

**120 KLD MOLASSES BASED ETHANOL PLANT AND 4 MW CO-
GENERATION POWER PLANTS
AT
VILLAGE-CHAK ALLABAKSH & MAHIULDINPUR DALEL,
TEHSIL-MUKERIAN, DISTRICT-HOSHIARPUR**

1. Vardan EnviroNet

**Study Period: Post Monsoon Season
(1st October 2018 to 31st December 2018)**

Category – ‘A’, Activity – ‘5g’

Applicant

M/s Indian Sucrose Limited G. T. Road, Mukerian - 144211



Environment Consultant

Vardan EnviroNet

(NABET/EIA/1619/RA0037)

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Executive Summary

1 PROPOSED PROJECT & LOCATION

The ISL has proposed the 120 KLPD Molasses based ethanol plant and 4 MW co-generation power plants. Project will produce fuel ethanol and Extra Neutral Alcohol from molasses as raw materials in Village ChakAllabaksh and Mahiuldinpur Dalel, Tehsil-Mukerian, District-Hoshiarpur, Punjab.

2 PROJECT PROPONENT

- a) **Name** : Mr.Ved Gupta
Registered address : Sucrose Limited, G. T. Road, Mukerian – 144211, District Hoshiarpur, Punjab
Mail : ved.gupta@yaducorporation.com
Mob : 7290072110
- b) **Name** : Mr. Deepak Yadav
Registered address : 202/47, Thapar Arcade Kalu Sarai, Hauz Khas, Delhi-110016
Phone : +91-7290072111
Mail : Deepak.yadav@yaducorporation

Besides this, the management team comprises of many other senior members. The company is managed by well-qualified persons having progressive attitude and qualification.

3 REQUIREMENT OF THE PROJECT

- i. **Raw Material Requirement:** The total raw material along with estimated quantity, its source and mode of transportation is given in the below table:

S.no	Particular	Quantity	Source
1.	Molasses	480 TPD	Its own sugar industry & nearby sister industry (Bhagwanpura & Bhogpur Sugar Mill)
2.	Steam	30 TPH	Its own boiler of capacity 45 TPH
3.	Yeast (Active Dry Yeast/Distiller's Yeast)	As required	From the market
4.	Sulphuric acid	30 kg/day	From the market
5.	Antifoam Agent	30 kg/day	From the market
6.	DAP / UREA Nutrients - 46 % w/w Nitrogen	60 kg/day	From the market
7.	Bagasse	20 TPH	From the market
8.	Biocides	12 kg	From the market

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9.	Diesel	25 ltr/day	From the market
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The total requirement of molasses for the 330 days operation of the proposed distillery plant at optimum level of operation will be around 1,58,400 MT. ISL will use in house produced molasses of 54,000 MT and then balance 1, 04, 400 MT of molasses will be procured from sister unit or nearby sugar factories

Power Requirement: The total electricity requirement for this project is 3100 Kwh, will be met through its own power plant of capacity 4 MW. In case of emergency DG-sets will be used of capacity 600 KVA.

Man Power Requirement: The total manpower requirement during the operation work will be **98 (approx)** and during construction work will be **50 (Approx)**

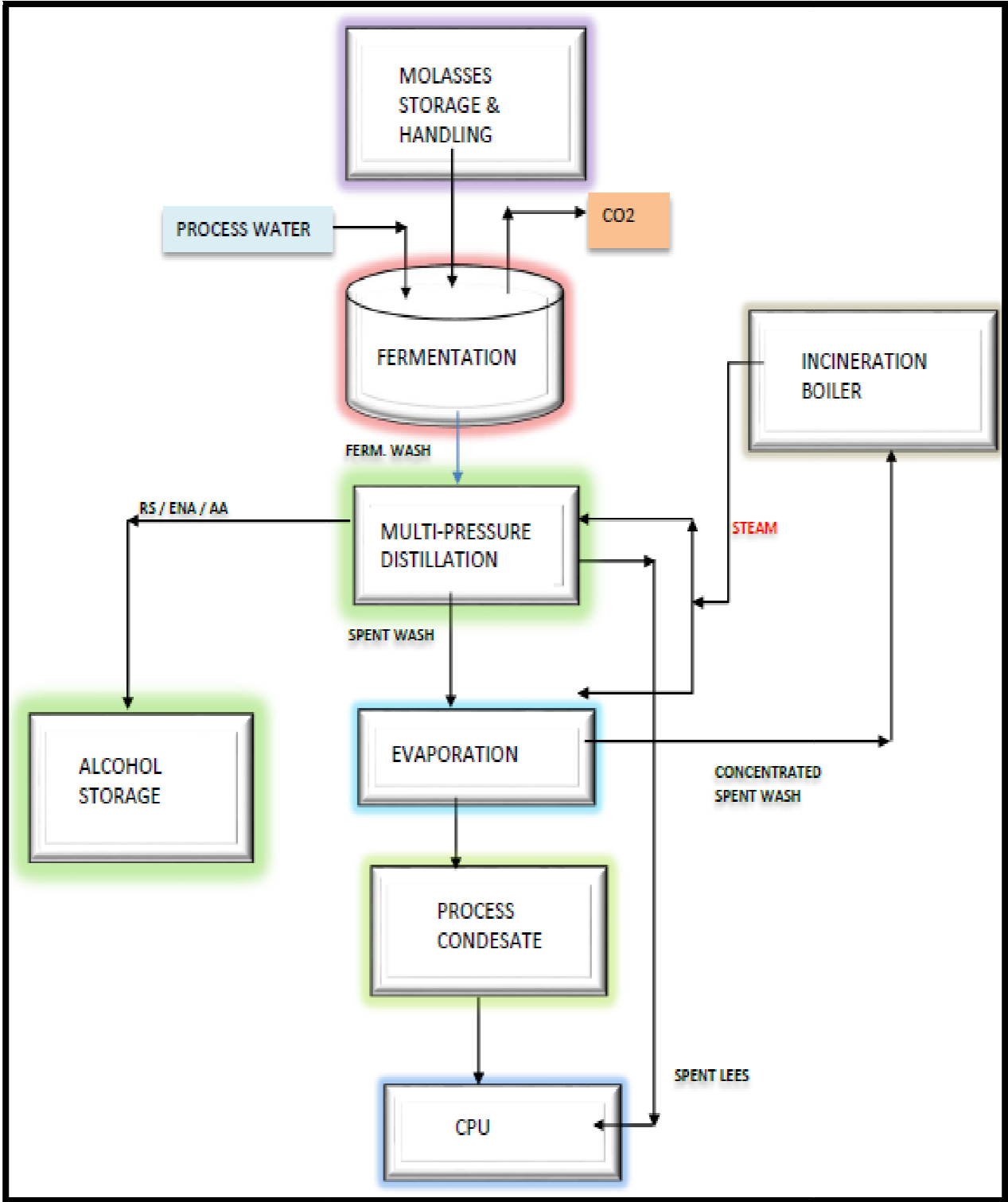
Fuel requirement: Fuel quantity for the boiler will depend on the quantity of Stem required. Fuel burned in the boiler is the mixture of Bagasse and spent wash. The composition of spent wash is 30-35 %, if the sludge content in the spent wash is 50-60% brix (4000-6000 mg/kg) for the maximum gross value. The quantity of bagasse required will be ~ 20 TPH.

Water Requirement: The water requirement will be about **7 m3 per KL** of spirit including process water, boiler feed water, make up water cooling tower, DM water for distillation, which will be sourced from the bore well and ground water approval will be taken before the project setup. This water will be used both domestic and Industrial purpose. Domestic water requirement for the project is **5 KLD** and Industrial water requirement is **~848 KLD** total water requirement will be **853 KLD** and this water will be source form Ground Water. **CGWA application for the with drawl of Ground water** has been applied vide application no **21-4/4688/PB/IND/2019** on dated **14-01-2019**.

Land Requirement: The total Land area required for the project is 13 acres. This land is already acquired by the project proponent, which is adjacent to its sugar plant. The detailed breakup of the land is given in the table below:

S.No	Land Usage	Area in Acres	ha
1	Paved Area	1.27	0.52
2	Open area	1.57	0.63
3	Green Belt	4.3	1.74
4	Rooftop Area	5.86	2.37
	Total Area	13	5.26

4 MANUFACTURING PROCESS



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5 ENVIRONMENTAL BASELINE STATUS

The baseline data was collected for the post monsoon season from 1st October to 31st December 2018. The analysis shows that all the result are under the NORMS.

Parameters	No. of locations	Description	Permissible Level
Air Quality	8	PM ₁₀ - 66.5 to 86.9 µg/m ³ PM _{2.5} - 39.6 to 56.4 µg/m ³ SO ₂ - 6.4 to 14.5 µg/m ³ NO ₂ - 16.5 to 31.2µg/m ³	100 µg/ m ³ 60 µg/ m ³ 80 µg/ m ³ 80 µg/ m ³
Ground Water Quality	8	pH - 7.34 to 7.93 Hardness - 184.52 to 320.52 mg/l TDS - 380 to 556 mg/l	6.5-8.5 200-600 mg/l 500-2000 mg/l
Surface Water Quality	8	pH - 7.30 to 7.56 Hardness - 119 to 251mg/l TDS - 175 to 253mg/l	----
Soil Quality	6	pH - 7.30 to 7.91 Nitrogen - 210.00 Kg/ha. to 291.00 Kg/ha Phosphorus - 24.56 Kg/ha. to 34.96 Kg/ha Potassium - 121.00 Kg/ha. to 165.30 Kg/ha	-----
Noise Level	8	Noise Level (Day) - 51.89Leq dB to 62.96 Leq dB Noise Level (Night) - 41.15Leq dB to 51.40 Leq dB	75 Leq dB (A) 70 Leq dB (A)

6 BIOLOGICAL ENVIRONMENT

Biological environment of the area was studied during the study period and study result show that there is No Wildlife Sanctuary, National Park, Biosphere Reserves, Wildlife Corridors, migratory routes of birds and Reserve & Protected forest within study area of 10 km radius and One Schedule -1 Species i.e Indian Peafowl was observed during study.

7 DEMOGRAPHY& SOCIO-ECONOMIC ENVIRONMENT

- Total number of households are about 23091
- Total population of villages under the study area is 110139 out of which males are 55582 (50.46%) and females are 54557 (49.53%)
- The average family size is about 4.7 persons per family
- Sex ratio (No. of females per 1000 males) is 981 which indicates that females are less in number than their male counterpart in the study area
- Out of the total population, the population of children within the age of 0-6 age-group is about 11773 (10.68%)
- Child Sex ratio is 817 i.e No. of female child per 1000 male child.
- Scheduled caste population is about 25107 (22.79%) while the Scheduled tribes population is Nil in the region
- Out of the total population in the region 83886 i.e 76.16% are literates

It can be inferred from the data obtained that area is on an average populated while it is observed that the adult female population is quite higher as compared to female population with the age-group of 0-6 years. Scheduled tribe population is nil in the study area.

8 ENVIRONMENT MANAGEMENT PLAN

8.1 Air Environment

- The control the particulate emissions ESP will be installed and particulate matter value will be maintain less than 50mg/m³ as per standards of CPCB.
- CO₂ scrubber will be provided to scrub CO₂ emissions in water.
- The whole process will be carried out in closed condition so as to avoid any chances of VOC emissions
- Online stack monitoring system for regular monitoring of (for Particulate Matter) will be installed and transmission of online data to Punjab Pollution Control Board and CPCB will be done.
- Adequate stack height will be provided to Boiler and D.G. sets.
- The main raw material and product shall be brought in and dispatched by road in covered enclosures.
- Dust collectors will be installed at loading-unloading section to minimize the PM emission at the site.
- Emphasis will be given for proper handling and storage of chemicals, product, fuel and raw material to minimize the chances of any dust or fugitive emissions.
- It will be ensured that the vehicle owners must have valid PUC Certificate.

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- Dust suppression on haul roads will be done at regular intervals.
- Boiler ash will be transferred in closed conveyors to the end users to avoid any spillage.

8.2 Water Environment

- Spent wash will be treated through Centrifuge Decanters for separation of Suspended Solids as yeast sludge, which will be dried in lagoon & later used as cattle feed as it contains higher protein and fiber content.
- Thin slop from the Decanter Centrifuge are partly recycled back to process (30-35%) and partly taken to Multi Effect Evaporator.
- Spent less water from the distillation column, dehydration, boiler blow down, cooling tank will be treated in the Condensate Polishing Unit (CPU).
- Treated water from the CPU will be used as make up water for the boiler, cooling tower and in the back in process again.
- Domestic wastewater will be disposed of through septic tank followed by soak pit system.
- Proper storm water drainage will be provided during rainy season to avoid mixing of storm water with effluent.
- Online monitoring station will be installed and results will be transmitted to the PPCB websites to maintain the ZLD.

8.3

Odour Management

- Some Odor problem may be there due to the production of hydrogen sulphide in the fermentation tank, but the same shall be controlled and restricted by controlling the production of hydrogen sulphide by:
- Maintaining the pH in the range 5_9 and temperature will be maintained for the reaction. Even in some cases
- Doping will be done by the Chlorine dioxide that destroy the Odour at the source.
$$5\text{H}_2\text{S} + 8\text{ClO}_2 \longrightarrow 5\text{H}_2\text{SO}_4 + 8\text{Cl}^- + 4\text{H}_2\text{O}.$$
- Odour Management Plan outlines the methods by which odorous emissions will systematically assess, reduce and prevent potentially from the distillery unit.
- Odour shall be primarily controlled at source by good operational practices, including physical and management control measures.
- Better housekeeping will maintain good hygiene condition by regular steaming of all fermentation equipment.
- Use of efficient bio-oxides to control bacterial contamination.

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8.4

Solid & Hazard

Boiler ash will be collected and will be given to authorized vendor for the Brick manufacturing. MEE salt will be burnt in the boiler.

Yeast Sludge from the fermented tank and decanter will be dried in the lagoon and would be used as the cattle feed.

Used oil which will be in minimum quantity would be given to authorized vendor for disposal.

Other solid waste like plastic container, tank would be sold to authorized vendor.

8.5

Noise Management

- All equipment shall be of standard make and equipped with silencer.
- Closed rooms shall be provided for all the utilities so as to attenuate the noise pollution.
- High noise zone should be marked, and earplugs/earmuffs shall be provided to the workmen near high noise producing equipment. The workmen should be made aware of noise and vibration impacts on their health and mandatory use earplugs.
- All pipes and valves (including pressure control valve) shall be one schedule higher than needed by pressure considerations to attenuate noise.
- Padding shall be provided on plant floors to avoid noise due to vibration / falling objects.
- Proper shifting arrangement shall be made to prevent over exposure to noise and vibration.
- Silent DG sets shall be used.
- Speed limits shall be enforced on vehicle.
- Use of horns / sirens shall be prohibited.
- Use of loud speakers shall comply with the regulations set forth by CPCB.
- Regular noise monitoring shall be carried at project site and baseline monitoring stations to check compliance with prevailing rules.
- All statutory precautionary measures will be implemented.
- Vehicles/machinery shall be regularly maintained (by oiling/greasing) to produce less noise.
- Greenbelt with dense trees shall be developed around the periphery of the plant to reduce noise levels.

9 PROJECT COST

The estimate capital cost is based on Cost & Prices and Taxes & Duties. The total capital requirement for the proposed project has been estimated is **Rs 160 Crore**. The cost estimates for major plant & equipment are based on indicative prices received from reputed suppliers. The cost of Civil & Structural steel works are based on estimated quantities and the prevailing composite rate of civil & structural work

10 ENVIRONMENT MANAGEMENT BUDGET

The proponent has proposed the **9.61 Crore** as capital budget and **4.36 lakhs** as the recurring budget towards the environment protection:

S.No	Environmental Protection Measure	Capital Cost (In Crore)	Recurring Cost (In lakhs)
1	Air pollution control measure		
	<i>ESP</i>	3	1
	<i>Water sprinkler</i>	1	0.3
2	Water pollution control measure		
	<i>MEE</i>	2	0.8
	<i>Condensate polishing Unit</i>	2	1.0
	<i>Soak Pit & Septic Tank</i>	0.01	0.06
3	Green belt development	0.10	0.70
4	Rain water harvesting	0.50	0.35
5	Fire fighting and safety measure	1	0.15
	Total EMP budget	9.61	4.36

11 GREEN BELT DEVELOPMENT:

About **1.7ha** (33% of total are) will be utilized for green belt development and plantation will be done as per Central Pollution Control Board (CPCB) Norms, with consideration of the nature of pollutants, availability of space and dominant wind directions. The green belt would be consisting of shrubs, trees, avenue trees, revenue trees, crops and potted plants. Green belt will be proposed as per the new guideline by the MOEF & CC i.e **2500 plant per ha**. Total no of plant to be planted in the premises will be **4250**. A budget of **Rs 10 lakhs** has been allocated for green belt.

12 CORPORATE ENVIRONMENT RESPONSIBILITY:

Corporate Environment Responsibility is for the sustainable development of various components like Social, Economic, Environmental etc. These entire components are closely interrelated and mutually re-enforcing. This budget will be used to meet the issue raised during Public hearing and for Social need assessment. The CER budget proposed by the project proponent is **3.2 Crore**. This CER budget is proposed as per the Office Memorandum dated 1st May, 2018 by the MoEF& CC.

Proposed CER Activities

S. No.	Activities	Budget (Crore)
1	Health Facility	0.50
2	Infrastructural Development	0.80
3	Educational Facility	0.20
4	Community Welfare Activities	0.30
5	Community Water Conservation	0.60
6	Community Capacity Building	0.40
7	Afforestation Programme	0.40
Total		3.20

13 PROJECT BENEFIT

- Bio-fuels are derived from molasses which is the by-product from the sugar industry and therefore provide a strategic advantage to promote sustainable development and to supplement conventional energy sources.
- The produced product from the Ethanol plant will be used for the blending of fuel (20% by 2020) as per National Biofuel policy which results in the reduction of Green house gases.
- Fuel grade ethanol is cleaner fuel as compare to diesel.
- Generation of revenue to the State.
- By product (Molasses, baggase) from the existing Sugar Mill will be used as the raw material for the production of Fuel grade Ethanol, hence leading to sustainable development.
- Helps in the generation of revenue to the state which will help in national economy.
- The rural economy will get a big boost due to purchase of large quantity of sugarcane.
- The unit will be pollution free since there will be no effluent discharge, ZLD will be maintained. So it's an eco-friendly project.
- To minimize the air pollutant concentration, ESP will be installed.
- Groundwater table will be enhanced by rain water harvesting method.