

**M.R. Krishnamurthy Co-operative Sugar Mills Ltd
(Proposed Distillery Unit)**

**S.F. Nos. 110, 113 A, 114,
Sethiathope village,
Chidambaram Taluk,
Cuddalore District.**

The Proposed Distillery Unit

Management Summary for the Proposed Unit of
45KLPD Capacity Distillery Plant

CONTENTS

1.0PROJECT DESCRIPTION.....	1
1.3 PRODUCTS MANUFACTURED.....	1
1.4 RAW MATERIALS.....	2
1.5 MANUFACTURING PROCESS.....	2
1.6 POWER AND FUELS.....	3
1.7 RAW WATER.....	3
THE TOTAL REQUIREMENT OF RAW WATER FOR THIS UNIT WILL BE 548.5 KLD, WHICH WILL BE MET FROM WELLS INSIDE THE FACTORY PREMISES.....	3
1.8 LAND.....	3
1.9 MANPOWER.....	3
1.10 ORGANIZATION STRUCTURE.....	3
2.0DESCRIPTION OF THE ENVIRONMENT.....	5
2.1 CLIMATE.....	5
2.2 ECOLOGY.....	5
2.3 HYDROLOGICAL CONDITIONS.....	5
2.4 WATER QUALITY.....	5
2.5 AMBIENT AIR QUALITY AND NOISE LEVELS.....	5
2.6 LAND USE PATTERN.....	6
3.0ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES.....	6
3.1 AIR EMISSIONS AND CONTROL MEASURES.....	6
3.2 WASTEWATER GENERATION AND METHOD OF TREATMENT.....	6
3.3 SOLID WASTE GENERATION AND METHOD OF DISPOSAL.....	6
3.4 HAZARDOUS WASTE.....	6
3.5 NOISE LEVEL.....	6
3.6 ODOUR CONTROL SYSTEM.....	7
4.0ENVIRONMENTAL MONITORING PROGRAMME.....	7
4.1 ENVIRONMENTAL MONITORING.....	7
4.2 BUDGETARY ALLOCATION FOR ENVIRONMENTAL MANAGEMENT.....	7
5.0ADDITIONAL STUDIES.....	7
5.1 SOCIO-ECONOMIC CONDITIONS.....	7
6.0PROJECT BENEFITS.....	8
6.1 SOCIO-ECONOMIC BENEFIT.....	8
THE PROPOSED PROJECT ON IMPLEMENTATION WILL GENERATE 57 - POTENTIAL JOBS DIRECTLY, AND WILL ALSO GENERATE MANY INDIRECT JOB OPPORTUNITIES..	8
DUE TO THE PROPOSED PROJECT, INDIRECT EMPLOYMENT TO THE EXTENT OF 507WILL BE GENERATED. THE GOVERNMENT REVENUE FROM THE PROJECT WILL INCREASE BY WAY OF DIRECT AND INDIRECT TAXES, DUTIES, ETC. THE INFRASTRUCTURE DEVELOPMENT WILL GET AN IMPETUS WITH THIS INDUSTRIAL GROWTH. COMMUNICATIONS, TRANSPORT, SCHOOLS, HOSPITALS, TRADE AND COMMERCE WILL INDIRECTLY GET AN IMPETUS.....	8
7.0ENVIRONMENTAL MANAGEMENT PLAN.....	8
7.1 AIR POLLUTION MANAGEMENT.....	8
7.2 WASTE WATER MANAGEMENT.....	8
BIO COMPOSTING.....	10

THE UNIT HAS PLANNED OVER 10 ACRES CONCRETE YARD FOR COMPOSTING. HDPE SHEET WILL BE SPREAD OVER THE CONCRETE YARD TO AVOID THE LEAKAGE OF SPENT WASH INTO THE EARTH.....10

7.3 SOLID WASTE MANAGEMENT.....10

7.4 NOISE LEVEL.....11

7.5 LAND DEGRADATION.....11

7.6 GREENBELT PLAN.....11

1.0 PROJECT DESCRIPTION

1.1 Introduction

M/s. M.R. Krishnamurthy Co-operative Sugar Ltd. had been registered as a Coop. Society in 1987 under the Tamil Nadu Coop. Societies Act 1983 with the object of manufacturing and sale of sugar along with the by-products to the best advantage of the Share Holding members. The mills started its business in 1990. The capacity of the mills is 2500 TCD.

M/S. M.R. Krishnamurthy Co-operative Sugar Ltd. is promoting 45 KLD multi product Ethanol in same premises Sethiathope village, Chidambaram Taluk, Cuddalore District in Tamil Nadu.

1.2 Plant Location

The proposed distillery plant is to be located at S.F. Nos. 110, 113 A, 114, Sethiathope village, Chidambaram Taluk, Cuddalore District. This proposed site is located about 16 km away from Chidambaram and it is in-between the road connecting Mannargudi and Panruti. The site is located in the Eastern of this road. The nearest Major railway station is Virudhachalam. The gross assets value of the proposed project cost is 36 crores.

1.3 Products Manufactured

S.No.	Distillery Basic details	Quantity	Unit
1	No of days of operation	300	Days
2	Alcohol production (Rectified Spirit) from molasses	45.0	KL / Day
3	Anhydrous Alcohol	40.8	KL / Day

1.4 Raw Materials

S.No.	Raw Material	Quantity
1.	Cane Molasses	196 MT/Day
2.	D.A.P. / Urea	45 Kg/ Day
3.	Antifoam Oil	90 kg/Day
4.	Sulphuric Acid	67.5 Kg/day

1.5 Manufacturing Process

Molasses is diluted with process water and calculated quantity of yeast is added. Air is passed through the above diluted molasses with the first two fermentors and CO₂ is passed in the balance three fermentors. The enzymes produced during the yeast metabolism converts the fermentable sugars present in the molasses to ethyl alcohol and Carbon di-oxide gas. The fermented liquid containing ethyl alcohol is distilled in the series of distillation column to produce industrial alcohol (Rectified sprit), Extra neutral alcohol and anhydrous Alcohol.

Molasses with process water in constant proportion is continuously fed to the 1st three fermentors, air is passed in the 1st two fermentors. The Carbon di-oxide gas generated in the 1st 2 fermentors is passed into balance three fermentors. The diluted molasses flows from 1st fermentor to 5th fermentors. During this flow the ethyl alcohol is produced by the action of enzymes in the yeast as fermented liquid. The fermented liquid is settled in the settling tanks and the clear liquid is taken to the distillation column for ethyl alcohol distillation.

Rectified spirit

The fermented liquid is fed at the top of the distillation column and at the bottom steam is passed. The generated alcohol vapours are concentrated in the distillation column and cooled in the condensers to get Industrial alcohol (Rectified spirit) which contains 95% of ethyl alcohol.

Anhydrous Alcohol:

The Anhydrous Alcohol is manufactured from Industrial alcohol (Rectified spirit) by Molecular Sieve System. The Industrial alcohol is vaporized in the evaporation column and fed into the molecular Sieves where the water vapour gets absorbed and the pure Alcohol vapour is collected and cooled to get Anhydrous Alcohol.

1.6 Power and Fuels

Total Power requirement of the Plant will be 500 KWH. Total Power and steam will be obtained from its sister concern M/s. M.R. Krishnamurthy Coop. Sugars Mills Ltd. (Cogeneration Plant) or the boiler and turbogenerator from distillery plant itself.

1.7 Raw Water

The total requirement of raw water for this unit will be 548.5 KLD, which will be met from wells inside the factory premises.

1.8 Land

The total area allotted for this factory is 20 acres.

1.9 Manpower

The plant will have about 57 employees per day for its normal working.

1.10 Organization Structure

The Senior General Manager is responsible for the factory operations. There are several executives for various sections such as Production, Human

Resource, Purchase, Store, Accounts, Environmental & Safety, Maintenance, and Quality Control etc.

2.0 DESCRIPTION OF THE ENVIRONMENT

2.1 Climate

The climate is generally arid with temperatures varying from 20.0°C to 37.9°C. The rainfall is maximum in the NE monsoon period and minimum in SW monsoon period.

2.2 Ecology

There is no endangered species of flora and fauna noticed in this area. The area does not shelter any specific wildlife.

2.3 Hydrological Conditions

2.3.1 Surface Water

The run-off during monsoon period contributes to the surface water. There is no perennial stream or river in the surrounding villages. These villages get water from open wells and bore wells which get recharged in rainy season

2.3.2 Ground water

The ground water table varies from 68 m to 92 m. It is therefore a low to medium potential zone for ground water.

2.4 Water Quality

Water samples were collected from different locations, and the following parameters will be monitored for pH, Colour (Visual), Odour, Turbidity (NTU), Electrical Conductivity, Total Suspended Solids, Total Dissolved Solids, Chlorides (as Cl), Sulphates (asSO₄), Calcium (as Ca), Magnesium (as Mg), Total Hardness(as CaCO₃), Phenolphthalein Alkalinity(as CaCO₃), Total Alkalinity (as CaCO₃), Iron (as Fe)

2.5 Ambient Air Quality and Noise Levels

The ambient air quality was studied for various locations. It is found that the Suspended Particulate Matter (SPM) is found to vary from 80 µg/m³ to a maximum of 148 µg/m³. The concentration of NO_x and SO₂ are found to be

very low. The noise levels recorded at various locations indicate that it is mostly less than 64 dB(A).

2.6 Land Use Pattern

The entire area is a patta land owned by the company and it is in the form of shrub land. The buffer zone has no forests.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 Air Emissions and Control Measures

S. No.	Description	Proposed
1.	Fermentor	15 m height 0.25 m dia of stack with wet scrubber will be provided.
2.	Boiler (10 T/hr)	30 m height 2.0 m dia of stack will be provided.

3.2 Wastewater Generation and Method of Treatment

S.No.	WASTE WATER	QUANTITY (KLD)	METHOD OF TREATMENT
1.	Spent wash water	450	Utilized for Bio-methanization followed by Bio-composting.
2	Waste water from domestic usages	4	Disposed through a Septic tank of size 2.5 x 2.0 x 2.5 m followed by a dispersion trench of size 5.0 x 4.0 x 2.5 m.

3.3 Solid Waste generation and method of disposal

S.No.	Solid Wastes	Quantity	Method of Disposal
1.	Settled Yeast Sludge	7 t/Day	Collected and used in Bio-composting.

3.4 Hazardous Waste

There will be no hazardous waste generated from this proposed distillery

3.5 Noise Level

The noise level in the inside & outside the factory is maintained at low level.

3.6 Odour Control System

Since the entire process like distillation and CO₂ scrubber will be proposed with world-class technology, the Odour from the process will be of very minimum.

4.0 ENVIRONMENTAL MONITORING PROGRAMME

4.1 Environmental Monitoring

The environment, safety and health monitoring programme in the factory are as follows:

Particulars	Parameter	Frequency
Stack Emissions	SPM, SO ₂ , NOx	Monthly
Ambient Air Quality	SPM, RPM, SO ₂ , NOx	Monthly
Waste water	pH, BOD, COD, SS, TDS, Cl ₂ , SO ₄ and Oil & Grease Etc.	Monthly
Noise monitoring	Noise Levels	Monthly
Safety and Occupational Health	--	Yearly

4.2 Budgetary Allocation for Environmental Management

Category	Capital Investment	Annual Operating Costs
	<i>(Rupees in Lakhs)</i>	
Air Pollution Management	2.5	1.5
Water and Wastewater Management	535.0	62.5
Solid Waste Management	30.0	18.5
Greenbelt	12.5	4.0
Environmental Monitoring and Training	5.0	2.5
Total	585.0	89.0

5.0 ADDITIONAL STUDIES

5.1 Socio-economic Conditions

There is no habitation or settlement in the industrial area. The nearest village of Sethiathope is having a population of 7963 with 4161 males and 3802 females as per 2001 census data. The workers constitute 30.6%. The major source of income of the local population is from these types of industries only.

6.0 PROJECT BENEFITS

6.1 Socio-economic benefit

The proposed project on implementation will generate 57 - potential jobs directly, and will also generate many indirect job opportunities.

Due to the proposed project, indirect employment to the extent of 507 will be generated. The Government revenue from the project will increase by way of direct and indirect taxes, duties, etc. The infrastructure development will get an impetus with this industrial growth. Communications, transport, schools, hospitals, trade and commerce will indirectly get an impetus.

7.0 ENVIRONMENTAL MANAGEMENT PLAN

7.1 Air Pollution Management

S. No.	Description	Proposed
1.	Fermentor	15 m height 0.25 m dia of stack with wet scrubber will be provided.
2.	Boiler (10 T/hr)	30 m height 2.0 m dia of stack will be provided.

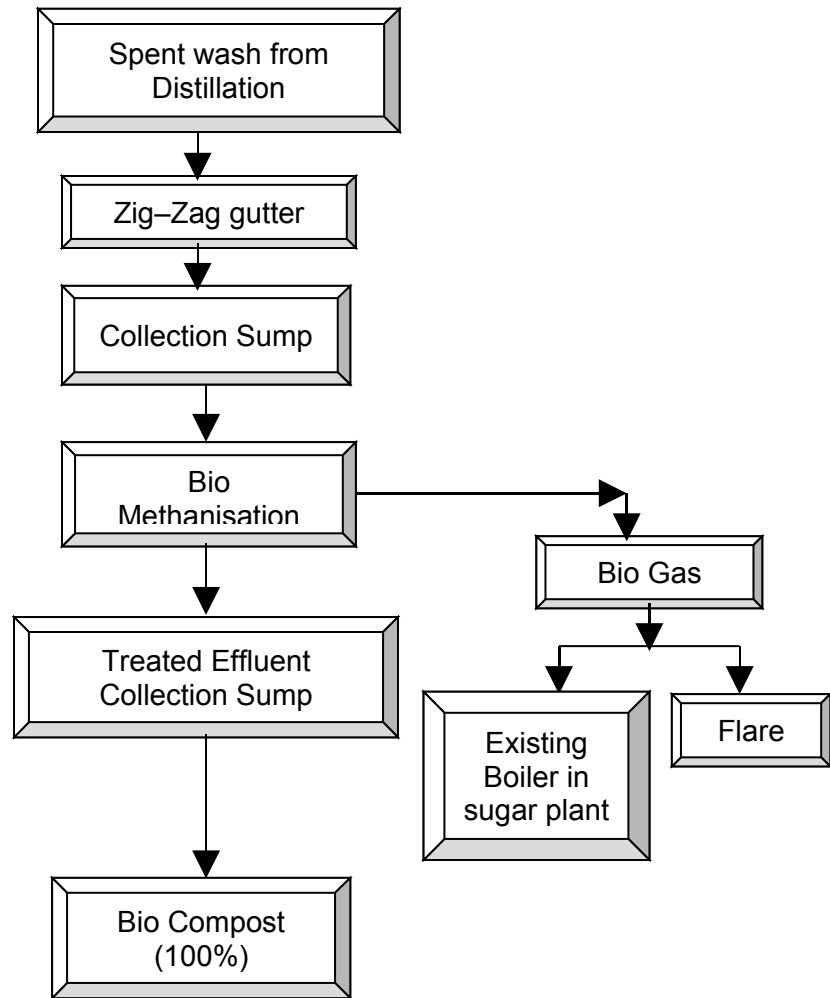
7.2 Waste water management

S.No.	WASTE WATER	QUANTITY	METHOD OF TREATMENT
--------------	--------------------	-----------------	----------------------------

		(KLD)	
1.	Spent wash water	450	Utilized for Bio-methanization followed by Bio-composting.
2	Waste water from domestic usages	4	Disposed through a Septic tank of size 2.5 x 2.0 x 2.5 m followed by a dispersion trench of size 5.0 x 4.0 x 2.5 m.

EFFLUENT TREATMENT PLANT

(a) Treatment Flow Chart



(b) Bio-Methanisation

The spent wash from distillation column is generated as effluent and it is passed to zigzag gutter. Then it is collected in a collection sump to equalize the shock load during distillation process. The remaining portion is allowed to pass through spent wash gutter. Then it is collected in Bio-Methanisation plant. Distillery effluent treatment by Bio-methanation process based on UASB digester.

Since the above effluent is rich in high carbon BOD, it is subjected to anaerobic digestion in which the organic load is converted in to biogas. The biogas is used as fuel in boilers. The digested slurry from the bio-Methanisation process is collected in a treated effluent collection sump and this effluent is used for bio composting using press mud as the base material.

Biogas Recovery:

The Bio-gas is generated as a by product during the treatment of effluent. COD of the effluent gets reduced during methanogenesis reaction. The bio-gas consist the following components:

Methane 65%

CO₂ 32%

H₂s 1.5%

Vapor 1.5%

Bio Composting

The outlet of biomethanisation is a high organic waste with extremely high values of BOD and COD. The Bio composting process is planned as per the description given in the guidelines issued by the Central Pollution Control Board Govt. of India.

The unit has planned over 10 Acres concrete yard for composting. HDPE sheet will be spread over the concrete yard to avoid the leakage of spent wash into the earth.

7.3 Solid Waste Management

S.No.	Solid Wastes	Quantity	Method of Disposal
1	Settled Yeast Sludge	7 t/Day	Collected and used in Bio-composting.

7.4 Noise Level

As per the observations, the noise level in the buffer zone is found to be very low.

7.5 Land Degradation

Since, the small quantity of wastewater will be generated from domestic usages, the chances of contamination of soil will be nil. The vacant area in the industry will be used for tree plantation to improve the surrounding environment of the industry.

7.6 Greenbelt Plan

Greenbelt is developed inside the factory premises covering a total area of about 7.4 acres. The unit will also develop the nearby area around the industry for greenbelt. The inter-spaces are laid with shrubs. The inter-space between trees planted is about 5m. It is proposed to double the tree density in future.

**For M/S. M.R. Krishnamurthy Co-operative Sugar Ltd
(Distillery Plant)**

ADMINISTRATOR