

FICCI CMSME WEBINAR - 2024

CASE STUDY - WATER AUDIT & INDUSTRIAL WATER USE EFFICIENCY



GUJARAT ECO TEXTILE PARK (LUTHRA GROUP)

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Date : 30/08/2024

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- Industry Classification
- Project Objectives & Challenges
- Project Activities
(Strategy, Planning, and Implementation)
- Impact of project (Before & After CP implementation)
- Water conservation steps – Checklists
- CETP with 25 MLD UF – RO Recycling System
- Benefits of the project & Improvement so far
- Photographs of GETP achievements

Introduction - GETP at a Glance

Sr. no.	Particulars	Details	
1	Plant description	Common Effluent Treatment Plant Gujarat Eco Textile Park , NH-8, Tal: Palsana Dist. Surat	
2	Year of Establishment	2009	
3	Plant treating capacity	60 MLD, (EC & NOC of 100 MLD)	
4	Number of associated client Members as on Sept. 2022	Process House	27
		Denim Plant	04
		Yarn Dying	16
		Technical Textile	02
		Weaving Unit	27
		Air Texturizing	02
		Total (Nos.)	78



GETP

Gujarat Eco-Textile Park

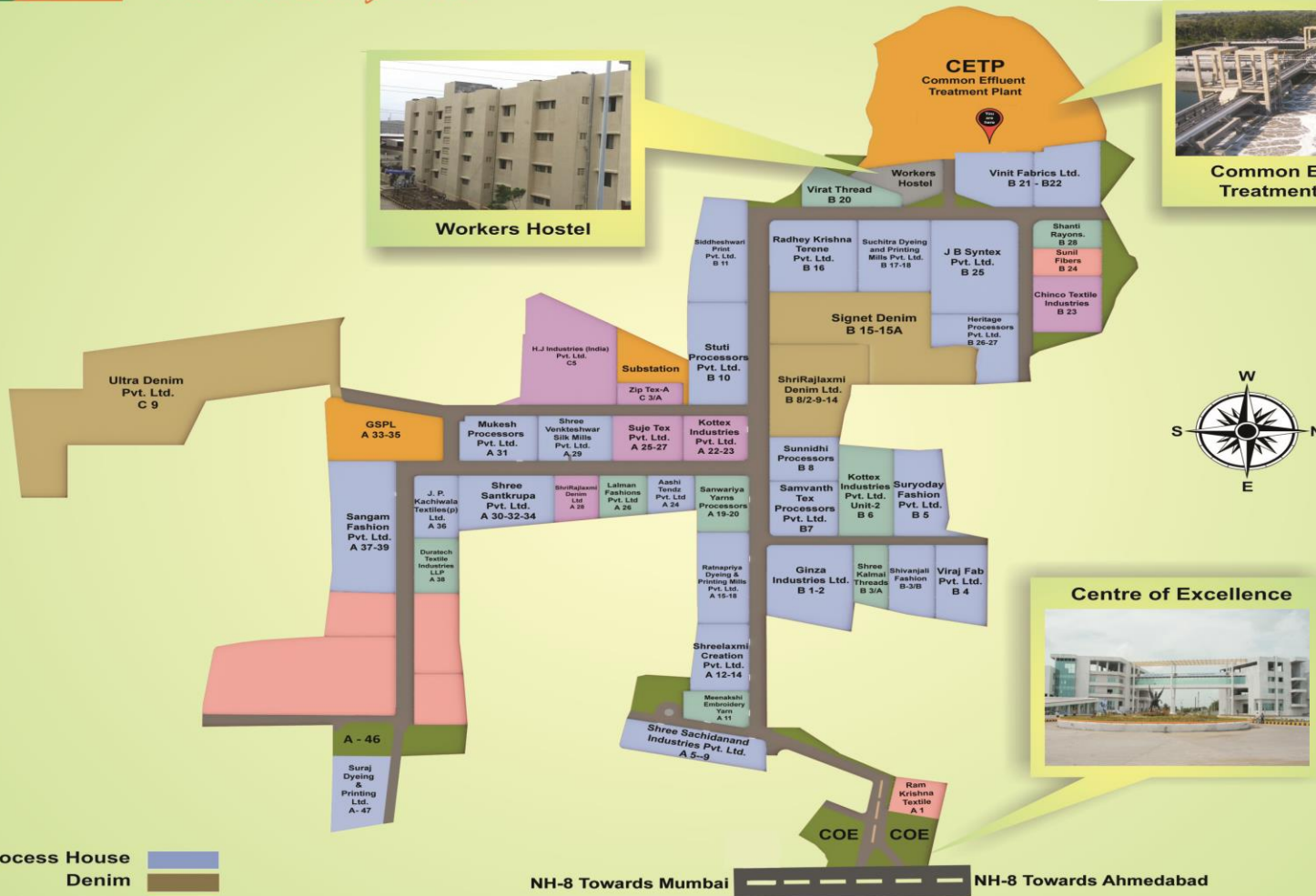
The Processing Park



Workers Hostel



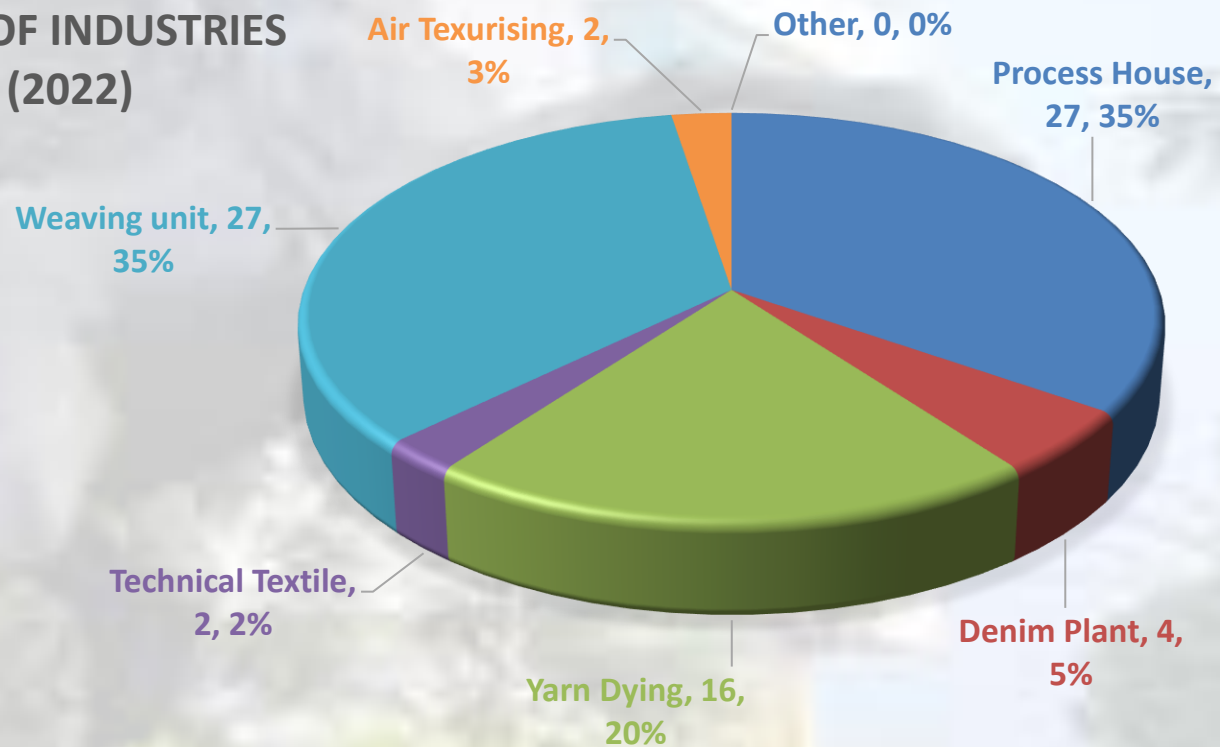
Common Effluent Treatment Plant



Centre of Excellence

TYPES OF INDUSTRIES				
Sr. No.	Type of Industry	2020	2021	2022
1	Process House	27	28	27
2	Denim Plant	4	4	4
3	Yarn Dying	16	14	16
4	Technical Textile	2	2	2
5	Weaving unit	3	9	27
6	Air Texurising	0	0	2
7	Other	1	0	0
Total		53	57	78

**TYPES OF INDUSTRIES
(2022)**



Objective of the Project

- To minimize water consumption by implementing water saving steps and cost-effective options using cleaner production techniques
- Address the Water scarcity of ground water.
(Water table from 30 ft to > 150 ft),
Normal Bore - Well depth is in the range of 350 Ft – 400 ft
- Improve Ground water quality (TDS, Total Hardness, Silt)
- Improve better economics with cost control
- To meet legal Compliance for Ground water authority
- Effective implementation for 25 MLD of Recycling & reuse system
- Reduce treatment cost at CETP.
- Decrease in pollution load with Cleaner production.
- Promote Recycle and Reuse initiative for water conservation
- Support Sustainable development and Environment protection.

Project Strategy for Water Conservation

- Creating awareness on water conservation and sustainability
- To address the challenges of MSME in Textile park :
 1. Technical know how (Low technical know how in small scale unit)
 2. Lack of motivation to improve (unorganised management)
 3. Lack of resources for study & improvement (poor communication skill)
 4. Fear of Failure (Production loss, Quality compromise....etc..)
- Formation of cleaner production committee at park level, one on one meeting
- Water audit and its minimization initiative through hand holding.
- Cleaner Production assessment, evaluation, and implementation
- Study and monitor - consumption pattern of resources like chemical, water, energy and complete manufacturing process of selected textile units.
- Concept to commissioning of 25 MLD UF & RO plant for recycle and reuse.

Planning and Implementation

- Awareness programme for water conservation using newly designed checklist.
- In house Cleaner production cell created comprising team of engineers and textile experts.
- Technical information related to Cleaner production is circulated through mails and WhatsApp group on regular basis.
- GETP has worked on developing policy to incentivise industry for best achievement and penalties for poor compliances.
- Full time appointment of textile consultant M/s ECS Engineers for water conservation activities.
- Cleaner production studies at representative selected textile units like process house, denim unit, yarn dyeing unit etc....by Gujarat cleaner production centre, Gandhinagar as per MOU signed at textile India 2017 international exhibition.
- Energy conservation studies by – FICCI New Delhi, sponsored by Shell India.
- Implementation of 25 MLD Recycling and reuse project under IPDS Scheme
- Implementation of Recycle water network with Flow metering system

CP - Project Cost & Contribution

Sr. No.	Particulars	Cost (Rs. Lakhs)	Remarks
1.	GETP Member Contribution for Cleaner Production Assessment Studies	2.50	CP studies by GCPC - Gandhinagar
2.	GETP contribution for Textile Technical Consultant M/s ECS Engineers	10.00	Project implementation & technical support
3.	GETP contribution for CP cell development	5.00	Administration and technical support
4.	FICCI Sponsored Project for Steam & water Conservation	40.00	Purchase of Flow meters, and utility studies by certified Energy Auditor
5.	Total Project Cost	57.50	

Recycling Plant – UFRO – 25MLD – IPDS Project Scheme Investment

Sr. No.	Project Component Description	Project Cost Estimate Rs. in Lakhs
1	Civil Work	1455.00
2	Mechanical Work	10039.00
3	Electrical Work	845.00
4	Instrumentation Work	1103.00
5	Recycle water Conveyance system	480.00
6	Others	1909.00
	TOTAL COST	15831.00



Signing MOU with GCPC, at Textile India 2017, Gandhinagar.



Signing MOU with SHELL, at Textile India 2017, Gandhinagar.



GETP has arranged training programme in association with GCPC, Gandhinagar 27th July 2016 – KICK OFF



GETP has arranged Training programme in association with GCPC, Gandhinagar 20th July 2015



GETP has arranged training programme in association with FICCI, Delhi

CLEANER PRODUCTION CHECKLIST (TEXTILE SECTOR)

SR.NO.	C.P. OPTIONS
1	RECYCLE/REUSE OF COOLING WATER AND CONDENSATE WATER AS BOILER FEED WATER.
2	REUSE OF TREATED WATER FOR WASHING AT PRINTING MACHINES.
3	WATER CONSUMPTION OPTIMISATION AT JIGGER MACHINES.
4	CAUSTIC SODA RECOVERY SYSTEM.
5	CAUSTIC BATCH WASHING IN PLACE OF CONTINUOUS WASHING IN JET
6	REPLACEMENT OF ALKALINE SCOURING WITH BIO-SCOURING ENZYME FOR ENZYMATIC SCOURING.
7	REUSE OF ALKALINE STREAM MERCERISING.
8	EFFICIENT BOILER OPERATION.
9	OPTIMIZATION OF HEAT ENERGY IN JIGGER MACHINES.
10	LOW LIQUOR RATIO JET DYEING MACHINES.
11	AUTO COLOUR DISPENSING THROUGH SPECTROPHOTOMETER & CHEMICAL DISPENSING SYSTEM.
12	INSTALLATION OF VARIABLE FREQUENCY DRIVE IN JET DYEING MACHINES.
13	HEAT LOSS OPTIMISATION AT CYLINDER DRYING RANGE.
14	OPTIMIZATION OF EXHAUST BY CONTROLLING THE EXHAUST HUMIDITY WITH AUTOMATIC AT STENER/AGER.
15	INSTALLATION OF WATER FLOW METER AT MACHINE LEVEL AND DEPARTMENT LEVEL TO MONITOR WATER CONSUMPTION.
16	CONDENSATE RECOVERY.
17	OPTIMISATION OF HEAT LOSSES IN DRYER.
18	VARIABLE FREQUENCY DRIVE ON MAJOR ELECTRICAL MOTORS.
19	AVOID CONTINUOUS WASH IN JET DYEING/DRUM WASHING MACHINE AND WATER USAGE OPTIMIZATION.
20	PRODUCT CHANGE- COLOUR SHADE SELECTION FROM WASTAGE COLOUR PASTE

WATER SAVING CHECKLIST

UNIT NAME:

DATE:

SR.NO	WATER CONSERVATION LIST
1.	Bath, Toilet, Water Tapping Open Or Close.
2.	Possible, Flow Metering System In Plant. (Section Wise And M/C).
3.	R.O. Waste Water Recovery System
4.	Open Tapping Size And No. Of Tapping To Be Reduced
5.	Cooling Water Recovery System.
6.	Condensate Recovery System.
7.	Screen Wash Timer System.
8.	Screen Wash Reduced Tapping Size.
9.	Dhulai-Kundi Water Reuse From Last Kundi To First Kundi.
10.	Auto Screen Washing M/C.
11.	Stop-Beam Dyeing Outer Cooling Or Reuse It.
12.	Recovery Water With All Vacuum Pumps.
13.	Zero-Zero M/C Cooling Water Pumps.(Recycle)

Authorized sign:



WATER SAVING CHECKLIST

UNIT NAME:

DATE:

SR.NO	WATER CONSERVATION LIST
14.	Flat Bed And Rotary Printing Machine Blanket Washing Water Use ETP Or Reuse Water.
15.	Ghanti Water Recovery System.
16.	Fresh Water In Printing M/C- Block Bottom Of Washing Unit & Overflow Through Side.
17.	Fresh Water Use In Flat Bed & Rotary Printing M/C Install Control Valve In Inlet Line.
18.	Use Complete ETP Water For Dyeing (Primary-Secondary-Tertiary).
19.	Dhulai Kundi Squeezer System Installation.
20.	Running Wash Control On Jet Drum, By Install Pneumatic Valve On Inlet And Outlet Of M/C.
21.	Drum Washer Last Cooling Water Recovery.
22.	Water Level Controller Or Indicator In Jet & Drum.
23.	Water Discharge Through Collection Tank Or Direct.
24.	Scrubber Water Recycle From ETP Treatment.
25.	Install Hydraulic System In Printing M/C.
26.	Other Water Saving Scheme.

Authorized sign:

WATER SAVING POTENTIAL AT GETP 2022

S.NO.	Machine Name	Total	Standard	Existing	Water Saving	Water Saving	Existing	Total	Selected Steps as per WC		
		(Nos.)	Water	Consumption	Per Mc Per	Per Mc Per	Consumption	Water			
			Required Per	Per Batch (Litre)	Batch (Litre)	Day (Litre)	Per Day (KL)	Saving Per	E	H	D

CONNECTED TO THERMOPACK

			Standard Water Requier Per Day(Litre)	Existing Use Of Water Per Day (Li tre)		Water Saving P er Mc Per Day (Litre)		Total Water Savin g per Day (KL)			
27	Stenter Machine										
27	Stenter Machine	83	4000	8000		4000	664	332	2		
28	Batching Stenter	17									
29	Flat Bed Printing	81	20000	60000		40000	4841	3227	2,7,8,14, 17,16		
30	Rotary Machine	6	100000	150000		50000	918	306	2,14,17		
31	Digital printing m /c	6									
32	Relax Dyer	2									
33	Padding Machine	19									
34	Pole Dryer	2									
35	Tubler Dryer	8									
TOTAL KLD							44409	13569			



U JET M/C PLC PANELS at GINZA INDUSTRIES



CONDENSATE RECOVERY SYSTEM at ULTRA DENIM



Drum Machine at T.M. Patel with PLC



CAUSTIC RECOVERY PLAN at SANGAM FASHION



FULLY AUTOMATED (PLC) SOFT FLOW DYEING M/C at GINZA INDUSTRY



ETP COLLECTION TANK and Reuse at VIRAJ



LONG-JET MACHINE WITH FULL PLC SYSTEM at VIRAJ

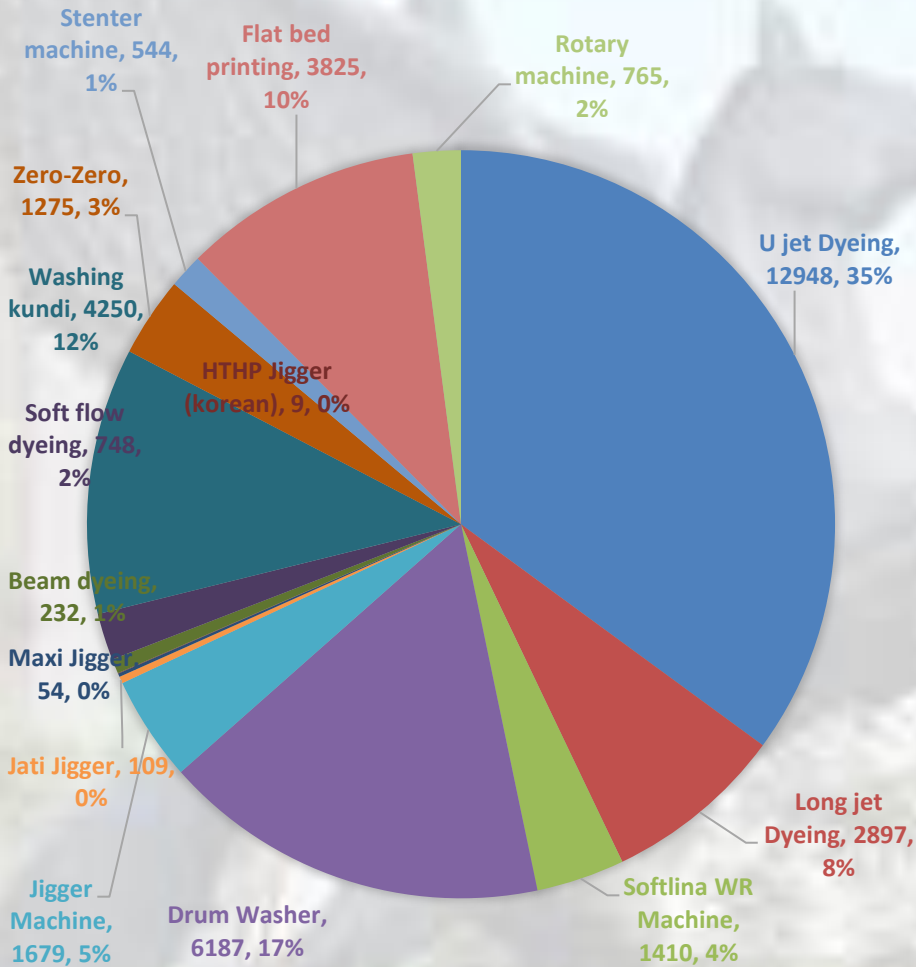


MIX WATER (R.O. REJECT+ETP) FOR SCREEN WASHING at VIRAJ

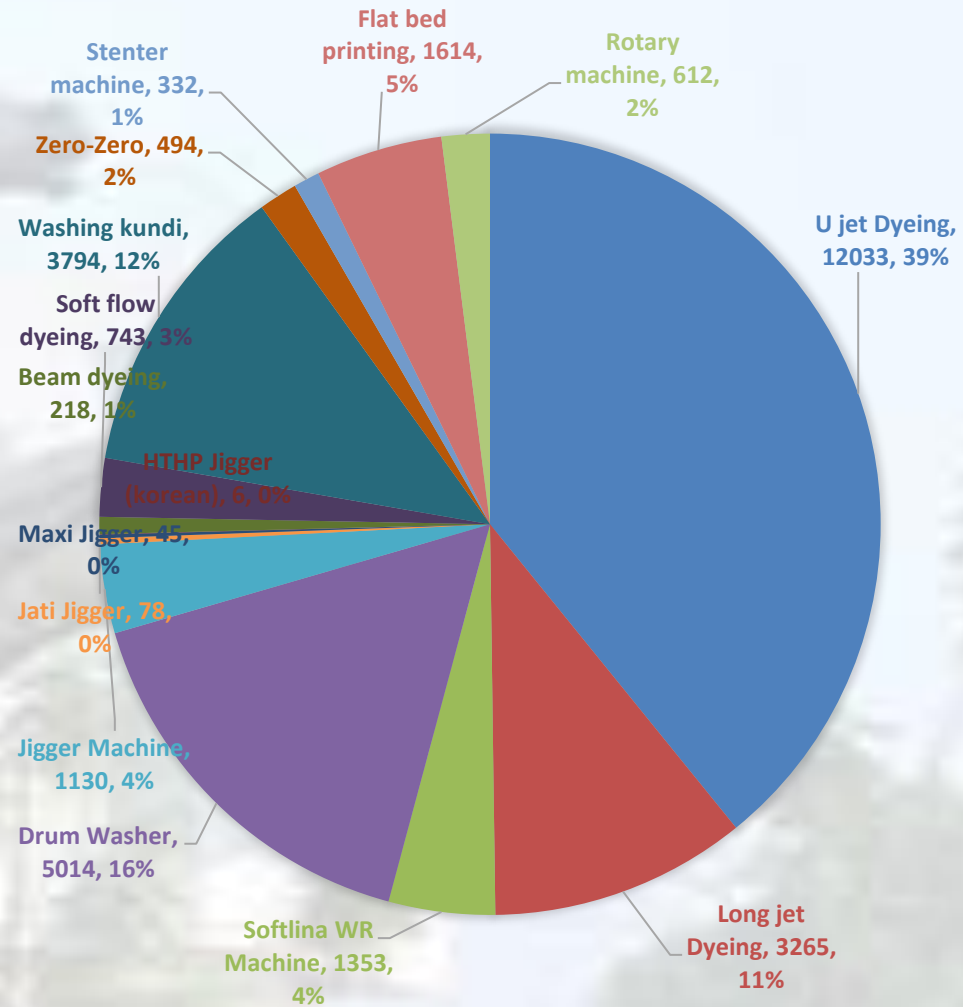
Water Conservation at GETP M/C Wise

Machine	Total Nos.	Water Consumption per Day (KL) 2022	Total water saving (KL) 2022	After CP Study June 2022
U jet Dyeing	546	15042	3009	12033
Long jet Dyeing	76	3732	466	3265
Softlina WR Machine	49	1645	292	1353
Drum Washer	141	7520	2506	5014
Jigger Machine	219	1998	869	1130
Jati Jigger	8	125	47	78
Maxi Jigger	4	72	27	45
HHP Jigger (korean)	1	9	3	6
Beam dyeing	22	284	66	218
Soft flow dyeing	17	908	165	743
Washing kundi	25	5060	1265	3794
Zero-Zero	50	1483	988	494
Stenter machine	83	664	332	332
Flat bed printing	81	4841	3227	1614
Rotary machine	6	918	306	612
Total		44300	13569	30731

WATER CONSUMPTION BEFORE CP IMPLEMENTATION

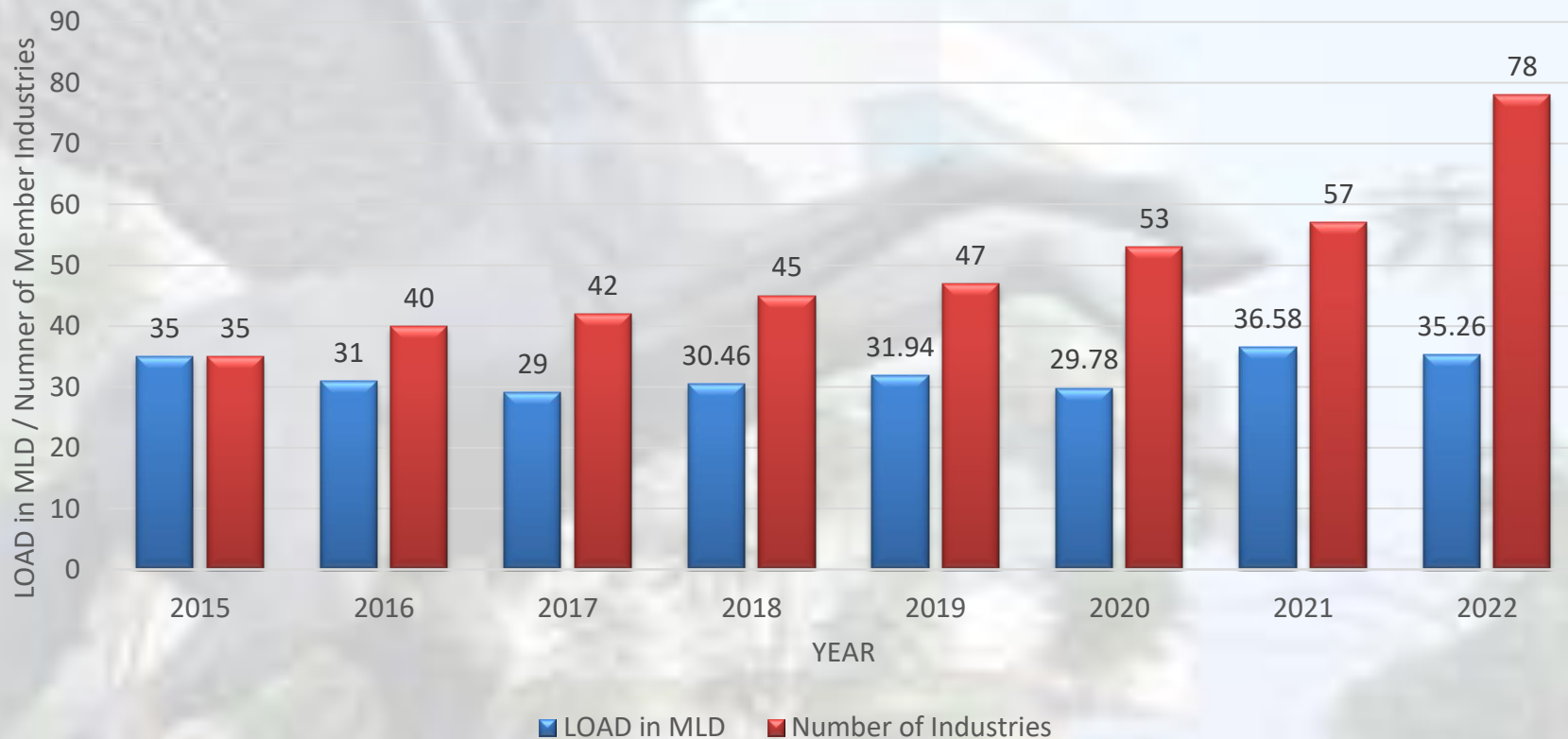


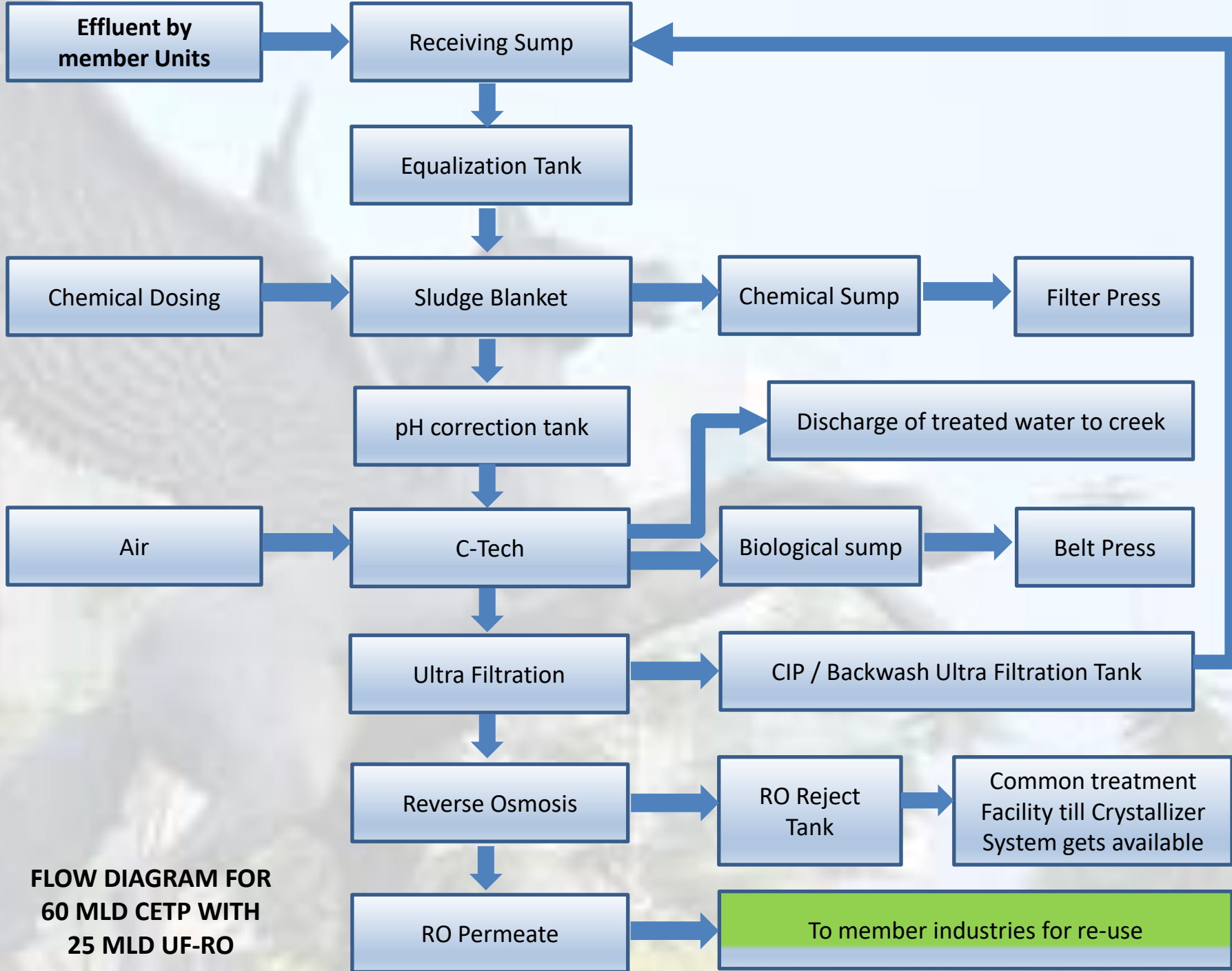
WATER CONSUMPTION AFTER CP IMPLEMENTATION



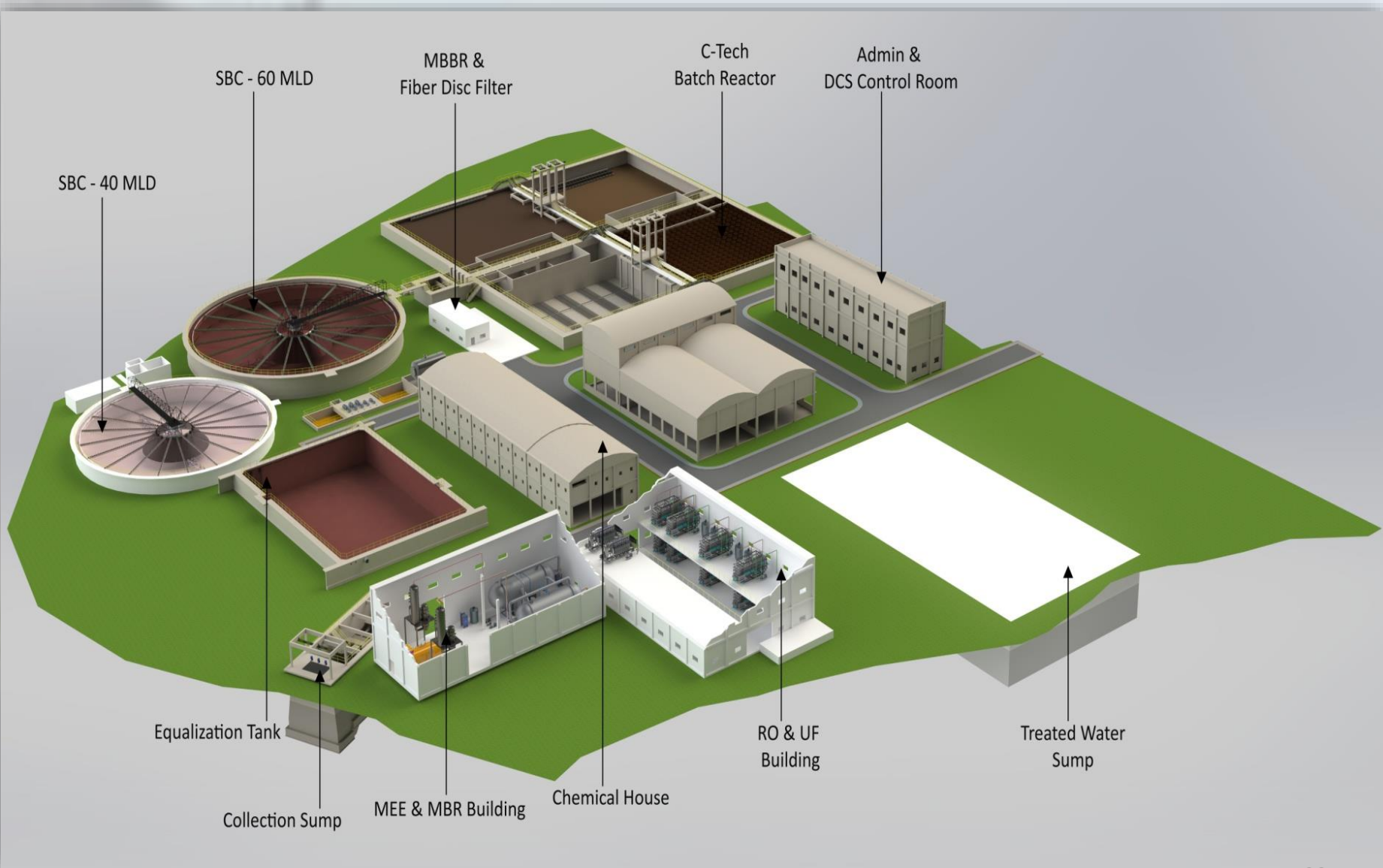
WASTEWATER LOAD REDUCTION @ CETP INLET AFTER CP IMPLEMENTATION (IN AVG. MLD)

Type of Industry/Members for Year	2015	2016	2017	2018	2019	2020	2021	2022
Process House	26	29	29	27	25	27	28	27
Yarn Dyeing	3	5	6	10	13	16	14	16
Denim	3	3	4	4	4	4	4	4
Others	3	3	3	4	5	6	11	31
Total	35	40	42	45	47	53	57	78



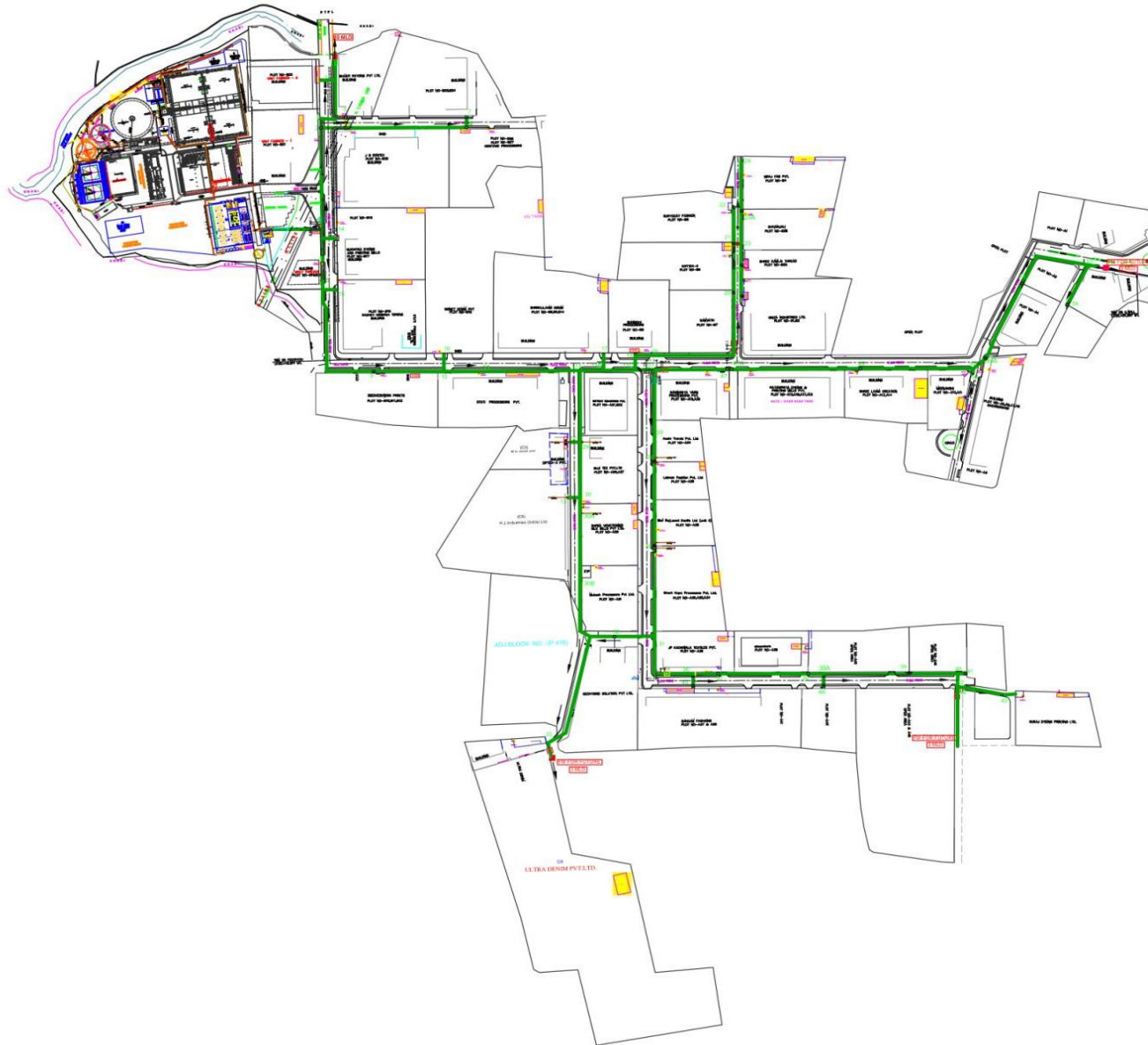


CETP - GETP



Recycle Water Network - GETP

GETP RO SUPPLY DI PIPELINE NETWORK



CASE STUDY - RECYCLING PLANT of 25 MLD ZLD: (Phase – 1 – Operational – 12 MLD)

25MLD pressurized UF and Pressurized Ultrafiltration (PUF) system to treat the secondary treated textile effluent for Gujarat Eco Textile park (GETP), Palsana.

Currently in first phase,

- **12 MLD of treated textile effluent recycle & reuse**
- 67 % recovery for treatment through UF-RO
- Supplying **8.0 MLD RO permeate treated water** to the Member Industries for re-use.

Phase – II of 12 MLD to be commissioned & supply to increase by Dec 2024.



EXISTING COMMON EFFLUENT TREATMENT PLANT FACILITY



FLOW METERING SYSTEM FOR RO PERMEATE AT MEMBER INDUSTRY



RECYCLING PLANT - UF SKIDS – 6 MLD



RECYCLING PLANT - RO SKIDS – 6 MLD SKID



ELKECTRICAL PANELS for UF/RO



CIP - DOSING AREA

PARAMETERS AT DIFFERENT STAGES

Parameters for Primary Treatment				
Sr. No.	Parameters	Unit	Inlet	Outlet
1	pH	--	7.0 - 7.5	7.5 - 8.0
2	TSS	mg/L	350 - 400	70 - 80
3	COD	mg/L	1000 - 1100	550 - 650
4	BOD	mg/L	250 - 300	150 - 175

Secondary Treatment - CETP				
Sr. No.	Parameters	Unit	Inlet	Outlet
1	pH	--	7.5 - 8.0	7.2 - 7.5
2	TSS	mg/L	70 - 80	50 - 60
3	COD	mg/L	550 - 650	200 - 250
4	BOD	mg/L	150 - 175	20 - 30

UF – RO - Treatment - CETP (Quality of Treated Water)			
Sr. No.	Parameters	Unit	Value
1	pH	--	7.5 - 8.0
2	TDS	mg/L	<350

Improvement so far ...

- Water conservation of approx. 4470 KL per day by the member industries adopting Cleaner production measures.
- Water conservation of approx. 3800 KL per day due to RO - recycling plant.
- Total saving (4470 + 3800) 8270 KLD at Textile park
- Water conservation in the range of 5 – 35 % by individual industry.
- Treated water internal recycle of 100 KL/day for CETP consumption.
- Benefits of Water recycle and quality improvement, chemical and cost savings.
- Disposal of ETP sludge (through AFR Facility to Cement industry)
- Complying with PCB consent conditions and norms.
- Water conservation at GETP in last 3 years is as below :

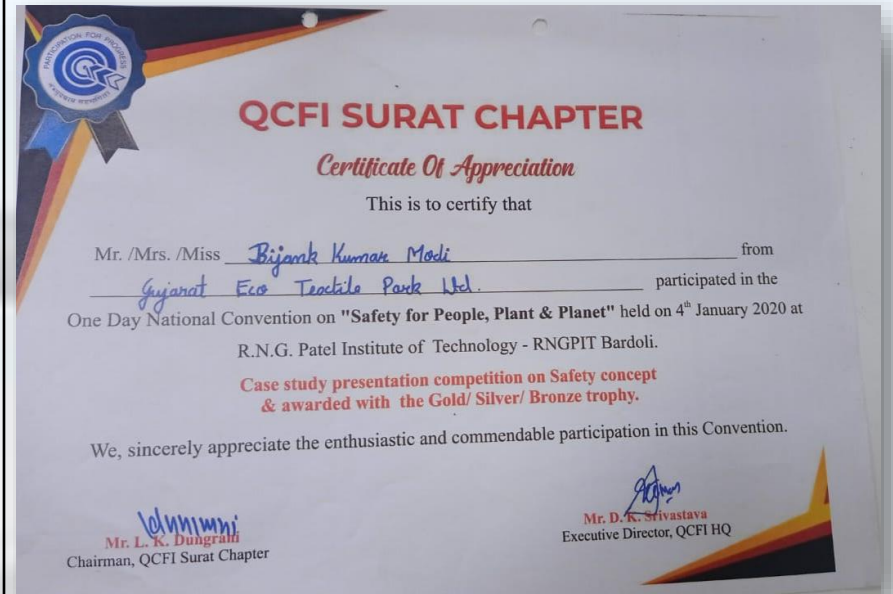
Year	Average Water Quantity (KLD)	Number of Member Industries	Number of Chambers	% of Saving Quantity w.r.t previous year	Average Water Saving Per annum (KLD)	Saving Rs. (Cr.)
2020	19030	53	497	--	--	--
2021	23412	57	520			
2022	30727	78	582	18%	8270	3.90

- Note :
 - Water Cost min. 15 Rs/ KL (Borewell water cost)
 - Tanker cost min. 60 Rs /KL
 - Working days per year 315 Nos. days.

Awarded for Best Performing Textile Park – 2015 by Ministry of Textile



QCFI Surat Chapter



D & B - Axis Bank Infra Awards - 2011



APEX INDIA Green Leaf award 2019



Awarded for National Award For Excellence In Water Management 2018.



Green AWARD to GETP by Quality Circle Forum of India (QCFI)





GETP
Gujarat Eco-Textile Park
The Processing Park



Thank you

Please visit : www.getp.in
www.luthraindia.com

