Presentation on Zero Liquid Discharge System For Molasses Based Distillery Effluent.

Organized By:

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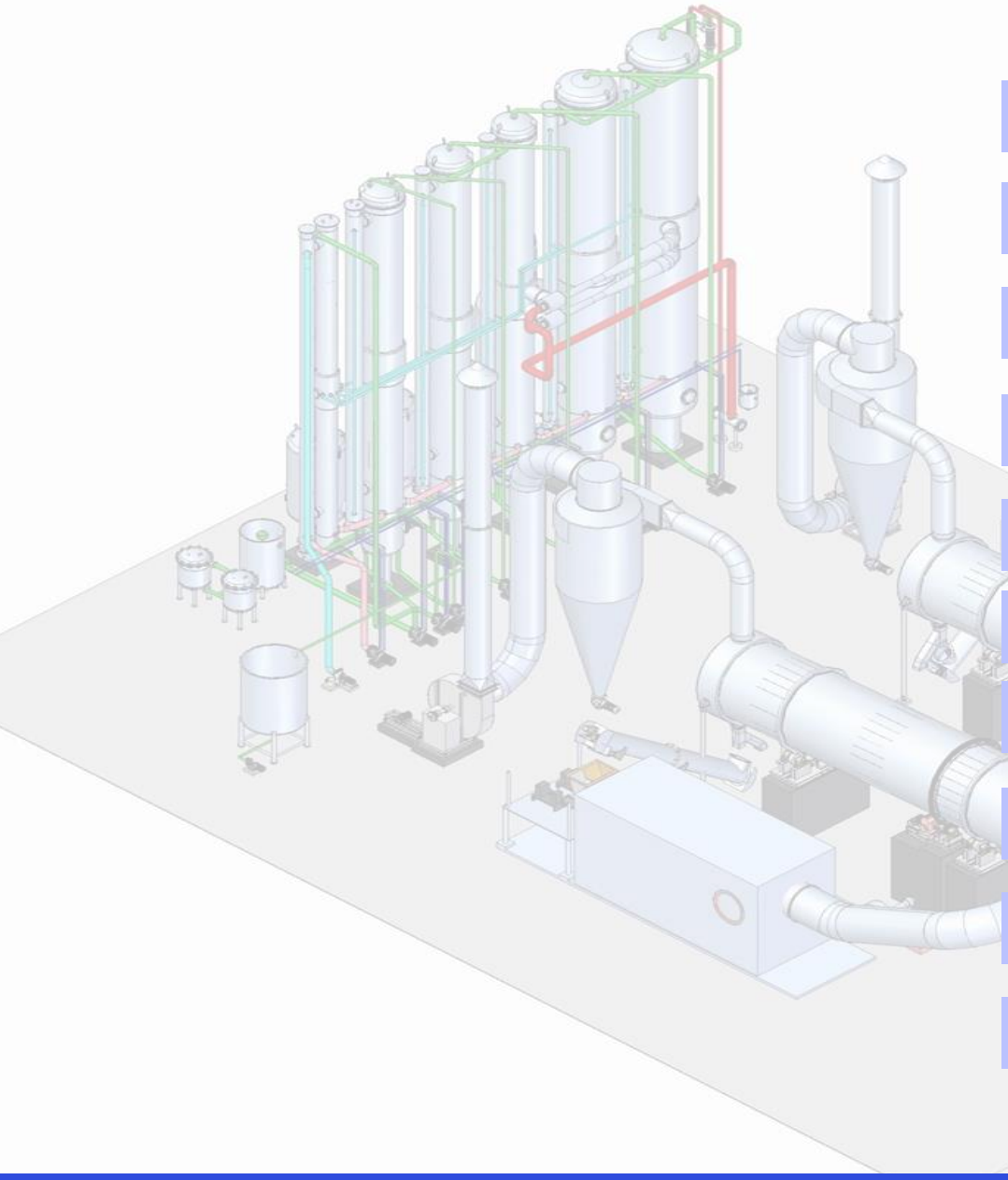
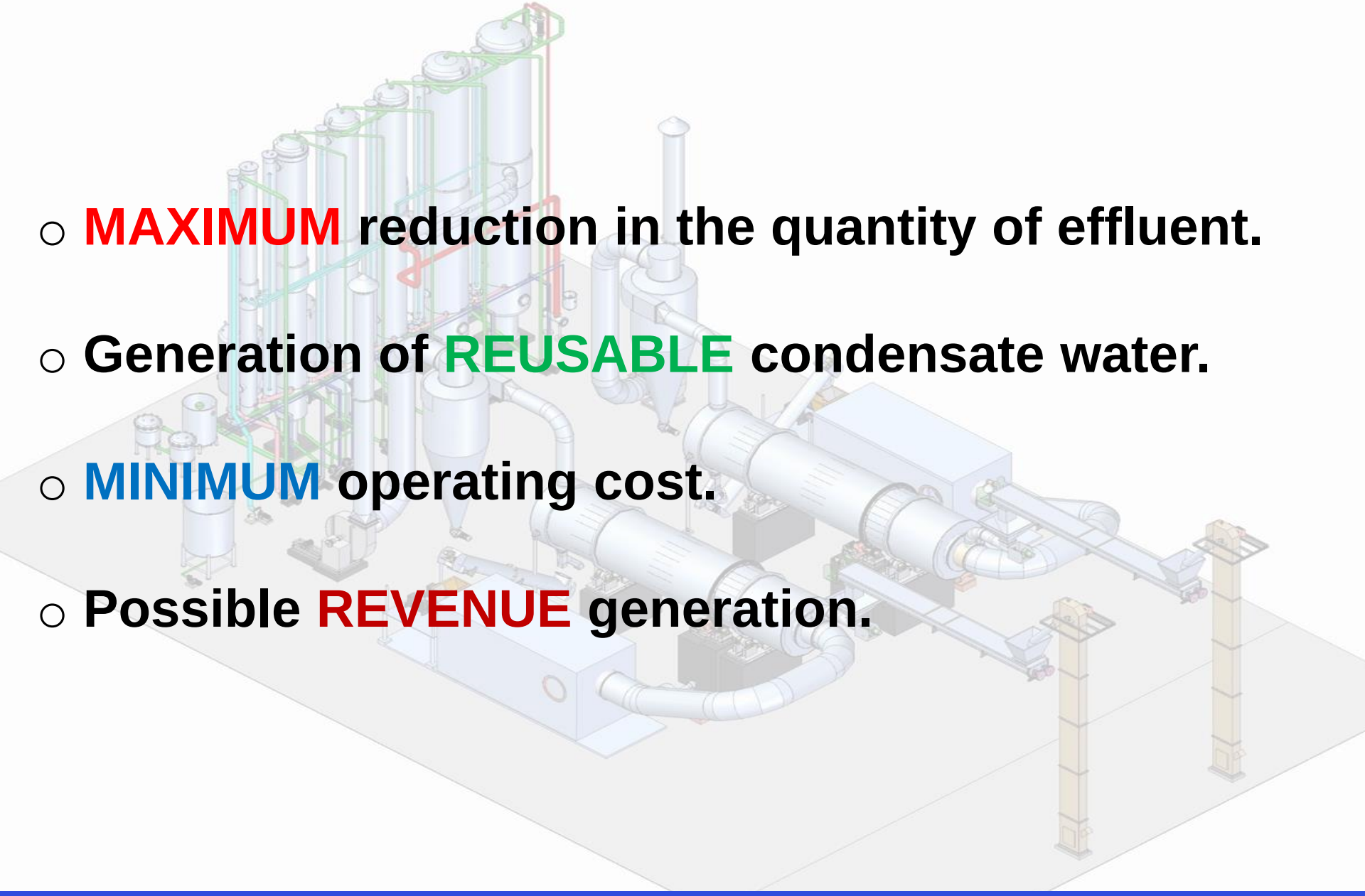


- INTRODUCTION
- DISTILLERY EFFLUENT
- SSP TECHNOLOGY
- EVAPORATION SYSTEM
- DRYING SYSTEM
- CLIENT LIST
- INSTALLATION PHOTOGRAPHS
- ABOUT SSP
- R & D CENTER
- THANKS

EFFLUENT CHARATERISTIC

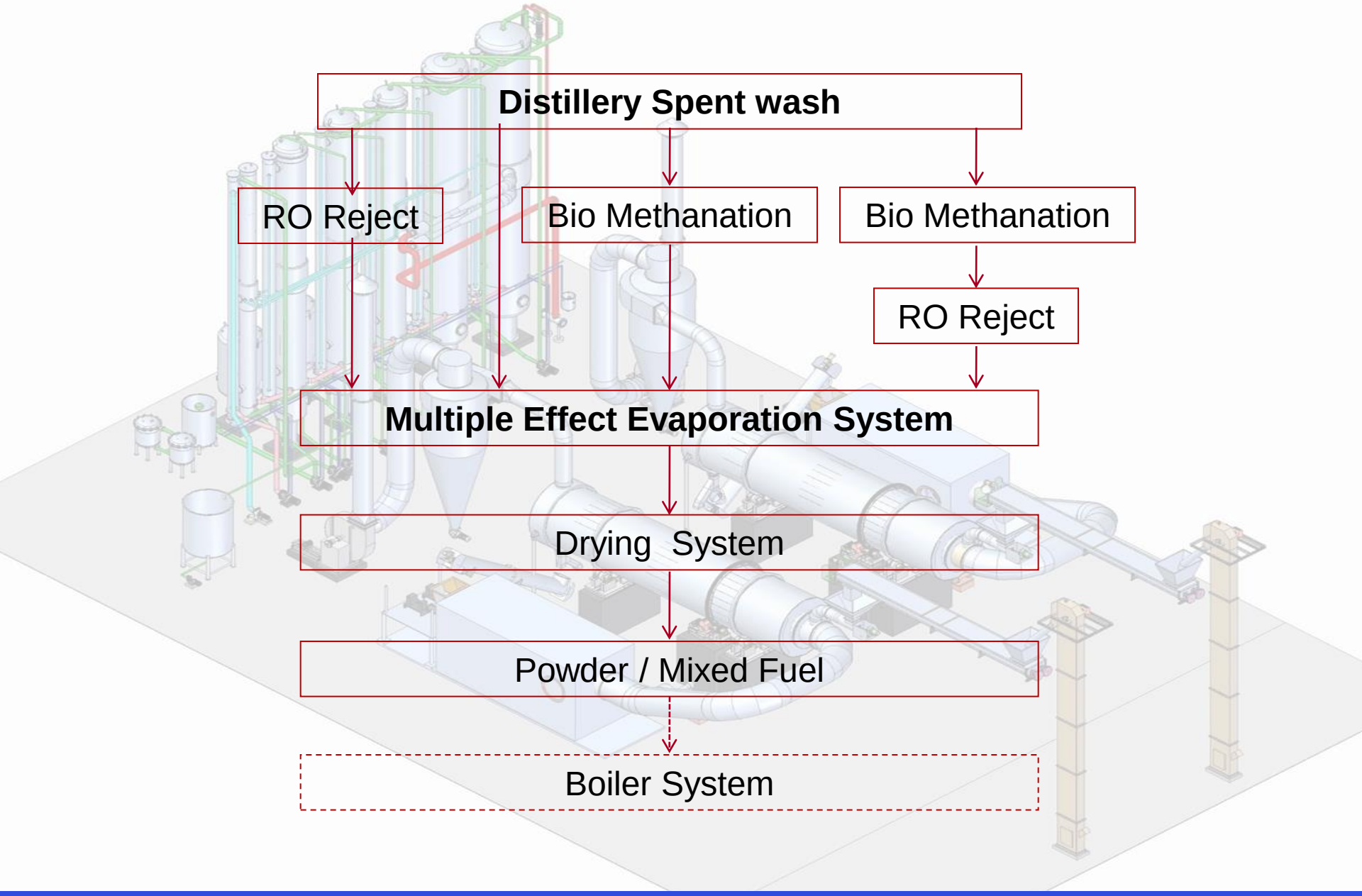
PARTICULARS	SPENT WASH	BIOMETHANATED	RO REJECT
BOD (mg/l)	40000 – 60000	12000 - 13000	15000 - 16000
COD (mg/l)	80000 – 100000	35000 - 40000	45000 - 55000
pH	4 - 5.3	7 – 7.5	7 – 7.5
TS (mg/l)	120000 – 150000	40000 – 50000	80000 - 100000

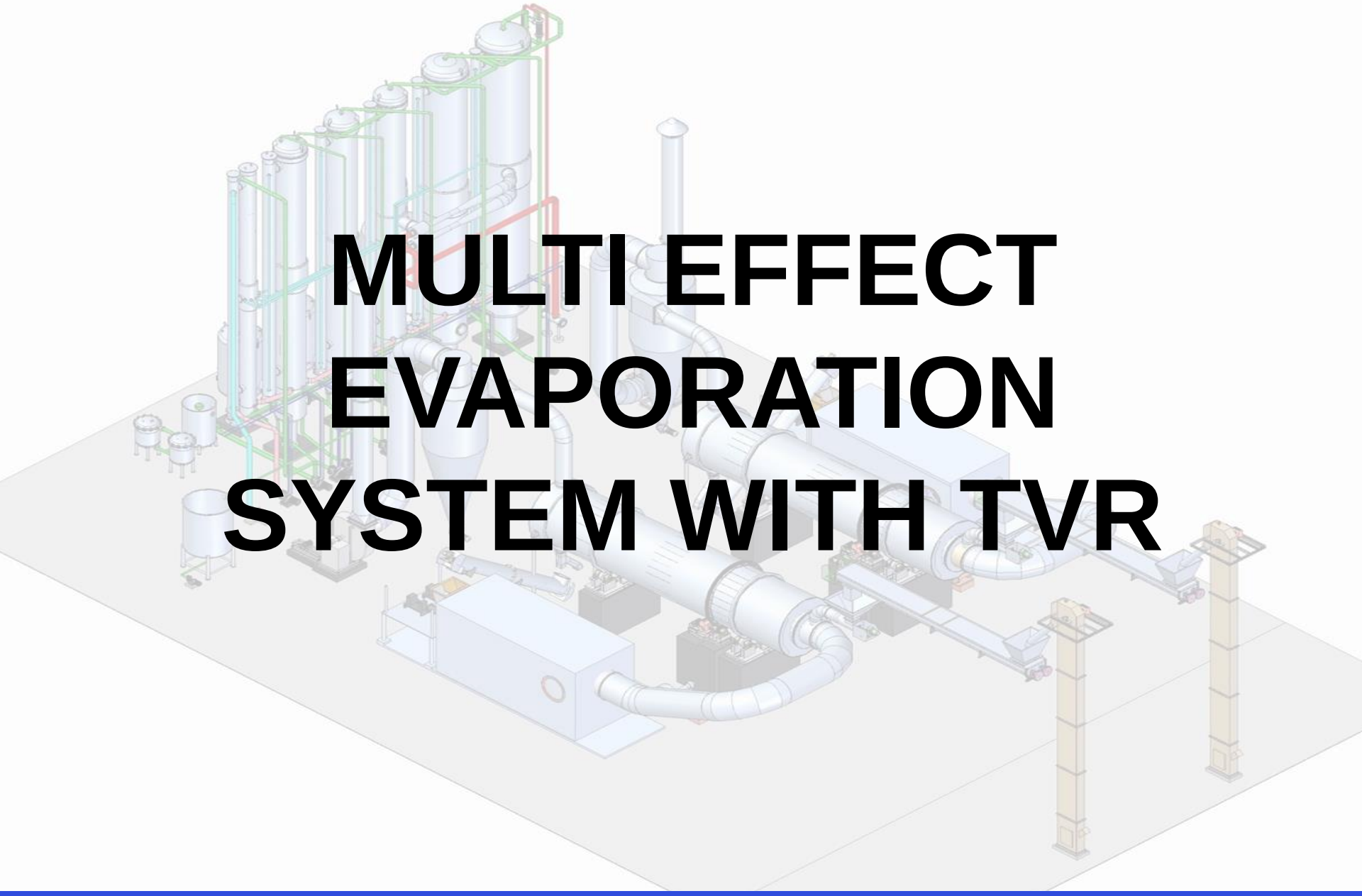
MAIN THRUST OF THE TECHNOLOGY



- **MAXIMUM** reduction in the quantity of effluent.
- Generation of **REUSABLE** condensate water.
- **MINIMUM** operating cost.
- Possible **REVENUE** generation.

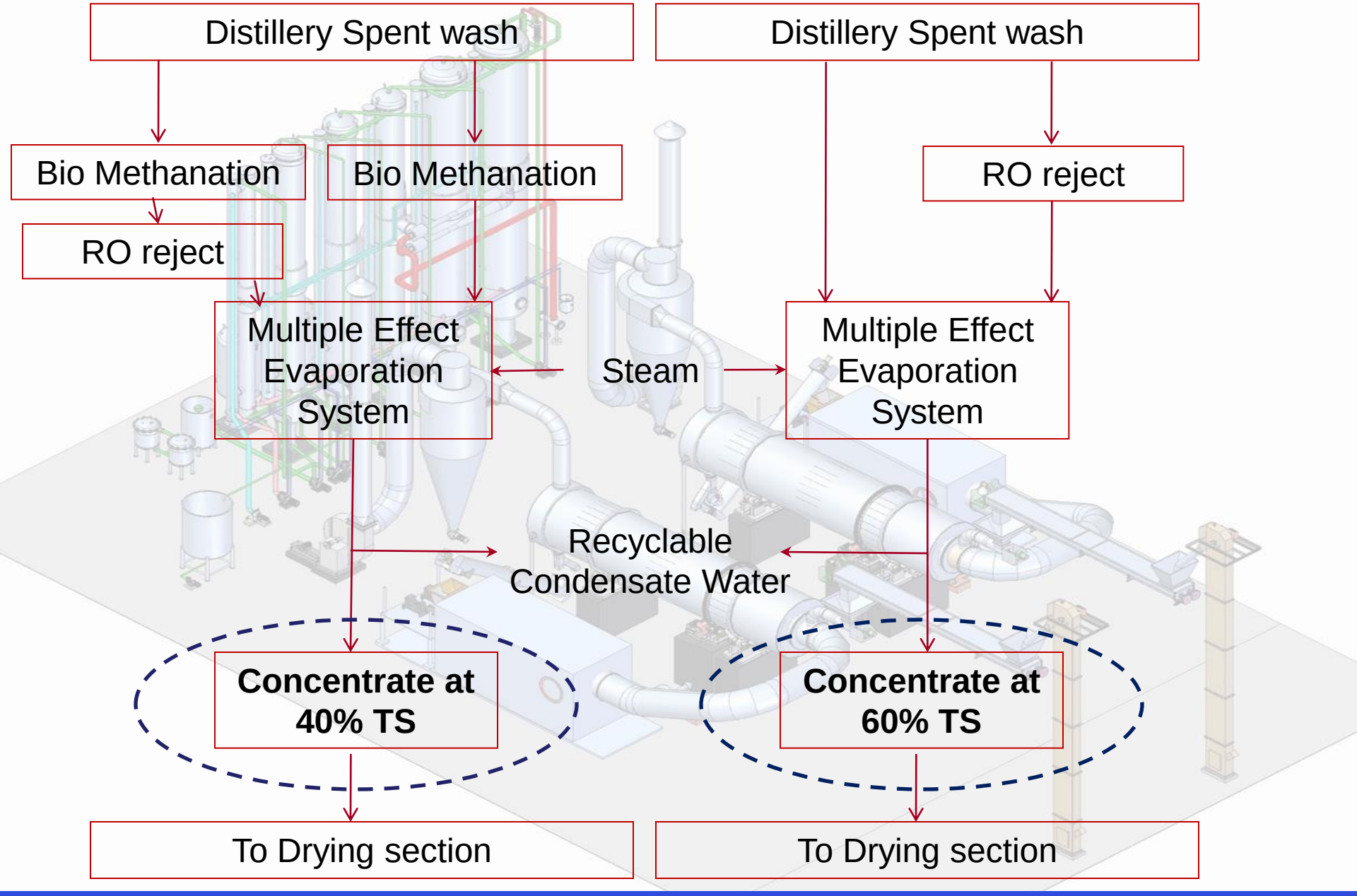
SCHEMATIC OVERVIEW





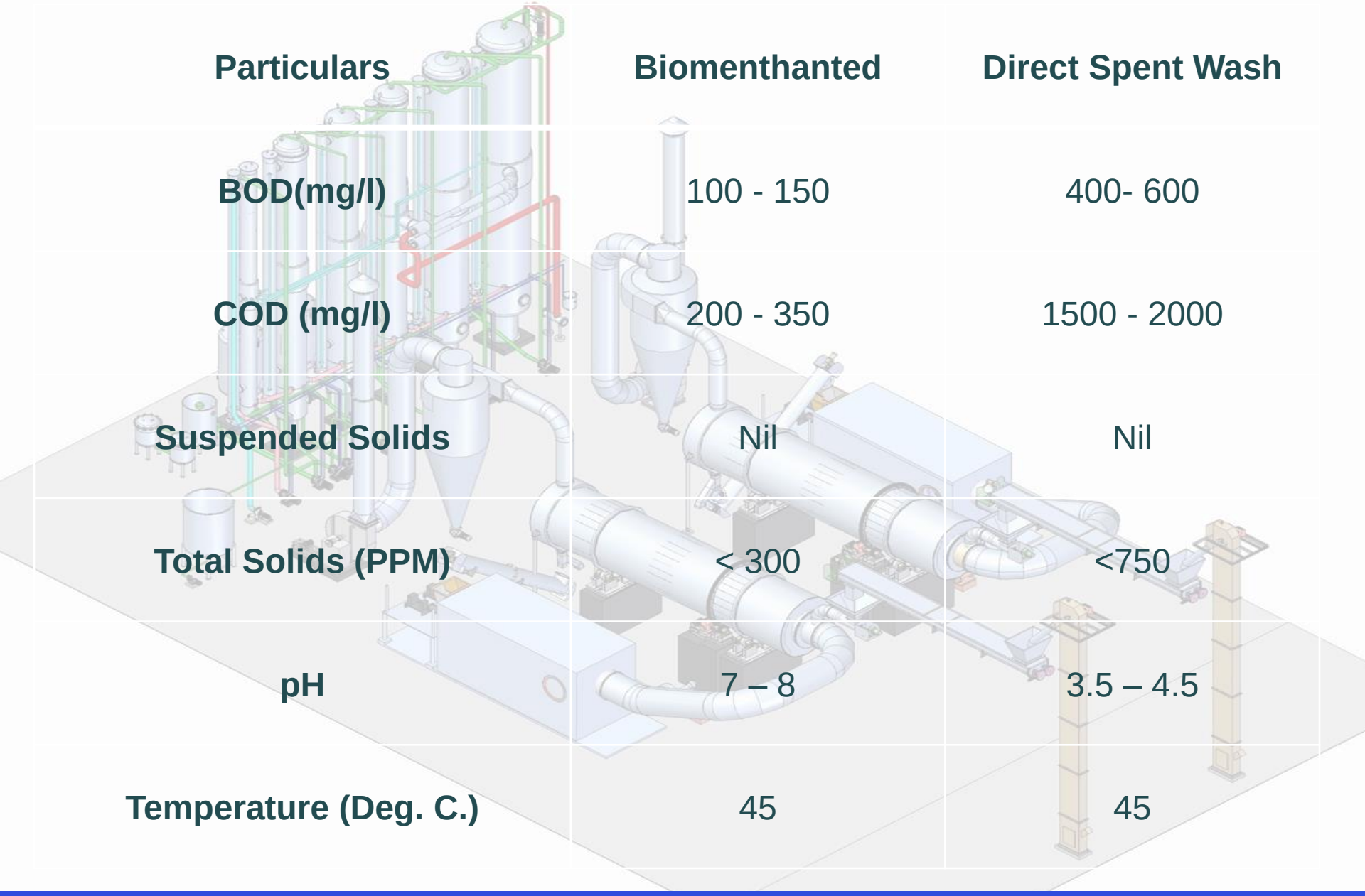
MULTI EFFECT EVAPORATION SYSTEM WITH TVR

MULTIPLE EFFECT EVAPORATION SYSTEM



CONDENSATE WATER ANALYSIS

Particulars	Biomenthanted	Direct Spent Wash
BOD(mg/l)	100 - 150	400- 600
COD (mg/l)	200 - 350	1500 - 2000
Suspended Solids	Nil	Nil
Total Solids (PPM)	< 300	<750
pH	7 – 8	3.5 – 4.5
Temperature (Deg. C.)	45	45



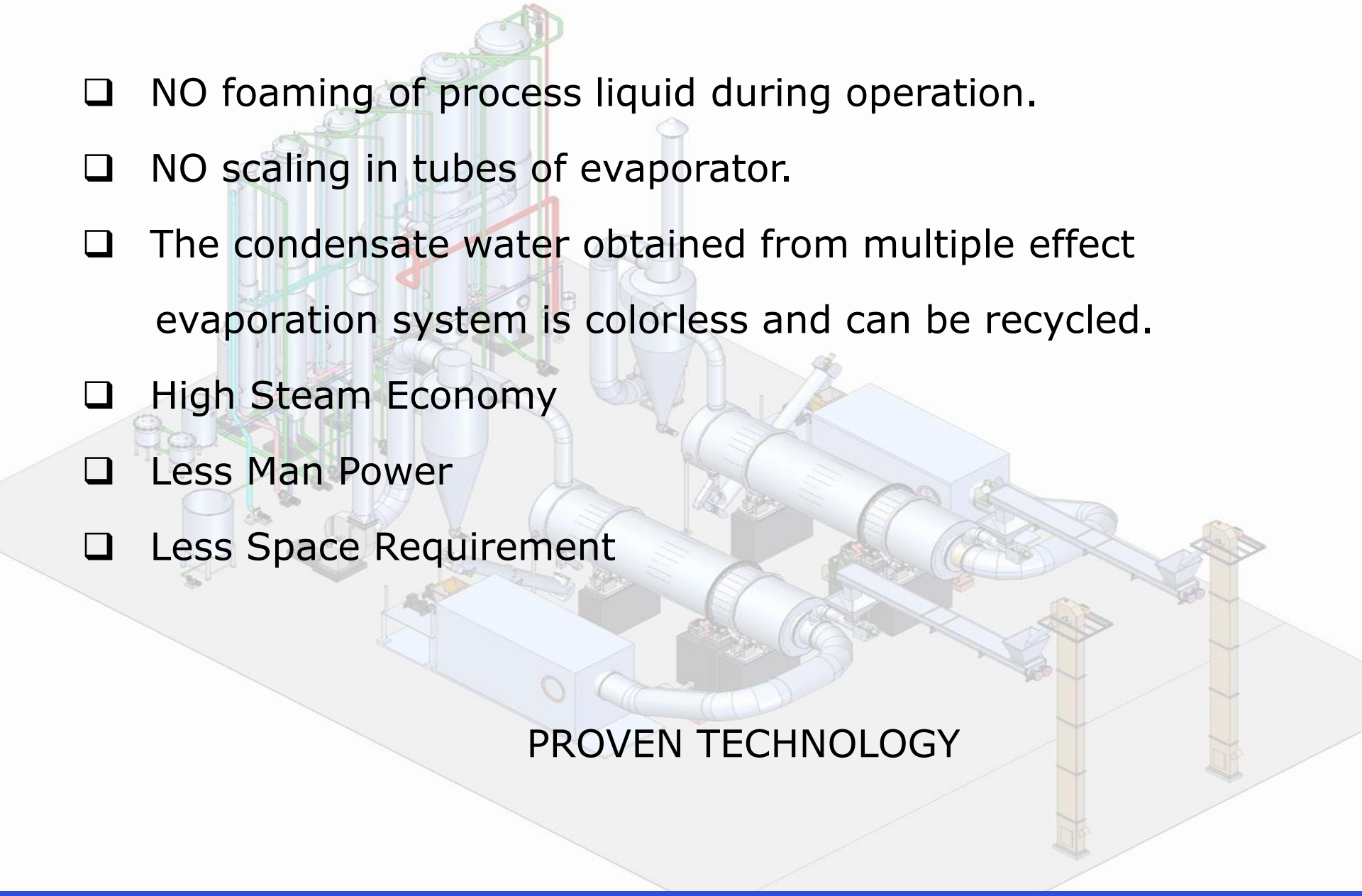
STEAM ECONOMICS

PARTICULARS	Five Effect Evaporation with TVR System (Steam: Water Evaporation)	Seven Effect Evaporation with TVR System (Steam: Water Evaporation)
1.5 kg/cm2-g Steam Pressure	1:5.25	1:6.5
3.5 kg/cm2-g Steam Pressure	1: 5.8	1:7.2
8 kg/cm2-g Steam Pressure	1:7	1: 8.5

LESS STEAM CONSUMPTION

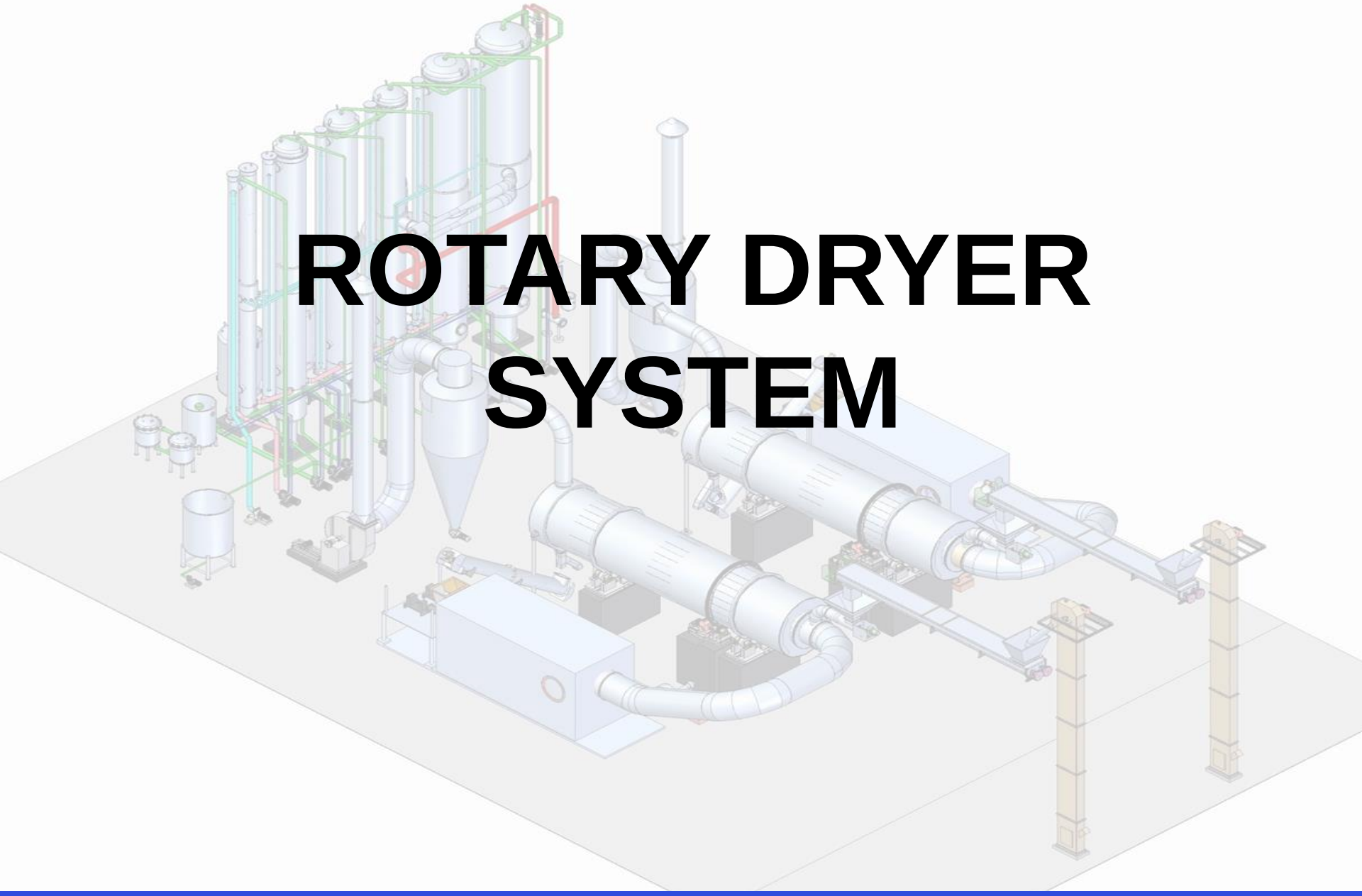
ADVANTAGES OF THE EVAPORATION SYSTEM

- NO foaming of process liquid during operation.
- NO scaling in tubes of evaporator.
- The condensate water obtained from multiple effect evaporation system is colorless and can be recycled.
- High Steam Economy
- Less Man Power
- Less Space Requirement

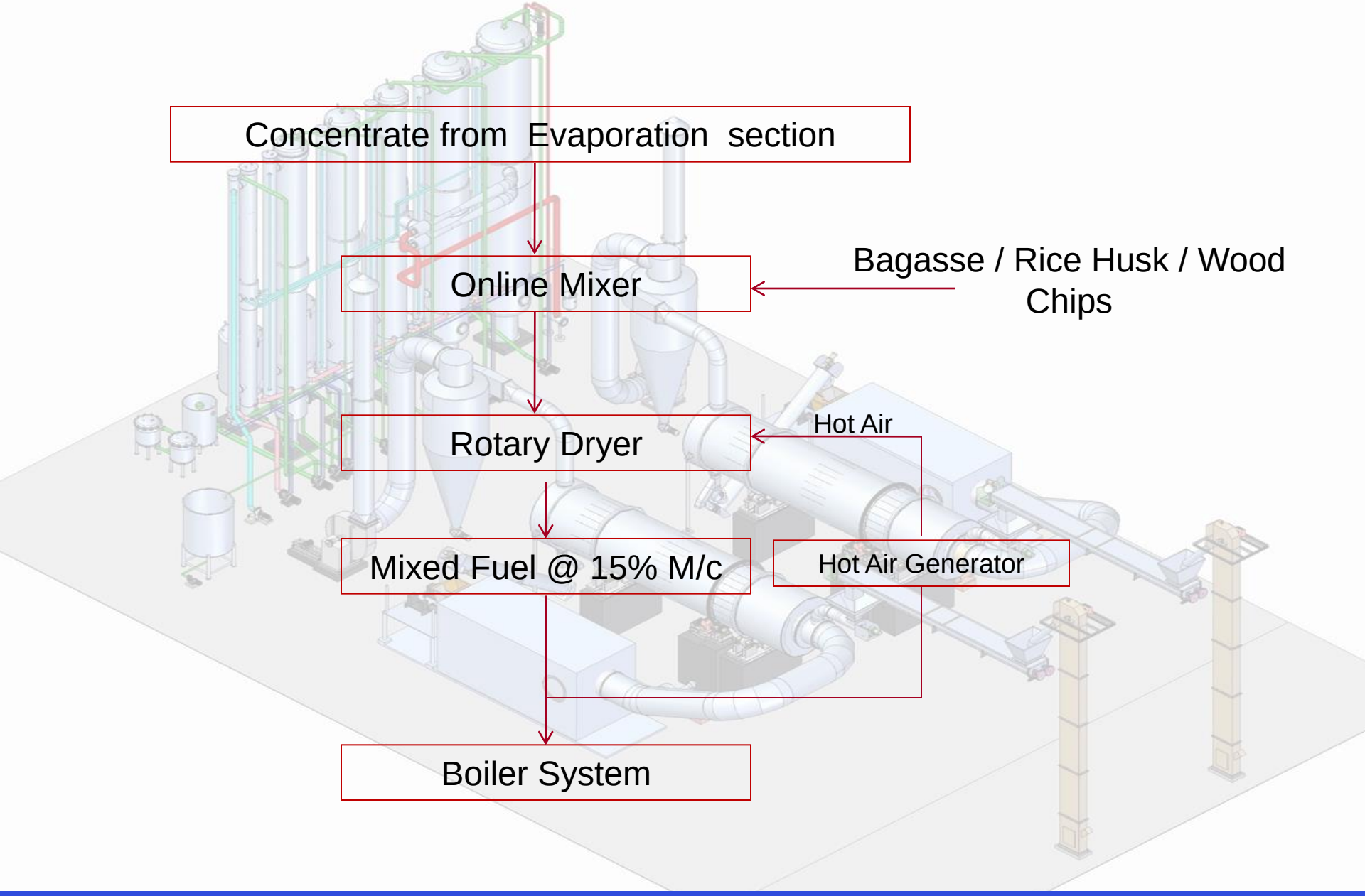


PROVEN TECHNOLOGY

ROTARY DRYER SYSTEM



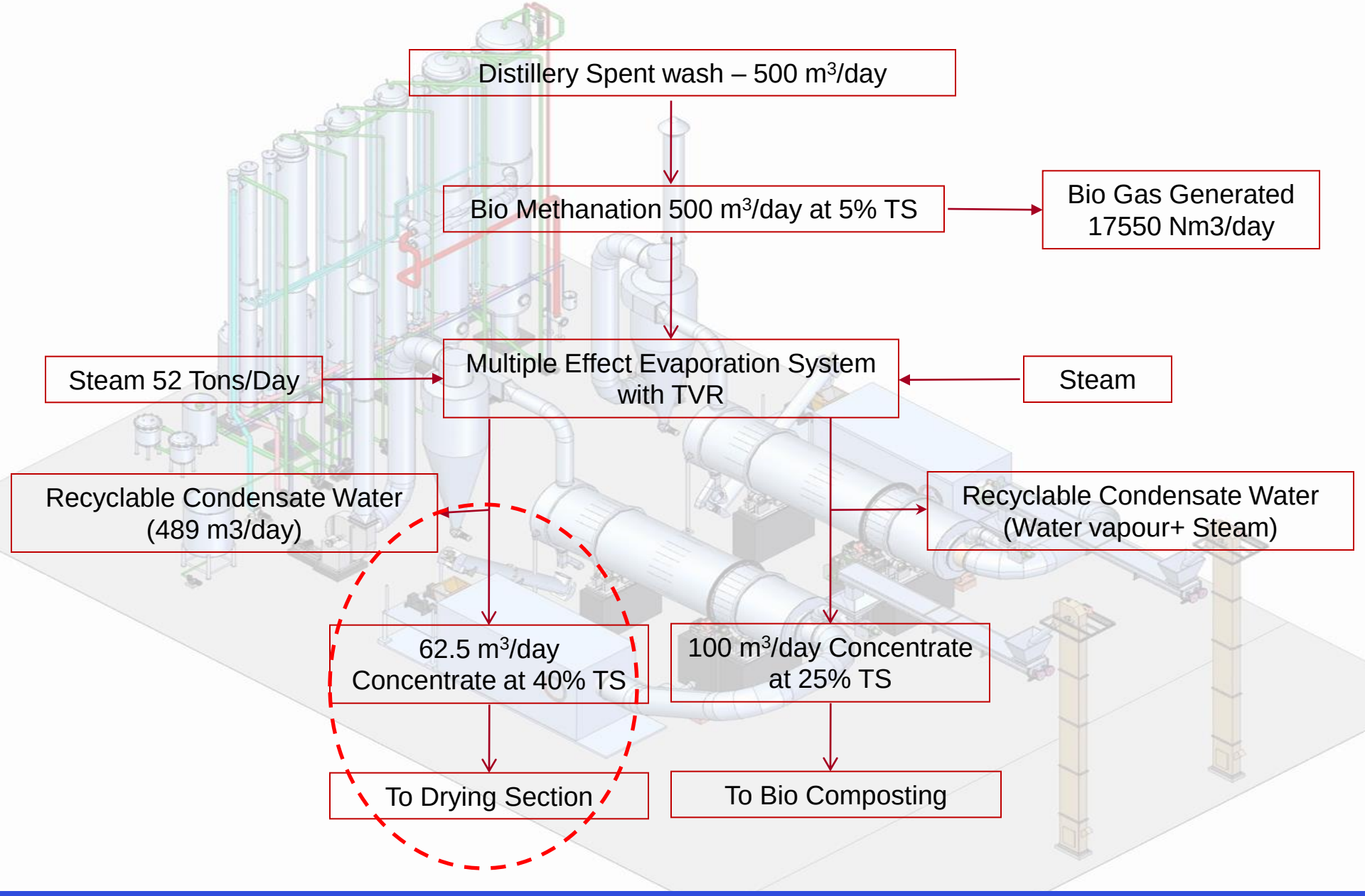
ROTARY DRYING SYSTEM



CASE STUDY FOR OPERATING COST

Capacity – 500 m3/day

EVAPORATION SYSTEM WITH TVR



ROTARY DRYER SYSTEM

Energy IN

62.5 TPD Bagasse at 50% TS

62.5 x 2200 = 137.5 MKcal

62.5 m3/day from Evaporator at 40 % TS

Online Mixer

62.5 TPD Bagasse at 50 % moisture

125 TPD at 55 % moisture

Rotary Dryer

Hot Air

66 TPD at 15% Moisture

Hot Air Generator

15 TPD

51 TPD for Boiler

Energy OUT

51 TPD Mixed Fuel at 85% TS

51 x 2600 = 132 MKcal

Energy Required

137.5 – 132 = 5.5 Mkcal

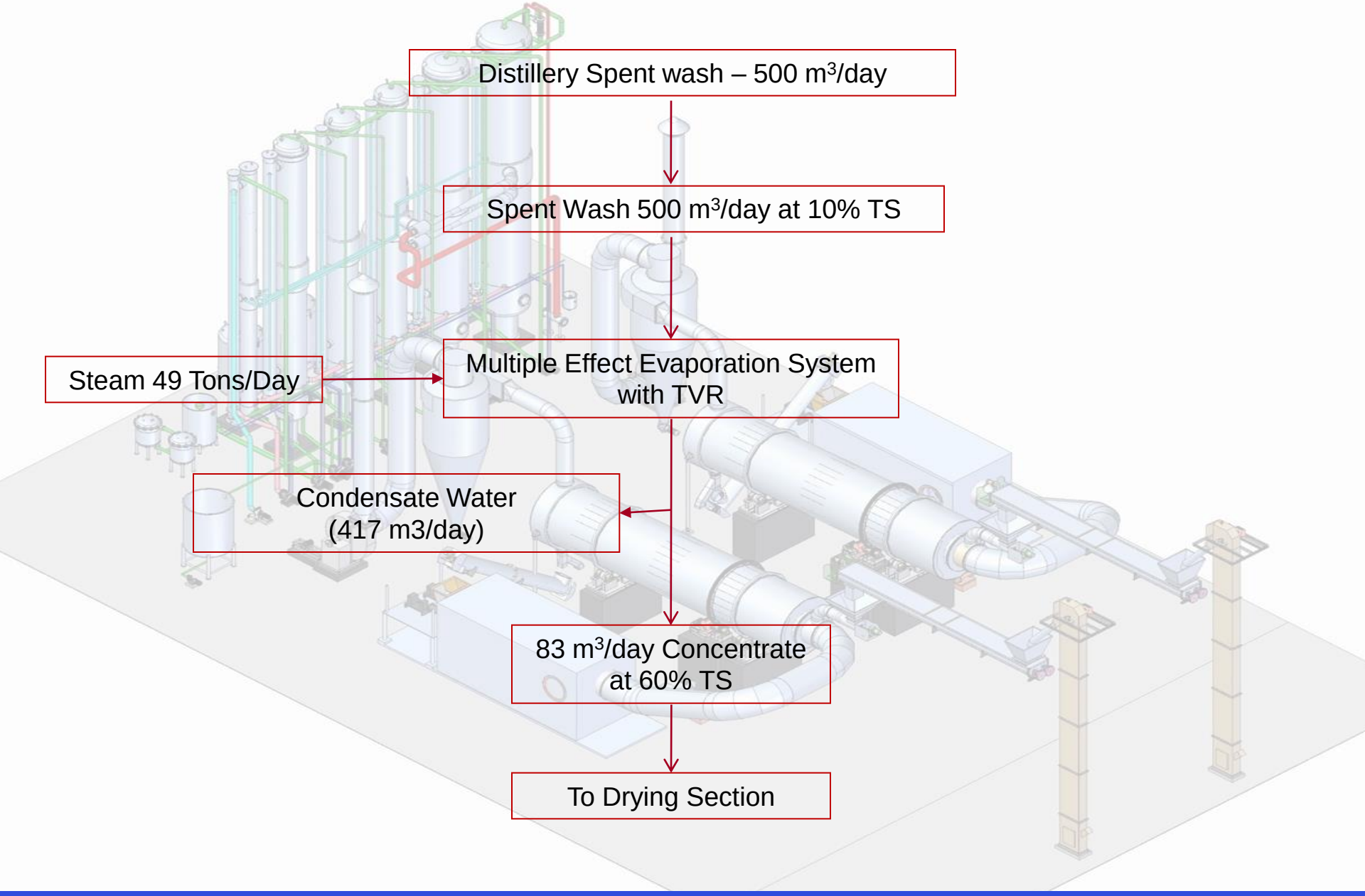
9 TPD Bagasse.

OPERATING COST / M3 OF EFFLUENT TREATED

SR. #	PARTICULRS	AMOUNT (INR)
1	Steam Cost of the Complete System @ 1000 INR/T	52,000.00
2	Power Cost for the Complete System @ 5.5 INR/Kw	26,400.00
3	Additional Bagasse Cost @ 2500 INR/T	22,500.00`
4	CIP Cost	1,250.00
	TOTAL EXPENSES	1,02,150.00
5	Equivalent Bagasse – From the Generated Bio Gas	97,500.00
	TOTAL REVENUE GENERATED	97,500.00
	ACTUAL EXPENSES	4,650.00
	TOTAL EFFLEUNT TREATED (M3/DAY)	500
	EFFLUENT TREATMENT COST (INR/M3)	**9.3**

*** Labor Cost is not considered in this calculation.**

EVAPORATION SYSTEM WITH TVR



ROTARY DRYER SYSTEM

Energy IN

83 TPD Bagasse at 50% TS

83 x 2200 = 182.6 MKcal

Energy OUT

88 TPD Mixed Fuel at 85% TS

88 x 2800 = 246.4 MKcal

Extra Energy Generated

246.4 – 182.6 = 64 Mkcal

29 TPD Bagasse.

83 m3/day from Evaporator at 60 % TS

Online Mixer

83 TPD Bagasse at 50 % moisture

166 TPD at 45 % moisture

Rotary Dryer

Hot Air

107 TPD at 15% Moisture

Hot Air Generator

19 TPD

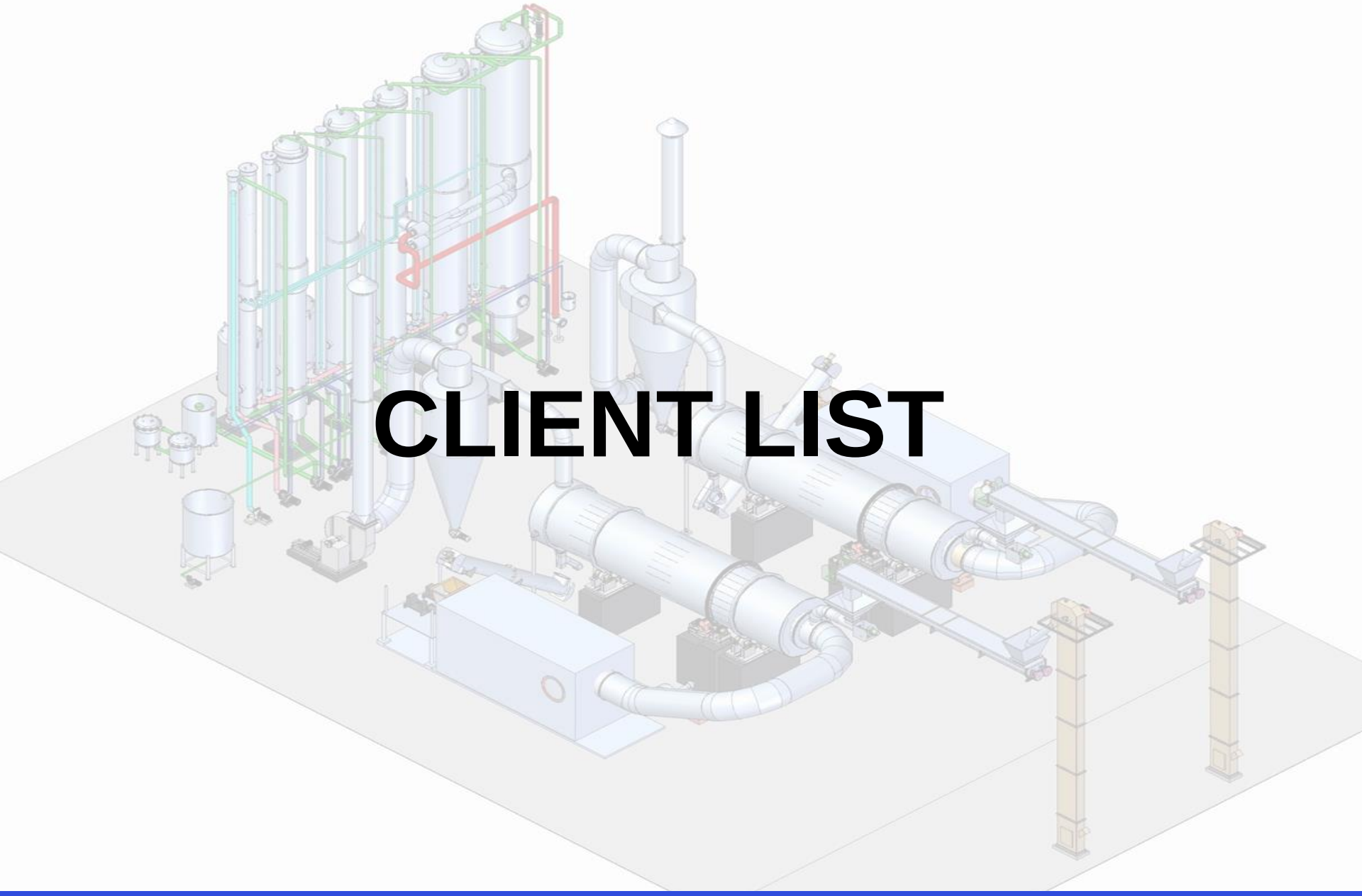
88 TPD for Boiler

OPERATING COST / M3 OF EFFLUENT TREATED

SR. #	PARTICULRS	AMOUNT (INR)
1	Steam Cost of the Complete System @ 1000 INR/T	49,000.00
2	Power Cost for the Complete System @ 5.5 INR/Kw	33,000.00
4	CIP Cost	1,250.00
	TOTAL EXPENSES	83,250.00
5	Equivalent Bagasse – From the Mixed Fuel	72,500.00
	TOTAL REVENUE GENERATED	72,500.00
	ACTUAL EXPENSES	10,750.00
	TOTAL EFFLEUNT TREATED (M3/DAY)	500
	EFFLUENT TREATMENT COST (INR/M3)	**21.50**

CONDENSATE WATER IS ACIDIC IN NATURE.

*** Labor Cost is not considered in this calculation.**



CLIENT LIST

CLIENT LIST – Molasses Based Distillery

Sr. #	Name of Customer	Name of the Equipment	Capacity (M3/day)
1	M/s Malladi Drug & Pharmaceuticals Ltd, Chennai	5 Effect Falling Film Evaporator with TVR	200 M3/day
2	M/s Ugar Sugar Works Ltd, Ugar (Karnataka)	5 Effect Falling Film Evaporator with Spray Dryer	360 M3/day
3	M/s Aswini Biopharma Ltd, Chennai	5 Effect Falling Film Evaporator with TVR	200 M3/day
4	M/s Ashoka Distilleries & Chemicals (P) Ltd	5 Effect Falling Film Evaporator with Spray Dryer	750 M3/day
5	M/s Sabacchus Distillery Pvt. Ltd, Pawanoo (H.P.)	5 Effect Falling Film Evaporator with TVR	225 M3/day
6	M/s SA DES SUCRERIES ET RHUMERIES DE MARIE, GALANTE,	3 Effect Falling Evaporator & Steam Tube Dryer	240 M3/day
7	M/s India Glycol Limited, UP	5 Effect Falling Film Evaporator with TVR	2400 M3/day
8	M/s Yasuj Flour,	Waste Water Treatment Plant. Decanter, Evaporator, Spin Flash Dryer and Accessories	80 M3/day
9	M/s Kanoria Chemicals & Industries Ltd, Ankleshwar	5 Effect Falling Film Evaporator with TVR	300 M3/day
10	M/s Agchem Biosynthesis Inc.,	2 Effect Falling-cum-Forced Evaporator for Stillage concentration	40 M3/day

Cont...

Sr. #	Name of Customer	Name of the Equipment	Capacity (M3/day)
11	M/s Square D Beverages Ltd, Chennai	3 Effect forced circulation Evaporator and Agitated Spin Flash Dryer for DDGS	300 M3/day
12	M/s Kanoria Chemicals & Industries Ltd, Ankleshwar	Spray Dryer	300 M3/day
13	M/s IFB Agro Industries Ltd,	5 Effect Falling Film Evaporator with TVR and Spray Dryer	750 M3/day
14	M/s Glycol Limited, UP	5 Effect Falling Film Evaporator with TVR	1800 M3/day
15	M/s Ugar Sugar Works Ltd, Ugar (Karnataka)	5 Effect Falling Film Evaporator with Spray Dryer	700 M3/day
16	M/s The Simbhaoli Sugar Mills Limited Chilwaria	5 Effect Falling Film Evaporator with TVR	800 M3/day
17	M/s SCM Sugar Limited (Distillery Division),	5 Effect Falling Film Evaporator with TVR with Spray Dryer	600 M3/day
18	M/s Nizam Deccam Sugars Ltd,	5 Effect Falling Film Evaporator with TVR with Spray Dryer	600 M3/day
19	M/s Pioneer Distilleries Ltd,	5 Effect Falling Film Evaporator with TVR	1200 M3/day
20	M/s Pioneer Distilleries Ltd,	Rotary Dryer	1200 M3/day
21	M/s Kolhapur Sugar Mills Limited,	5 Effect Falling Film Evaporator with TVR with Rotary Dryer	480 M3/day
22	M/s Renuka Sugar Limited, Haldia,	2 Effect Falling Film + 1 Forced Circulation Evaporation+ Dryer	80 M3/day

Cont…

Sr. #	Name of Customer	Name of the Equipment	Capacity (M3/day)
23	M/s Shakumbari Sugar & allied Ind. Ltd. Saharanpur, U.P.	Five Effect Evaporator with TVR system	2528 M3/day
24	M/s Shree Tatyasaheb Kore S. S. K. LTD. Warnanagar	7 Effect Falling Film Evaporator with TVR.	750 M3/day
25	M/s Dharni Sugar Limited, Chennai	5 Effect Falling Evaporator with TVR	800 M3/day
26	M/s NIVL Joint Stock Co. Vietnam	5 Effect Falling film Evaporator with TVR system + Spray Drying Plant	720 m3/day
27	M/s Lokmangal Agro Industries.	7 Effect Falling Film Evaporator with TVR.	900 m3/day
28	M/s Haryana Distilleries Limited	5 Effect Falling Film Evaporator with TVR + Spray Dryer	650 m3/day
29	M/s S. V. Sugar, Kanchipuram, Tamilnadu	5 Effect Evaporator + Rotary Drying System Fuel Used – Bagasse as well as Wood Chips	1200 m3/day
30	M/s United Spirit Limited, Vishakhapatnam (M/s Tern Distilleries)	7 Effect Evaporator + Rotary Drying System Fuel Used – Bagasse as well as Rice Husk	700 M3/ day
31	M/s Saf Yeast Limited, Chiplun	5 Effect Evaporator System with TVR	300 m3/day
32	M/s Saf Yeast Limited, Sandila	7 Effect Evaporator System with TVR	450 m3/day
33	Shree Pandurang SSK, Shripur, Maharashtra	5 Effect Evaporator with TVR	

Installations

SSP is leading End to End Technology Solution Provider Company based on EVAPORATION & DRYING TECHNOLOGY

Industrial Evaporators:

- Falling Film.
- Rising Film.
- Forced Circulation.
- Scrapped Surface.
- Thin Film.
- Combination Type.
- Evaporative Crystallizer.
- Flash Evaporator.

Industrial Dryers:

- Spray Dryer.
- Steam Tube Dryer.
- Fluid Bed Dryer.
- Rotary Dryer / RVD.
- Vacuum Tray Dryer.
- Spin Flash Dryer.
- Band Dryer.
- Vertical Thin Film dryer (VTFD).

RESEARCH & DEVELOPMENT CENTER

- For SSP, the process of establishing a plant begins not at our state of art manufacturing facilities but at our Research & Development Centre. We call it our **Central Nervous System.**

- The company dedicates its best in research, production and quality control, in order to keep pace with the fast changing technology in Chemical / Food Processing Industry. We are in continuous process to incorporate latest technology by developing models of **energy efficient** and **cost effective** plants.

- Recognised by the Ministry of Science and Technology of the Govt. Of India, our R&D centre works towards developing new technologies, qualitative improvements & achieving import substitution. It is complete with a design department, laboratory, pilot plants, technical library, data bank and documentation centre.

- Having such an elaborate R&D setup is extremely uncommon in the industry, which highlights our commitment to provide innovative technologies, result of which , SSP has applied for many patents.

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THANK YOU