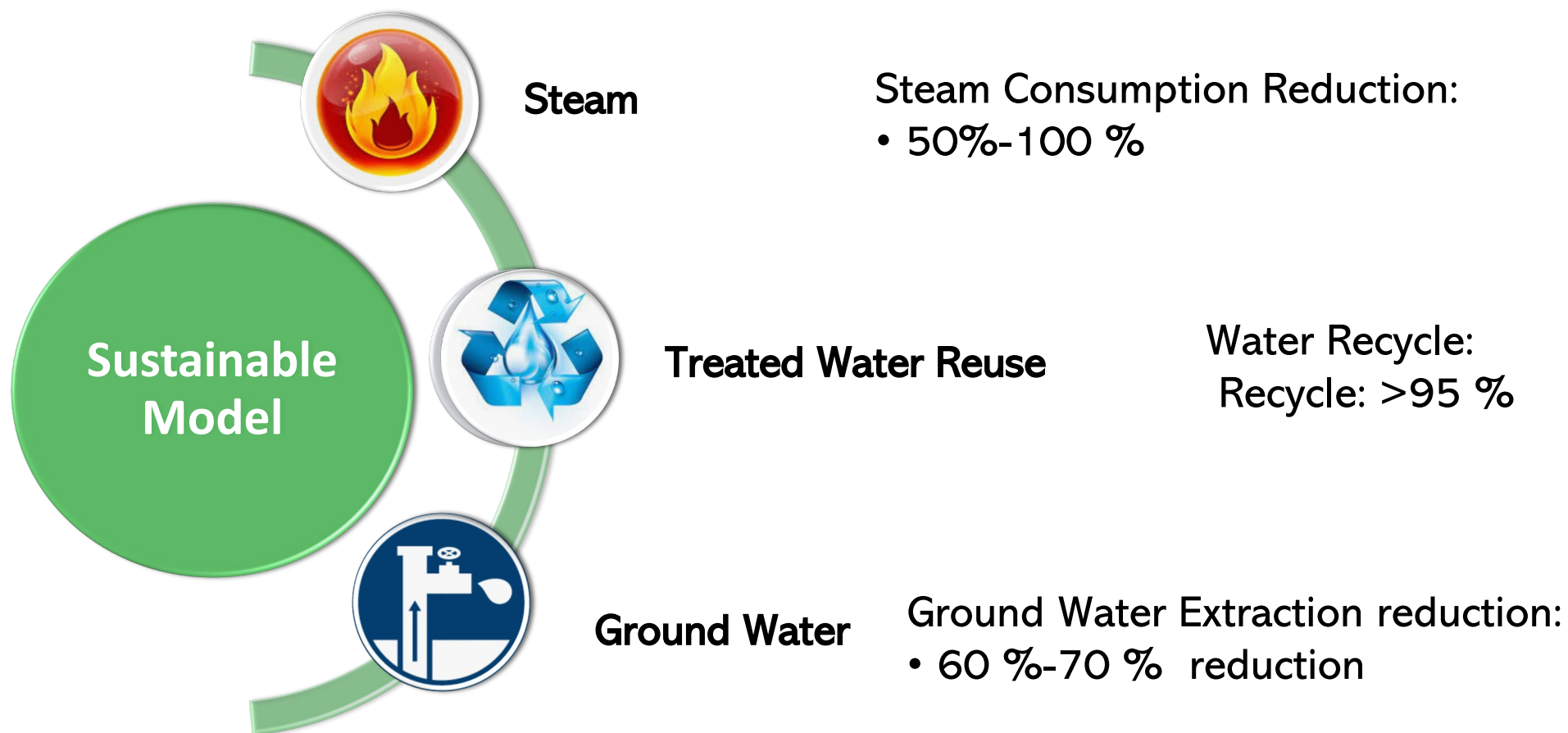
- Thermal Heat Recycling ; MVR driven system.
- Distillation & Evaporators : Steam / Cooling Tower not required.

Steam Reduction : by 50 %

- LTE[®] on C.P.U. Reject : Water recycling by more than 95% .
- Ground Water Extraction Demand - reduced



SUSTAINABLE MODEL: SUMMARY



WAY FORWARD: SUSTAINABLE SOLUTIONS: 2G ETHANOL PLANT (Gas Fermentation Route)



The poster features a background image of shredded paddy straw. In the top right corner, there is a small SED logo. The main text is on a dark blue background with a green wavy line separating it from the straw image. The text includes '1st of a kind', 'Agro Waste Based Ethanol Project in INDIA', a partnership statement with LanzaTech and Spray Engineering Devices Limited, and the website 'www.sprayengineering.com'.

1st of a kind

Agro Waste Based Ethanol Project in INDIA

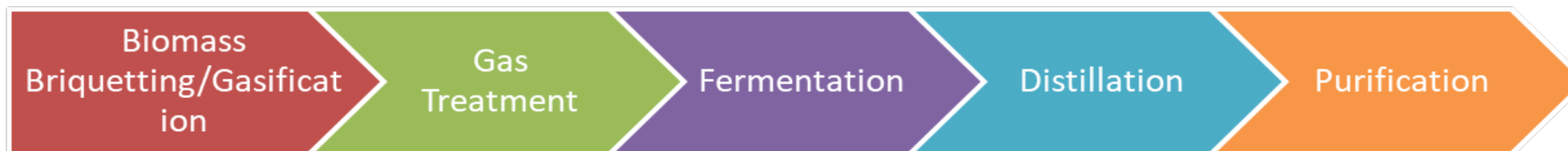
LanzaTech to work with Spray Engineering Devices Limited on Sustainable Ethanol Project

www.sprayengineering.com

SED 's Mission :

- Cost-effective biofuel technology by improvement of existing Process Blocks partnered with **Lanzatech**.
- Raw Material: Agro-waste i.e. Paddy Straw, Bagasse, Sugarcane Trash, Cotton Stalk, Corn Cob , Municipal Waste ,Carbon-dioxide etc.
- **Optimisation of CAPEX (< Rs 550 Cr.); 100-120 KLPD Ethanol;(Plant & Machinery/Civil)**
- **OPEX (< Rs 45/ Litre Ethanol)**
- Deployment of SEDL Patented LTE / MVR system in Bagasse Drying , Thermal Integration of Gasification & Fermentation , Ethanol Production & wastewater process treatment .

Biomass Gasification /Gas Fermentation Technology (Thermo-Chemical Platform)



Process Blocks:

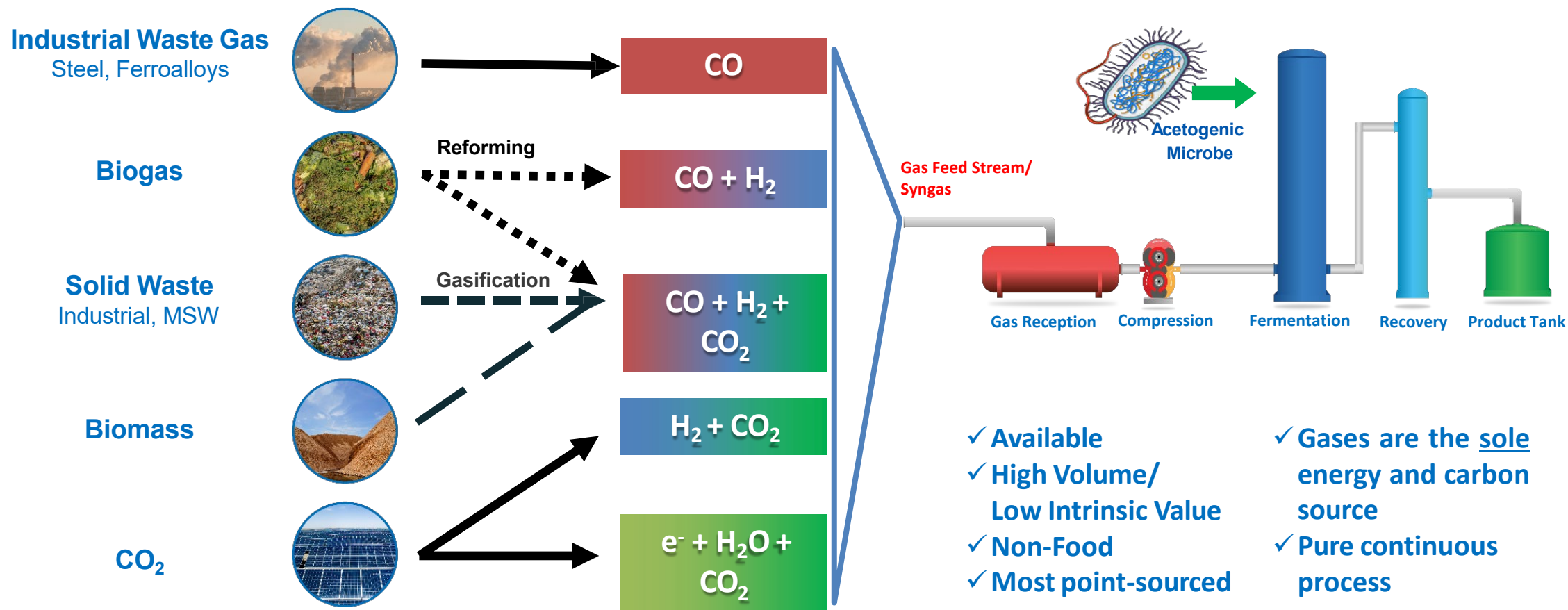
- Biomass Briquetting / Gasification.
- Syn Gas Pre-Treatment.
- Gaseous state Fermentation by Lanza tech
- Separation & Purification.
- Byproducts: Bio char / Vent gasses.
- Cell/chemicals recycling system.

Process Status Advantages:

- Biomass Handling is matured technology.
- Gas pretreatment , LT proprietary technology.
- LT Proprietary , Matured technology.
- Matured Technology.
- Bio char: sold /carbon credits.
- Vent gases burnt to produce steam

Technology Partner : Ankur Gasification //Lanza Tech Technology//SED

GAS FERMENTATION FROM WASTE CARBON STREAM



	Project At A Glance		
1.	Plant Capacity	100 KL / Day (expandable up to 120 KLPD)	
2.	Raw Material	Bagasse (45-50 % moisture) Sugarcane trash (15% moisture) Corn Cob (15 % moisture) MSW	
3.	Technology	Gas Fermentation	LanzaTech, USA
4.	Technology Component	Biomass Supply chain Gasification Gas Fermentation Ethanol Recovery Detailed Engineering/EPC	SED, Mohali Ankur Scientific, Vadodara LanzaTech, USA SED, Mohali SED, Mohali
5.	Plant Location	U.P./ Haryana	
6.	Land Requirement	26 Acre	
7.	CAPEX // OPEX	Rs 550 Cr // Rs 45 / Litre Ethanol	Land/P&M/Services//RM/utilities/
8.	Project Timeline	2years	

“Dedicated for **Sustainable Environment Development**
to unlock Perpetual Food and Energy Resources.”

Our Vision



If you can imagine it ,

You can achieve it

*MVR is a small step towards Sustainable growth of Ethanol Industry aligned
in true sense of “Atamnirbhar Bharat”*

Technology: Made In India For the World



THANK YOU!



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