



SECUNDERABAD TERMINAL (STL) **Water Harvesting & Discharge Treatment**

CII Awards - Jun 2023

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Topics of Discussion



- **Location Overview**
- **Sustainability Initiatives**
- **Water Harvesting & Discharge Treatment**
- **Replication Potential & Trigger of the Project**
- **National Standards & Benchmarks**
- **Project Cost & Savings Details**
- **Way Forward**
- **Q&A**

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Aerial View of the Terminal



SECUNDERABAD TERMINAL AERIAL VIEW

DATED ON - 16 - FEBRUARY - 2020



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Location Details



- **HPCL Secunderabad Terminal** is in **Ghatkesar, Hyderabad, Telangana**, involved in **Receipt, Storage & Distribution** of **Petroleum Products**
- Terminal is spread across **147 acres** of land of which **~45% to 50%** constitutes of **"Green Cover"**
- Terminal has a **storage capacity** of **2.2 lakh KL** and sales of **~366T KL / year**
- Terminal is **ISO 140001 certified** valid till **Mar 2024**

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Sustainability Initiatives: Overview



HPCL Secunderabad Terminal is consistently making initiatives towards sustainability some of which are:

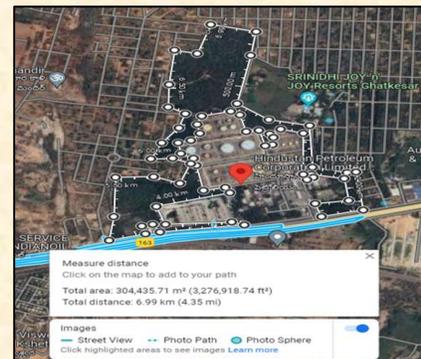
- **Green Belt**
- **Centralized Energy Monitoring System**
- **Solar Energy**
- **Vapor Recovery Unit**
- **Water Harvesting & Discharge Treatment**

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Sustainability Initiatives: Green Belt



Green Belt: 75 acres of area out of **total 147 acres** is covered with **green belt**, including 15M boundary across 4.5KM periphery of the Terminal. We are committed to **“Mission Life”** initiatives and aim to do **regular tree plantation**



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Sustainability Initiatives: CEMS



Centralized Energy Monitoring System: STL monthly electricity demand of 85,000KWH, regular monitoring of load has brought savings of Rs 70,000 / month

#	Location	Savings realized through CEMS as of 28/02/2023	Brief Description of the Implemented Solution	Savings expected till 31/03/2023
1	STL	Rs 25,000 / month from Nov 2022 onwards	1. Corrected load unbalances in the feeders of various buildings 2. Optical sensor (Make: Xcluma, 10 Lumen) installed on all the HMTs.	Rs 1,25,000
2	STL	Rs 13,000 / month from Jan 2023 onwards	Avoid/Minimize TT loading during TOD hours	Rs 39,000
3	STL	Rs 35,000 / month from 18 March 2023 onwards	Pump feeders constitute to the 60% energy consumption of the terminal. Regulating running of the 2nd HSD Pump basis the demand monitoring through MFM	Rs 16,000
Total		Rs 73,000 / month		Rs 1,80,000

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Sustainability Initiatives: Solar Energy



Solar Energy: STL has existing 177KW roof top solar plant & another 75KW plant is to be commissioned by Aug 2023. Also 160 number of streetlights across the terminal are solar powered



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Sustainability Initiatives: Vapor Recovery Unit



Vapor recovery Unit: VRU **collects vapors** generated during loading of TTs, this vapor is then treated and hydrocarbon component is collected while only air is released in the atmosphere ensuring VOC free ambient air.



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Water Usage Purpose & Statistics



- HPCL Secunderabad terminal located in Ghatkesar, Secunderabad, Hyderabad, Telangana has an **approximate annual water requirement of 4,600KL**
- The **purpose of utilization** of this water is for **drinking, cooking, washroom facilities, gardening, and storage for firefighting purposes**
- The terminal has taken **initiative** to **recycle** and **reuse wastewater** to become **self-water sufficient**
- Secunderabad Terminal is a **water positive location** with **no purchase of water since**

2021



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Water Conservation & Treatment Methods



- **Converted Wetlands (Toilet & Canteen Water Recycling)** 
- **Water Recycling : Fire engine, Rejected RO, Calibration water**
- **Effluent Treatment Plant (ETP)**
- **Rainwater Harvesting**

These water conservation methods are utilized across industries, but HPCL Secunderabad Terminal has some unique processes

Converted Wetlands

Water Recycling

Effluent Treatment Plant

Rainwater Harvesting

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Converted Wetlands (Toilet & Canteen Water Recycling)



- Secunderabad Terminal **has converted wetlands** for wastewater treatment
- We have **3-units of 4KL, 4KL and 9KL each** which collects wastewater from washrooms, canteen, etc. & **Effluent Treatment Plant (ETP) discharge / output**
- This water is **treated using Phyto Remediation Plant** and the treated water is **further used for gardening purpose**



Converted Wetlands

Water Recycling

Effluent Treatment Plant

Rainwater Harvesting

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Converted Wetlands: Test Report Of Treated Water



SV ENVIRO LABS & CONSULTANTS
(Environmental Engineers & Consultants in Pollution Control)

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Balaakur Road, S.R. Nagar Hyderabad-500018
Recognized by Govt. of India-MoEF & CC, New Delhi, Accredited by: NABL & NABET
Date: 18-05-2023

Ref: SVEL/HPCL/47KZ/23-05/17

NAME AND ADDRESS : M/s Hindustan Petroleum Corporation Ltd.,
P.B. NO.3, Chakravarthy,
R.R. District-501026,
Telangana State.

SAMPLE PARTICULARS : EFFLUENT

SOURCE OF COLLECTION : PHYTOREMEDIATION PLANT

DATE OF COLLECTION : 16-05-2023

TEST REPORT

S.No.	PARAMETER	UNIT	RESULT	METHOD	TSPCB LIMITS
1.	pH	--	7.51	APHA 1506-B-08, 23rd Edition, 2017	5.5-9.0
2.	Total Dissolved Solids - TDS	mg/l	785	APHA 2540-C, 23rd Edition, 2017	2100
3.	Total Suspended Solids - TSS	mg/l	16.0	APHA 2540-D, 23rd Edition, 2017	200
4.	Chemical Oxygen Demand - COD	mg/l	70.9	APHA 5220-B, 23rd Edition, 2017	250
5.	Bio-Chemical Oxygen Demand - BOD (5 days Incubation at 20°C)	mg/l	33.0	IS 3025 P 44	100
6.	Oil & Grease	mg/l	<1.0	APHA 5550 D.5-34, 23rd Edition, 2017	10

Remarks: As per the above test results, all parameters are within the TSPCB limits.

CHECKED BY:  SV ENVIRO LABS & CONSULTANTS

Converted Wetlands

Water Recycling

Effluent Treatment Plant

Rainwater Harvesting

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Fire Engine Water Recycling



- Secunderabad Terminal has **8-Fire Engines (FEs)** for mitigation of any fire hazards
- To ensure functioning of these FEs they are regularly operated for testing purposes
- These **engines use water** for the **cooling mechanism**, and this water after circulation through the cooler is **discharged by the engine**
- This **water is not allowed to be wasted** and is **collected** in an **underground tank** which is **pumped back to fire water tanks**



Converted Wetlands

Water Recycling

Effluent Treatment Plant

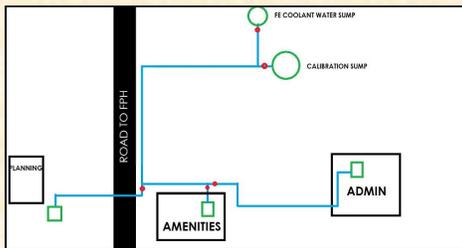
Rainwater Harvesting

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RO & Calibration Water Recycling



- Secunderabad Terminal has **3 RO plants** to ensure clean water facility at location
- The **rejected water** from all these RO's is not wasted and **re-used for calibration of TTs**
- Secunderabad Terminal has **~315 TTs** which needs to be **calibrated on yearly basis**
- The water used for calibration is **again decanted in the same tank & reused for other TTs**



Converted Wetlands

Water Recycling

Effluent Treatment Plant

Rainwater Harvesting

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Effluent Treatment Plant (ETP)



- Secunderabad Terminal has an **Effluent Treatment Plant (ETP)** of capacity **25m³/ hr**
- **Connected** through the drains of all the **tank dykes, gantry & both pump houses**
- Any **water/oil** collected in these drains is **transferred to this treatment plant** where the separated oil is stored in slop tank while the **treated wastewater is sent to wetland for further treatment**



Converted Wetlands

Water Recycling

Effluent Treatment Plant

Rainwater Harvesting

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Rainwater Harvesting



- We have **3 units of ground water wells** which are **cleaned annually prior to monsoons**
- They ensure we have **clean water throughout the year**
- Also **storm water drain** available in the terminal is **connected to 2-set of pits** to **collect the rainwater** which **recharges the wells** ensuring **sufficient water throughout the year**



Converted Wetlands

Water Recycling

Effluent Treatment Plant

Rainwater Harvesting

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Replication potential of the project in Indian Industry



- Water recycling and reuse practice at Secunderabad Terminal **can be replicated to all other industries** basis their **architecture & water usage**
- **PAN India HPCL locations** are heading towards such water recycling measures
- **Already replicated in many institutions:**
 - ✓ Sewage Treatment System at Office of Commissioner of Industries, Hyderabad Commissioned
 - ✓ Sewage Treatment System at HPCL, Silvassa
 - ✓ Sewerage Treatment Plant using (ICW) Delhi Metro
 - ✓ Wastewater Treatment System TSIIIC- ALEAP IE, Hyderabad

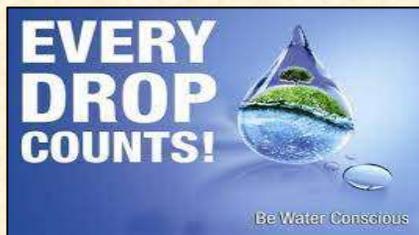


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The “Trigger” behind initiating the project



- Water covers 70% of our planet but only 3% of it is fresh water
- Due to growing population & contamination of water shortage has become a primary concern
- One of the ways to conserve fresh water is through recycling and reusing it
- **HPCL being a Public Sector Undertaking operated under the Ministry of Petroleum and Natural gas is always “committed to environment friendly initiatives”**



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National Standards / Benchmarks



- **ISO 46001 – Water Efficiency Management Systems**



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Project Cost & Savings Details



Project Cost	Intangible Benefits	Tangible Benefits	Savings (in UOM)	Savings (in Lakhs)	Payback Period
20 Lakhs	<ul style="list-style-type: none"> Ensure a continuous supply of water to all our future generations Maintain our health as intake of contaminated water can lead to harmful implications for us Ensure security of food resources as the growth of our crops and plants also depend on the water 	<ul style="list-style-type: none"> Savings towards purchase of water Nil water pollution as nil water discharge 	4600 KL water / year	4.5 lakhs / year	4.4 years

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Way Forward



As next steps towards the sustainable initiatives, we are heading towards the following certifications for the FY 2023-24:

- **ISO 45001 – Health & Safety**
- **ISO 46001 –Water Efficiency Management Systems**
- **ISO 50001 – Energy Management System**
- **GreenCo rating**



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THANK YOU