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**Presenting**

# HYBRID TECHNOLOGY (Hyper Core) Mechanised Faecal Sewage Treatment Plant

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# PICTURE OF THE PLANT


MUNICIPAL CORPORATION UJJAIN M.P.

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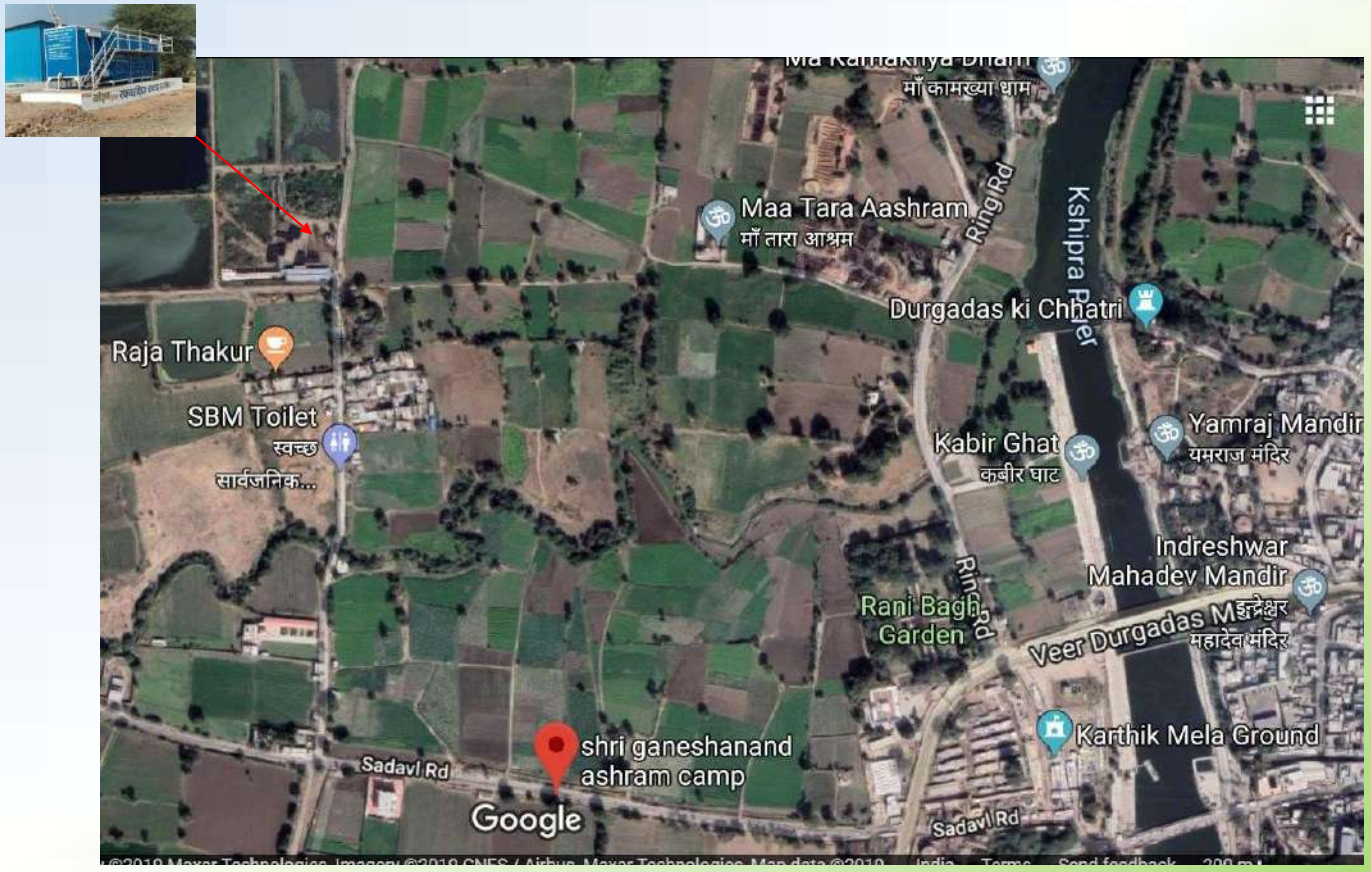
# LOCATION OF FSTP



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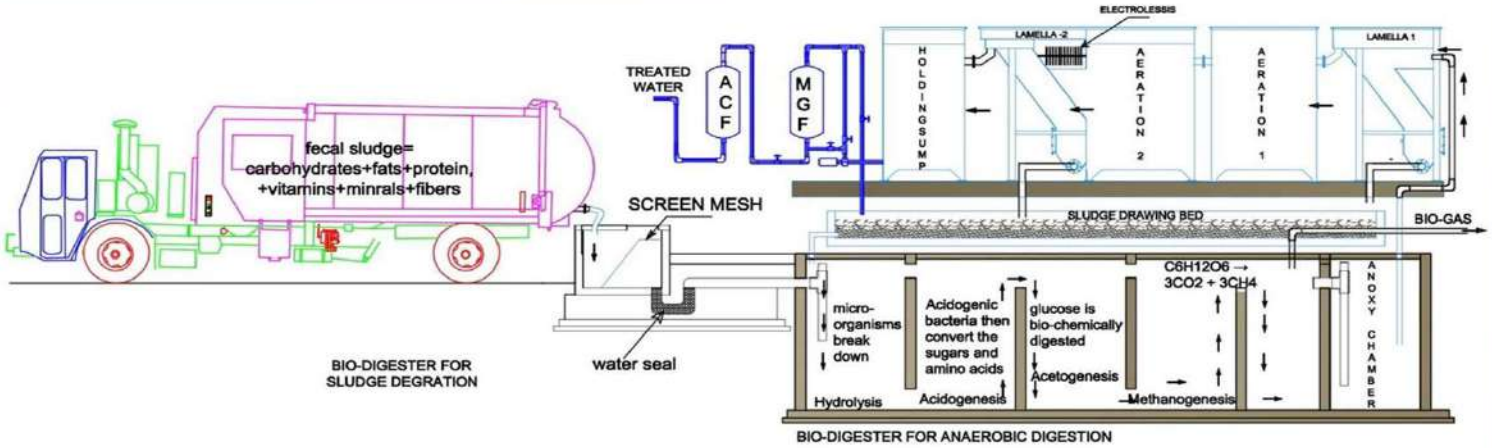
# INFORMATION ABOUT PLANT AND TECHNOLOGY

| CAPACITY | 50 KLD |
|---|---|
| Elecric Load | 4.5 KW |
| Required Area | 240 Sqm |
| Installation Time | 3 Month |
| Sludge Production | 200 GRAM/CUM |
| Type | Fully Automatic |
| | |




biological digester (or simply 'Bio-Digester') which degrade sludge by anaerobic digestion; anaerobic digestion is a collection of processes by which microorganisms break down biodegradable material in the absence of oxygen and sunlight.

The digestion process begins with bacterial hydrolysis of the input materials. Insoluble organic polymers, such as carbohydrates, are broken down to soluble derivatives that become available for other bacteria. Acidogenic bacteria then convert the sugars and amino acids into carbon dioxide, hydrogen, ammonia, and organic acids. These bacteria convert these resulting organic acids into acetic acid, along with additional ammonia, hydrogen, and carbon dioxide. Finally, methanogens convert these products to methane and carbon dioxide. Organic material such as glucose is biochemically digested into carbon dioxide ($CO_2$) and methane ($CH_4$) by the anaerobic microorganisms. $C_6H_{12}O_6 \rightarrow 3CO_2 + 3CH_4$

After bio-digester waste water travels to Anoxy chamber where dinitrification of waste water occurs, to make it fit for aerobic treatment.

NOTE:-finally in this process (HYPER CORE FECAL SLUDGE TREATMENT) we found sludge generation is negligible or not more then 250-500 gm/cumt

# PROCESS PLAN FOR FECAL SEWAGE TREATMENT PLAN BY HYBRID TECHNOLOGY

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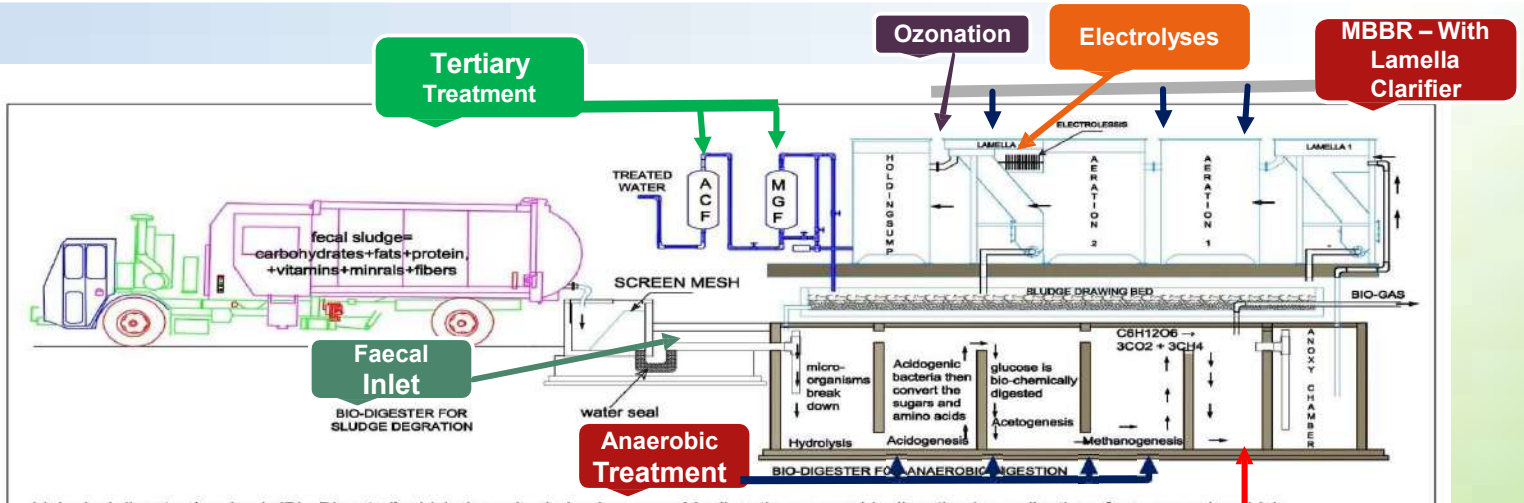
# What is HYPER CORE (HYBRID) TECHNOLOGY

***It's a combination of 5 technologies***

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PROCESS PLAN FOR FECAL SEWAGE TREATMENT PLAN BY HYBRID TECHNOLOGY

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# Benchmark set by Pollution Control Board (PCB)

## PARAMETER FOR FAECAL SLUDGE

| | |
|---|---|
| COD | < 250 PPM |
| BOD | < 30PPM |
| Coliform Bacteria | <1000 / 100ml |
| TSS | <100 mg / Ltr |

SOURCE: ADVISERY NOTE SEPTAGE MANAGEMENT IN URBAN INDIA (JANUARY 2013)

# Physical and chemical characteristics of septage

| Constituent (all units but for pH are in mg/l) | Average | Range |
|---|---|---|
| Biochemical Oxygen Demand | 6,480 | 440 - 78,600 |
| Chemical Oxygen Demand | 31,900 | 1,500 - 703,000 |
| Total Solids | 34,106 | 1,132 - 130,745 |
| Total Volatile Solids | 23,100 | 353 - 71,402 |
| Total Suspended Solids | 12,862 | 310 - 93,378 |
| Volatile Suspended Solids | 9,027 | 95 - 51,500 |
| Total Kjeldahal Nitrogen | 588 | 66 - 1,060 |
| AmmoniaNitrogen | 97 | 3 - 116 |
| Total Phosphorus | 210 | 20 - 760 |
| Alkalinity | 970 | 522 - 4,190 |
| Grease | 5,600 | 208 - 23,368 |
| pH | | 1.5 - 12.6 |

SOURCE: ADVISERY NOTE SEPTAGE MANAGEMENT IN URBAN INDIA (JANUARY 2013)

DESIGN CRITERIA BY

# HYPER CORE (HYBRID)TECHNOLOGY

AVERAGE PARAMETER OF FAECAL SLUDGE COLLECTED FROM DECENTRALISED HOUSEHOLD

## PERCENTAGE DECREASED BY AVERAGE PARAMETER IN DIFFERENT UNITS

SOURCE: ADVISERY NOTE SEPTAGE MANAGEMENT IN URBAN INDIA (JANUARY 2013)

## Physical and chemical characteristics of septage after Treatment by hyper core faecal sludge treatment plant

| Constituents (all units but for pH are in mg/l) | Average | Range | Treated Water Characteristics |
|---|---|---|---|
| Biological Oxygen Demand (BOD) | 6,480 | 440 - 78,600 | <30 |
| Chemical oxygen demand (COD) | 31,900 | 1,500 – 7,03,000 | <100 |
| Faecal Coliform per 100 ml | 25,000 | 18,300 – 75,402 | <1000 |
| Total Suspended Solids | 12,862 | 310 – 93,378 | <100 |
| pH | - | 1.5 - 12.6 | 6.5 – 8.5 |

# UNIT WISE OUTPUT RESULT

## 1. Grit and Screening:-

- Settleable solid are settled down in grit chamber like debris, soil, dust etc. it is manually cleaned day to day and sludge flow to screening channel,( 304 grade stainless steel round bars are provided with 4 – 10 mm spacing) large particles are trapped in this process of screening such as sanitary pads, hair bunch, plastic bottles, polythene, plastic cups etc. and this type of removal also remove total suspended solid and sometime BOD and COD.

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# 2. Viscosity of Sludge water

Collection is done from different location where sludge is having different viscosity; some amount (say 15%) of water gets added in sludge at the time of cleaning of septic tank. And for easy movement of sludge in plant, 15 to 20% treated water added in screening channel before bio digester.

| Sr. No. | Paramitar | Inlet (mg/li.) | Outle | Decrease (approx. parameter) (mg/li.) |
|---|---|---|---|---|
| 1 | pH | 1.5 TO 12.6 | - | 1.5 TO 12.6 |
| 2 | Total Suspended Solid | 12862 | 30% | 9003.40 |
| 3 | BIO-CHEMICAL OXIGEN DEMAND | 6,480 | 30% | 4536 |
| 4 | CHEMICAL OXIGEN DEMAND | 31900 | 30% | 22330 |

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# 3. BIODIGESTER

| Sr. No. | Paramitar | Inlet (mg/li.) | Outle | Decrease (approx. parameter) (mg/li.) |
|---|---|---|---|---|
| 1. | pH | 1.5 TO 12.6 | - | 6.5 – 8.5 |
| 2. | Total Suspended Solid | 9003.40 | 60% TO 70% | 3151.19 |
| 3. | BIO-CHEMICAL OXIGEN DEMAND | 4536 | 80% TO 90% | 680.40 |
| 4. | CHEMICAL OXIGEN DEMAND | 22330 | 70% TO 85% | 4466 |

# 4. ANOXI CHAMBER

**Anoxic** processes are typically used for the removal of nitrogen from **wastewater**. De-nitrification requires that nitrogen should be first converted to nitrate, which typically occurs in an aerobic **treatment** process such as a trickling filter or aerated suspended growth system.

# 5. PRIMARY LAMELLA CLARIFIER

| Sr. No. | Paramitar | Inlet (mg/li.) | Outle | Decrease (approx. parameter) (mg/li.) |
|---|---|---|---|---|
| | pH | 6.5 – 8.5 | As Inlet | As Inlet |
| 1 | Total Suspended Solids | 3151.19 | 30% to 40% | 2048.27 |
| 2 | Bio- Chemical Oxigen Demand | 680.40 | 30% to 40% | 442.00 |
| 3 | Chemical Oxigen Demand | 4466 | 30% to 40% | 2902.90 |

# 6. AERATION 1 & AERATION 2 MOOVING BED BIO-REACTER PROCESS

| Sr. No. | Paramitar | Inlet (mg/li.) | Outle | Decrease (approx. paramet er) (mg/li.) |
|---|---|---|---|---|
| | pH | Aa Inlet | Aa Inlet | Aa Inlet |
| 1 | Total Suspended Solids | 2048.27 | 30% - 40% | 1331.37 |
| 2 | Bio- Chemical Oxigen Demand | 442.00 | 75% to 95% | 44.2 |
| 3 | Chemical Oxigen Demand | 2902.90 | 75% to 95% | 290.29 |

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# 7. ELECTRO-FLOCULATION AND SECONDARY LAMELLA CLARIFIER

| Sr. No. | Paramitar | Inlet (mg/li.) | Outle | Decrease (approx. paramet er) (mg/li.) |
|---|---|---|---|---|
| | pH | Aa Inlet | Aa Inlet | Aa Inlet |
| 1 | Total Suspended Solids | 1331.37 | 70% to 80% | 332.84 |
| 2 | Bio- Chemical Oxigen Demand | 44.2 | 50% to 60%(act electrolysis) | 19.89 |
| 3 | Chemical Oxigen Demand | 290.29 | 70% to 80%(act electrolysis) | 72.57 |

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# 8. OZONATION

**OZON ($O_3$)** DOSING IS THREE DIMENTIONALLY ACT IN WASTE WATER LIKE DESOLVE OXYGEN **(DO)** IN WATER, REDUSING BIO-CHEMICAL OXYGEN DEMAND **(BOD)** REDUCING CHEMICAL OXYGEN DEMAND **(COD)** AND ALSO **KILL PATHOGENS.**

# 9. MULTY GRADE FILTER

| Sr. No. | Paramitar | Inlet (mg/li.) | Outle | Decrease (approx. parameter) (mg/li.) |
|---|---|---|---|---|
| | pH | Aa Inlet | Aa Inlet | 6.5-8.5 |
| 1 | Total Suspended Solids | 332.84 | 90% To 95% | 33.28 |
| 2 | Bio- Chemical Oxigen Demand | 19.89 | 30% To 40% (by act of $O_3$) | 12.92 |
| 3 | Chemical Oxigen Demand | 72.57 | 30% To 40% (by act of $O_3$) | 47.17 |

# 10. ACTIVATED CARBON FILTER

| Sr. No. | Paramitar | Inlet (mg/li.) | Outle | Decrease (approx. parame ter) (mg/li.) |
|---|---|---|---|---|
| | pH | As Inlet | Aa Inlet | 6.5-8.5 |
| 1 | Total Suspended Solids | 33.28 | 50% TO 60% | 14.97 |
| 2 | Bio- Chemical Oxigen Demand | 12.92 | 10% TO 15% | 11.62 |
| 3 | Chemical Oxigen Demand | 47.17 | 10% TO 15% | 42.45 |

# 11. IMPORTANT OBSERVATION:-

In this design, research has been done and it is observed that with the reduction of BOD, COD, Total Suspended solid and pH, it also reduces other constituent like Total Volatile Solids, Volatile Suspended solids, Total Kjeldahl nitrogen, Ammonia nitrogen, Total phosphorus, Alkalinity, Grease and heavy metals (such as arsenic, Zinc, Nickel, Mercury, Lead, Copper, Cadmium, Chromium) and C/N Ratio is also removed and mostly done before tertiary phase and there is negligible dry sludge generation because inorganic material in waste water trapped in grit and screening and organic material degrade in water in presence of anaerobic bacteria with flower types shelter and bio chemical enzyme which produces carbon dioxide and methane (in very less quantity though cannot be used as fuel).

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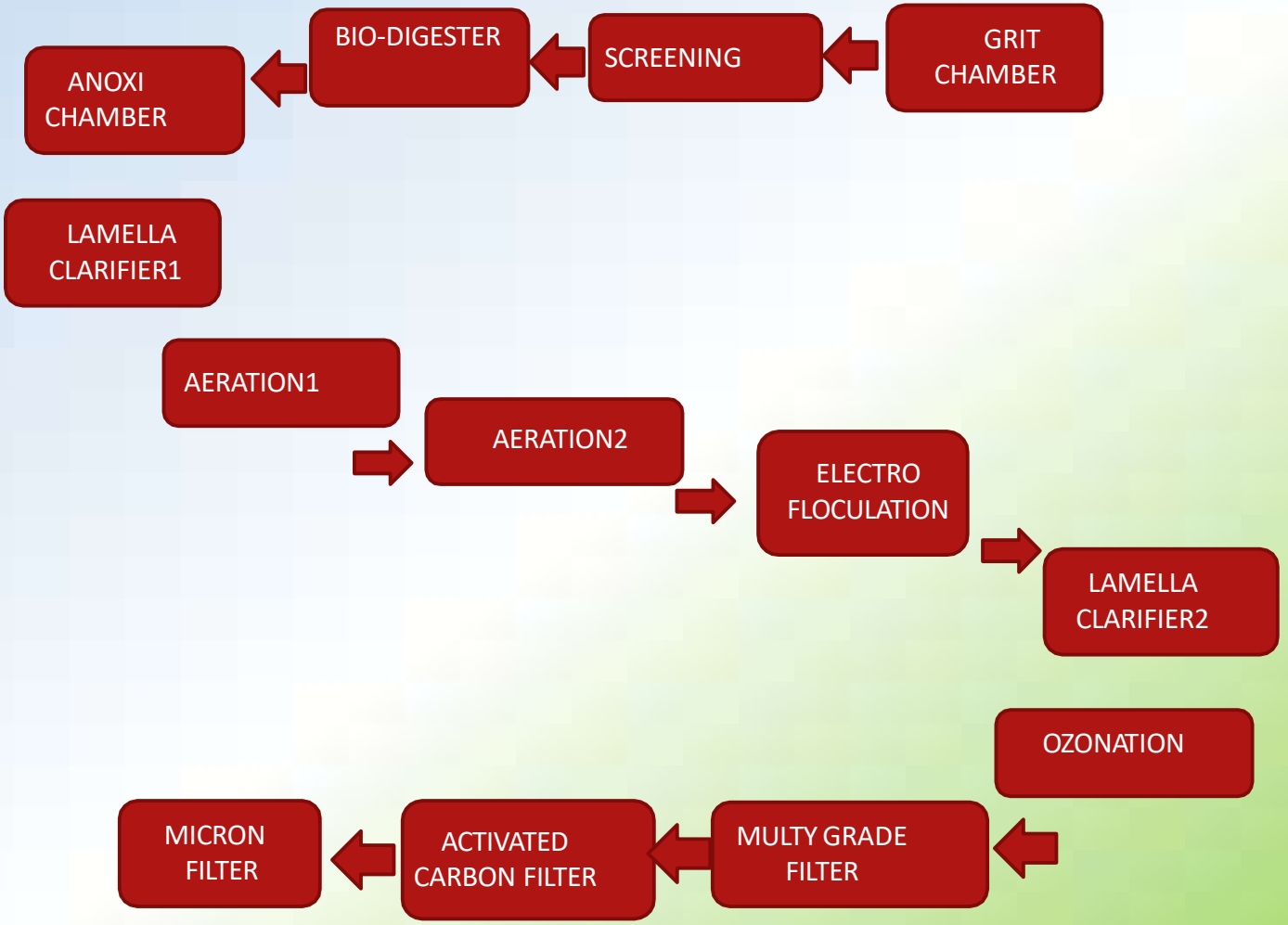
# FLOW CHART



उज्जैन, रविवार 20 जनवरी, 2019 | 7

# यह तो आरओ जैसा साफ हो गया, इसमें बदबू भी नहीं आ रही, क्षमता बढ़ाएं

**निरीक्षण : सदावल ट्रीटमेंट प्लांट का जायजा लेने पहुंची महापौर ने अधिकारियों से कहा**

उज्जैन | यह तो आरओ जैसा साफ हो गया, इसमें बदबू भी नहीं आ रही है। इसकी क्षमता बढ़ाएं ताकि ज्यादा से ज्यादा पानी ट्रीट किया जा सके। सदावल ट्रीटमेंट प्लांट की व्यवस्थाओं का जायजा लेकर महापौर मीना जोनवाल ने अधिकारियों को यह निर्देश दिए। उन्होंने कहा-पानी को बोतल में भरकर लाएं। बोतल में भरा पानी देखकर उन्होंने ट्रीटमेंट प्लांट की प्रशंसा की। यहां पर 60 लाख रुपए से ट्रीटमेंट प्लांट बनाया गया है। इसकी क्षमता 50 किलोलीटर (केएल) की है। प्लांट का निरीक्षण करते के साथ उन्होंने व्यवस्थाओं और प्रचलित कार्यों के संबंध में पीएचई के इंई धर्मेंद्र वर्मा से जानकारी ली। उन्हें कार्य को बेहतर से बेहतर किए जाने के निर्देश दिए। उन्होंने सदावल स्थित कुत्ताघर का भी निरीक्षण किया। महापौर ने दोनों स्थानों पर सफाई किए जाने और जरूरी संसाधन उपलब्ध कराने के निर्देश दिए। इस दौरान अपर आयुक्त मनोज पाठक मौजूद थे।


Outlet Water quality of FSTP, which was also inspected by Mayor of Ujjain.


बिल गेट्स फाउंडेशन की टीम ने किया सदावल ट्रीटमेंट प्लांट का निरीक्षण

उज्जैन | सदावल स्थित ट्रीटमेंट प्लांट का बिल गेट्स-मिलेंडा फाउंडेशन की टीम ने निरीक्षण किया। शहर के गंदे पानी को साफ करने के लिए यहां लगाया गया प्लांट भारतीय तकनीकी का पहला प्लांट है जिसका 11 जनवरी 2019 को पेटेंट हुआ है। इंजीनियर दुश्यंत दुबे के अनुसार भारत के इस तकनीकी के पहले प्लांट को देखने के लिए दिल्ली से आई सेंटर आफ पॉलिसी रिसर्च की टीम आई। टीम ने पूरी तकनीकी को समझा और इसे देश के अन्य हिस्सों में भी अपनाने की बात कही।

Team from Center of Policy research
Inspected Ujjain based FSTP, for Bill
& Melinda Gates foundation, on how
To increase the number of FSTPs in INDIA.


**SADAWAL, UJJAIN** - Bill & Melinda Gates foundation
Team visited plant to get **technology overview**.

दैनिक भास्कर

17-Dec-2018
उज्जैन Page 2

**प्रोजेक्ट** • सदावल में प्रदेश का पहला हाईब्रिड टेक्नालॉजी का हाइपर कोर फीकल सीवर ट्रीटमेंट प्लांट शुरू

# सीवर वाटर को साफ कर 42 हजार लीटर पानी फिर से उपयोग के लायक बना रहा नगर निगम

भास्कर संवाददाता | उज्जैन

## शहर से रोज 45 हजार लीटर सीवर वॉटर निकलता है, जिसे टैंकरों से प्लांट तक पहुंचाया जा रहा है

नगर निगम ने सदावल सीवरेज फॉर्म पर 45 हजार लीटर सीवर वाटर को ट्रीटमेंट करने के लिए हाईब्रिड टेक्नालॉजी का प्लांट चालू कर दिया है। यह तकनीक प्रदेश में पहली बार प्रयोग हो रही है। इसमें रोज 45 हजार लीटर पानी को ट्रीट कर 42 हजार लीटर पानी को दोबारा उपयोग के लायक बनाया जा रहा है। इस पानी का उपयोग फिलहाल किसान कर रहे हैं।

नगर निगम के ट्रीटमेंट प्लांट में पानी को साफ कर दोबारा उपयोग के लिए नया प्लांट लगाया गया है। इसे हाइपर कोर फीकल सीवर ट्रीटमेंट प्लांट नाम दिया है। हाईब्रिड टेक्नालॉजी वाला यह प्रदेश का पहला प्लांट है जिसमें सीवर के पानी में से कचरे-कूड़े, कपड़ा, प्लास्टिक, पॉलीथिन आदि को अलग कर पानी को दोबारा उपयोग लायक बनाया जाता है। यह पानी खास कर सिंचाई के लिए उपयोगी होता है। 60 लाख रु. की लागत से 200 वर्गमीटर जमीन पर लगे इस प्लांट के संचालन पर हर महीने 35 हजार रु. का खर्च आएगा। प्लांट ने काम करना शुरू कर दिया है। फिलहाल यहां से साफ हुआ 42 हजार लीटर पानी सिंचाई में उपयोग हो रहा हैं।

टैंकरों से लाया सेप्टिक टेंक का सीवर प्लांट में ट्रीटमेंट के लिए डाला जाता है। प्लांट में पानी को गंदगी से अलग कर साफ करते हैं।

**ऐसे करता है काम...**
- सीवर के पानी को ट्रीटमेंट प्लांट में लाने के बाद इससे कचरा-कूड़ा, प्लास्टिक अलग होता है।
- बॉयोलॉजिकल डाइजेस्टर में इसे बैक्टेरिया रहित किया जाता है।
- मिट्टी और अन्य तत्वों को सेटल कर पानी को अलग किया जाता है।
- पानी को सेंड फिल्टर, कार्बन फिल्टर और माइक्रोन फिटर से छाना जाता है।
- पानी को ओजोन डोज और हवा से गुजार कर शुद्ध किया जाता है।

### यह उपयोग हो सकेगा
- बगीचों, डिवाइडर की सिंचाई।
- निगम के वाहनों की धुलाई।
- सार्वजनिक सुविधाघरों की धुलाई।
- सुविधाघरों के फ्लश में।

### यह होगा फायदा
- सीवर को पहले नालों में बहाया जाता था। इससे बीमारियां फैलने का खतरा खत्म।
- यह गंदा पानी नालों से होकर शिप्रा में मिलने की समस्या नहीं।
- पानी का दोबारा उपयोग होने से साफ पानी की बचत।

### यह स्वच्छता का एक भाग
*सीवर वाटर को ट्रीट कर उसका दोबारा उपयोग करने की व्यवस्था नगर निगम ने की है। यह भी स्वच्छता का एक भाग है। कम खर्च में सीवर वाटर को दोबारा उपयोगी बनाया जा रहा है।*
**प्रतिभा पाल,** निगमायुक्त

### 95 प्रतिशत पानी का दोबारा उपयोग करने की व्यवस्था

तकनीकी विशेषज्ञ दुष्यंत दुबे के अनुसार इस तकनीकी से 95 प्रतिशत पानी को दोबारा उपयोग के लायक बनाते हैं। विश्वभर में निस्तार और सीवर के पानी को दोबारा उपयोग लायक बनने की होड़ लगी है। सदावल में लगा नया प्लांट नई तकनीकी का है। इस तकनीकी को कंपनी पेटेंट भी करा रही है। इसमें कम खर्च में ज्यादा पानी दोबारा उपयोग लायक बनता है।

### स्मार्ट सिटी प्रोजेक्ट में शहर के गंदे पानी की सफाई होगी

इधर स्मार्ट सिटी ने भी 402 करोड़ का सिवरेज प्लान लागू किया है। यह काम 2019 में पूरा होने की संभावना है। इसके लिए पूरे शहर में 400 किलोमीटर की सीवर पाइप लाइन डाली जा रही है। यह पानी मंगलनाथ के आगे बनाए जा रहे ट्रीटमेंट प्लांट में जाएगा। यहां इसे साफ कर शिप्रा में छोड़ेंगे। इस पानी का उपयोग किसान भी कर सकेंगे।

**40,000 liters** of water is saved and reused every day, best ever efficiency any plant has ever got.


**Presented to Shri Dushyant Dubey, Director**

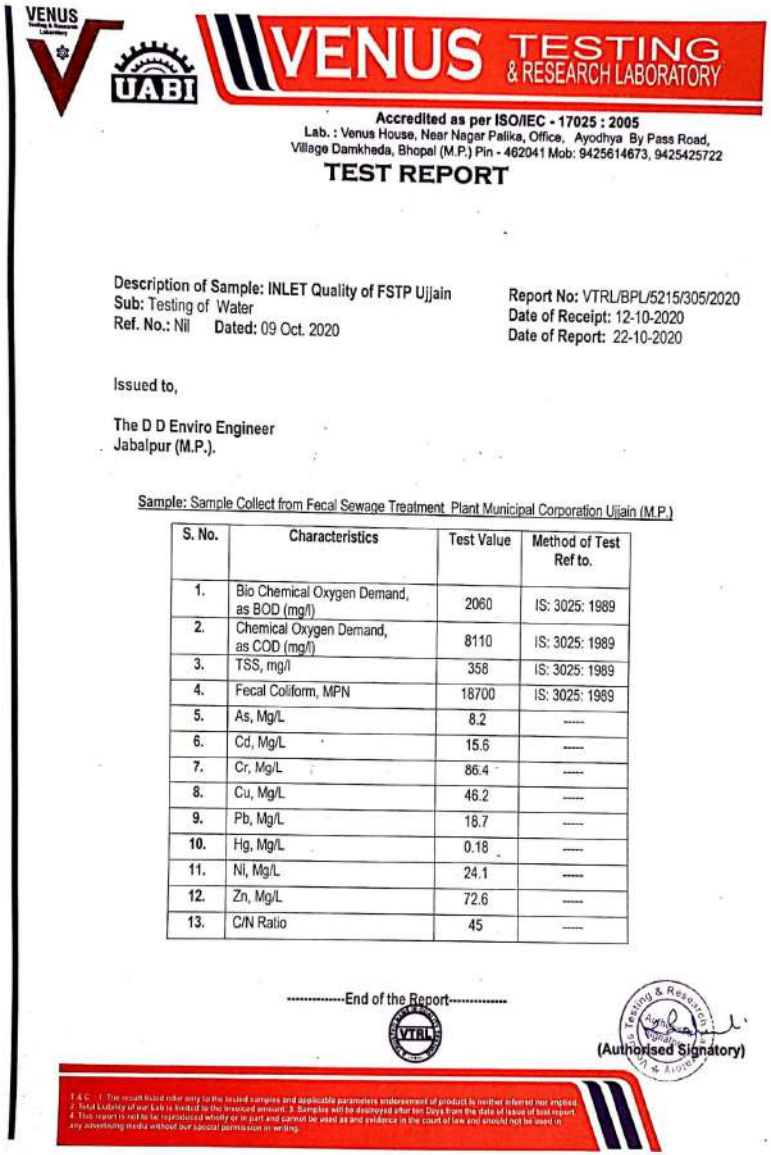
DB Builders and Enviro Engineers, is located at Shivhari complex, near Gulzar hotel, Mahannada, Nagpur Road, Jabalpur, M.P. They have devised new technologies for water saving and recycling purposes. They are involved in researche for economical, compact and fast methods to process faecal sludge and has also developed the low cost integrated Hyper CORE FSTP (faecal sludge treatment plant). Plant's capacity is 4.75 kl/d and 80% of water is used in several other activities other than irrigation, landscaping and industrial use, after treatment in the plant.

**Benefits**

- Low maintenance cost
- Low electricity requirement
- No odour after first stage treatment and less sludge generation
- Easy operation of the system
- Lower land requirement

Awareness regarding water conservation measures and use innovative technology was spread through YouTube, newspaper articles and brochures.

This technology won **National water award 2018** on 25 February 2019 by ministry of water resources, river development and ganga rejuvenation.



VENUS TESTING & RESEARCH LABORATORY

Accredited as per ISO/IEC - 17025 : 2005
Lab. : Venus House, Near Nagar Palika, Office, Ayodhya By Pass Road,
Village Damkheda, Bhopal (M.P.) Pin - 462041 Mob: 9425614673, 9425425722

**TEST REPORT**

Description of Sample: INLET Quality of FSTP Ujjain
Sub: Testing of Water
Ref. No.: Nil Dated: 09 Oct. 2020

Report No: VTRL/BPL/5215/305/2020
Date of Receipt: 12-10-2020
Date of Report: 22-10-2020

Issued to,

The D D Enviro Engineer
Jabalpur (M.P.).

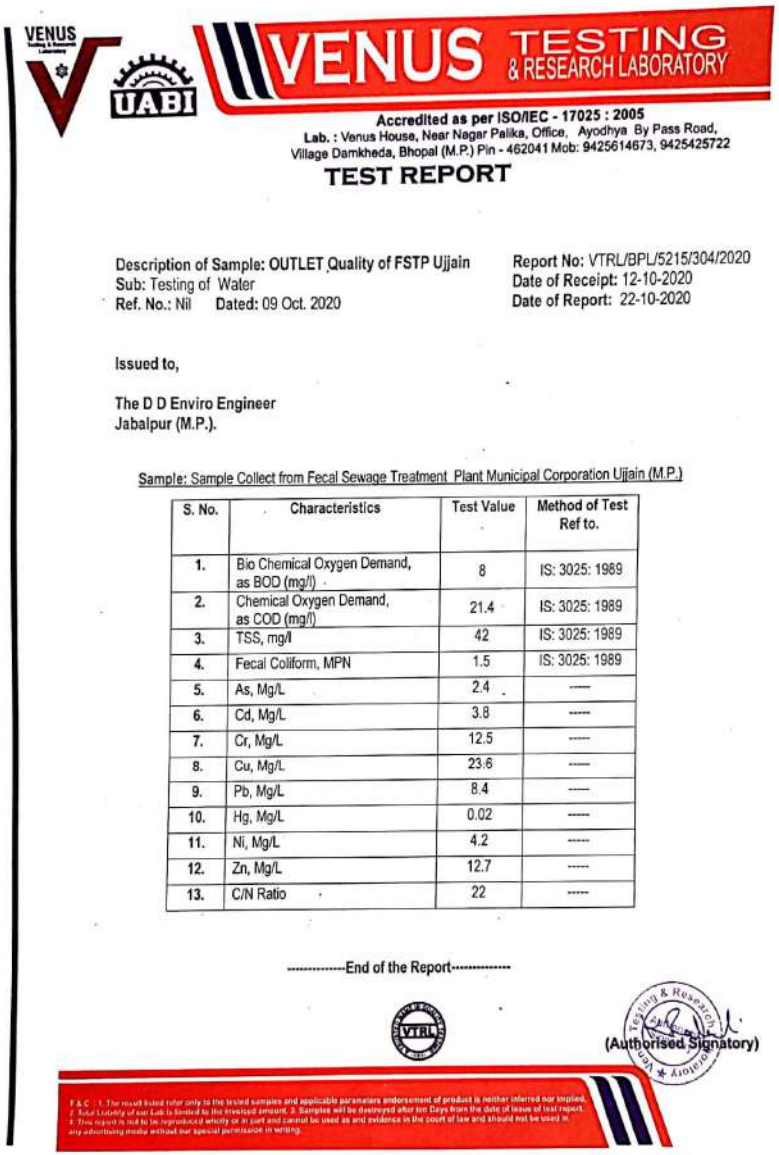
Sample: Sample Collect from Fecal Sewage Treatment Plant Municipal Corporation Ujjain (M.P.)

| S. No. | Characteristics | Test Value | Method of Test Ref to. |
|---|---|---|---|
| 1. | Bio Chemical Oxygen Demand, as BOD (mg/l) | 2060 | IS: 3025: 1989 |
| 2. | Chemical Oxygen Demand, as COD (mg/l) | 8110 | IS: 3025: 1989 |
| 3. | TSS, mg/l | 358 | IS: 3025: 1989 |
| 4. | Fecal Coliform, MPN | 18700 | IS: 3025: 1989 |
| 5. | As, Mg/L | 8.2 | ----- |
| 6. | Cd, Mg/L | 15.6 | ----- |
| 7. | Cr, Mg/L | 86.4 | ----- |
| 8. | Cu, Mg/L | 46.2 | ----- |
| 9. | Pb, Mg/L | 18.7 | ----- |
| 10. | Hg, Mg/L | 0.18 | ----- |
| 11. | Ni, Mg/L | 24.1 | ----- |
| 12. | Zn, Mg/L | 72.6 | ----- |
| 13. | C/N Ratio | 45 | ----- |

----------End of the Report----------

(Authorised Signatory)

T & C : 1. The result listed refer only to the tested samples and applicable parameters endorsement of product is neither inferred nor implied. 2. Total Liability of our Lab is limited to the invoiced amount. 3. Samples will be destroyed after ten Days from the date of issue of test report. 4. This report is not to be reproduced wholly or in part and cannot be used as and evidence in the court of law and should not be used in any advertising media without our special permission in writing.



VENUS TESTING & RESEARCH LABORATORY

Accredited as per ISO/IEC - 17025 : 2005
Lab. : Venus House, Near Nagar Palika, Office, Ayodhya By Pass Road,
Village Damkheda, Bhopal (M.P.) Pin - 462041 Mob: 9425614673, 9425425722

**TEST REPORT**

Description of Sample: OUTLET Quality of FSTP Ujjain
Sub: Testing of Water
Ref. No.: Nil Dated: 09 Oct. 2020

Report No: VTRL/BPL/5215/304/2020
Date of Receipt: 12-10-2020
Date of Report: 22-10-2020

Issued to,

The D D Enviro Engineer
Jabalpur (M.P.).

Sample: Sample Collect from Fecal Sewage Treatment Plant Municipal Corporation Ujjain (M.P.)

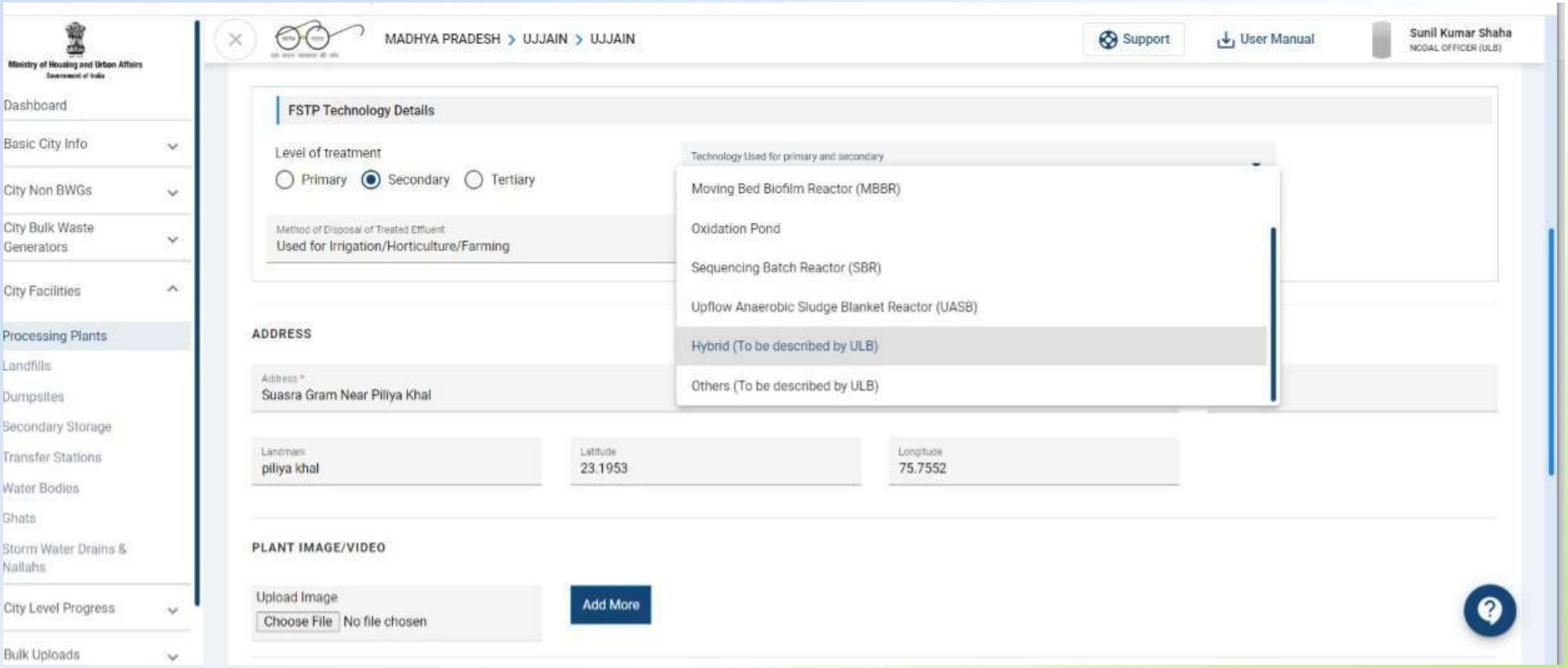
| S. No. | Characteristics | Test Value | Method of Test Ref to. |
|---|---|---|---|
| 1. | Bio Chemical Oxygen Demand, as BOD (mg/l) | 8 | IS: 3025: 1989 |
| 2. | Chemical Oxygen Demand, as COD (mg/l) | 21.4 | IS: 3025: 1989 |
| 3. | TSS, mg/l | 42 | IS: 3025: 1989 |
| 4. | Fecal Coliform, MPN | 1.5 | IS: 3025: 1989 |
| 5. | As, Mg/L | 2.4 | ----- |
| 6. | Cd, Mg/L | 3.8 | ----- |
| 7. | Cr, Mg/L | 12.5 | ----- |
| 8. | Cu, Mg/L | 23.6 | ----- |
| 9. | Pb, Mg/L | 8.4 | ----- |
| 10. | Hg, Mg/L | 0.02 | ----- |
| 11. | Ni, Mg/L | 4.2 | ----- |
| 12. | Zn, Mg/L | 12.7 | ----- |
| 13. | C/N Ratio | 22 | ----- |

----------End of the Report----------

(Authorised Signatory)

T & C : 1. The result listed refer only to the tested samples and applicable parameters endorsement of product is neither inferred nor implied. 2. Total Liability of our Lab is limited to the invoiced amount. 3. Samples will be destroyed after ten Days from the date of issue of test report. 4. This report is not to be reproduced wholly or in part and cannot be used as and evidence in the court of law and should not be used in any advertising media without our special permission in writing.

**Test report** of INLET & OUTLET quality of FSTP Ujjain




Ministry of Housing and Urban Affairs (MoHUA), adopted Hybrid technology in Swachhta Toolkit 2020-21.

JABALPUR ENGINEERING COLLEGE, JABALPUR
CONSULTANCY REPORT

No. CE/MKK/RC/2702/1862 Jabalpur, Dated 23-8-2018

To,

Engineer Dushyant Dubey
M/S D.D. Builders & Infra. Services,
SF-2, Shivhari Complex , Nagpur Road,
JABALPUR

Sub Proof Checking of Design & Drawings of proposed plan for Fecal Sludge Treatment Plant.

Ref.: Your letter No. FSTP/TS/01, dated 06/8/2018.

With reference to above letter the proof checking of submitted design & drawings of proposed plan for Fecal Sludge Treatment Plant (Septage) has been done.

Following points are observed:

1. Main objectives of the project is to reduce the strength of fecal sludge by biological and chemical treatment.
2. The Fecal Sludge Treatment Plant is designed for 50 KLD capacity on the basis of 20 hrs operation per day.
3. The design parameters considered are Flow, pH, Suspended solids, Bio-chemical Oxygen Demand, Chemical Oxygen Demand, Total Suspended Solids and Oil & Grease.
4. Six test reports of VENUS TESTING & RESEARCH LABORATORY, Bhopal conducted on samples taken at different stages from STP plant Nagar-Nigam, Ambikapur (C.G.) showing considerable reduction in Strength parameters considered.
5. Design calculations of raft foundation for Bio-Digester is done on the basis of SBC of soil of 150 kN/m$^2$.
6. Reinforcement used in the design of concrete elements is CTD bars with yield strength= 415 N/mm$^2$ and concrete grade is M25 for structural elements.

In view of above, submitted design & drawings of proposed plan for Fecal Sludge Treatment Plant (Septage) are found satisfactory and hence approved with corrections. Corrections are shown with red ink on drawing sheet.

23/8/18

(Dr. R. Chandak)
Professor & Head,
Civil Engg. Deptt.

(Prof. M.K. Koshta)
Asso. Professor
Civil Engg. Deptt.

Dr. Rajeev Chandak
Ph.D., IIT Roorkee
Professor & Head
Deptt. of Civil Engineering
Jabalpur Engineering College
Jabalpur (M.P.)

Principal
Jabalpur Engg. College,
Jabalpur 482011

PRINCIPAL
GOVT. ENGINEERING COLLEGE
JABALPUR (M.P.)

**Technical Sanction** from Government Engineering College (Ranked 34 in INDIA by Outlook)

unicef
for every child

# CERTIFICATE

## OF APPRECIATION

*This certificate is awarded to*

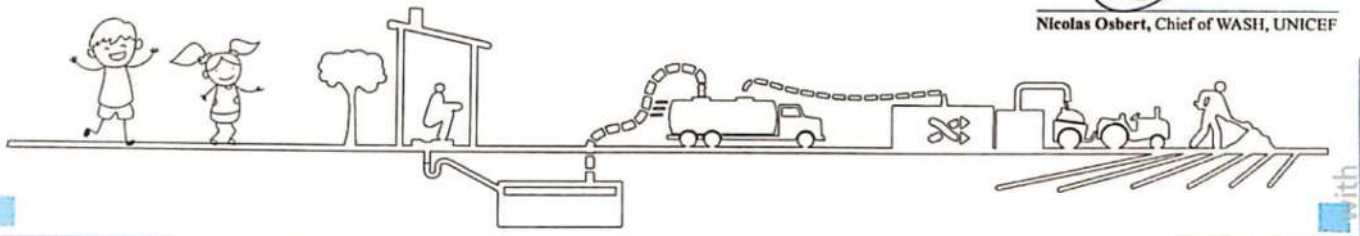
Dushyant Dubey *of* DD Builders

*for excellent insight imparted through participation in the National Workshop on*

***Investing in the Sanitation Cycle***

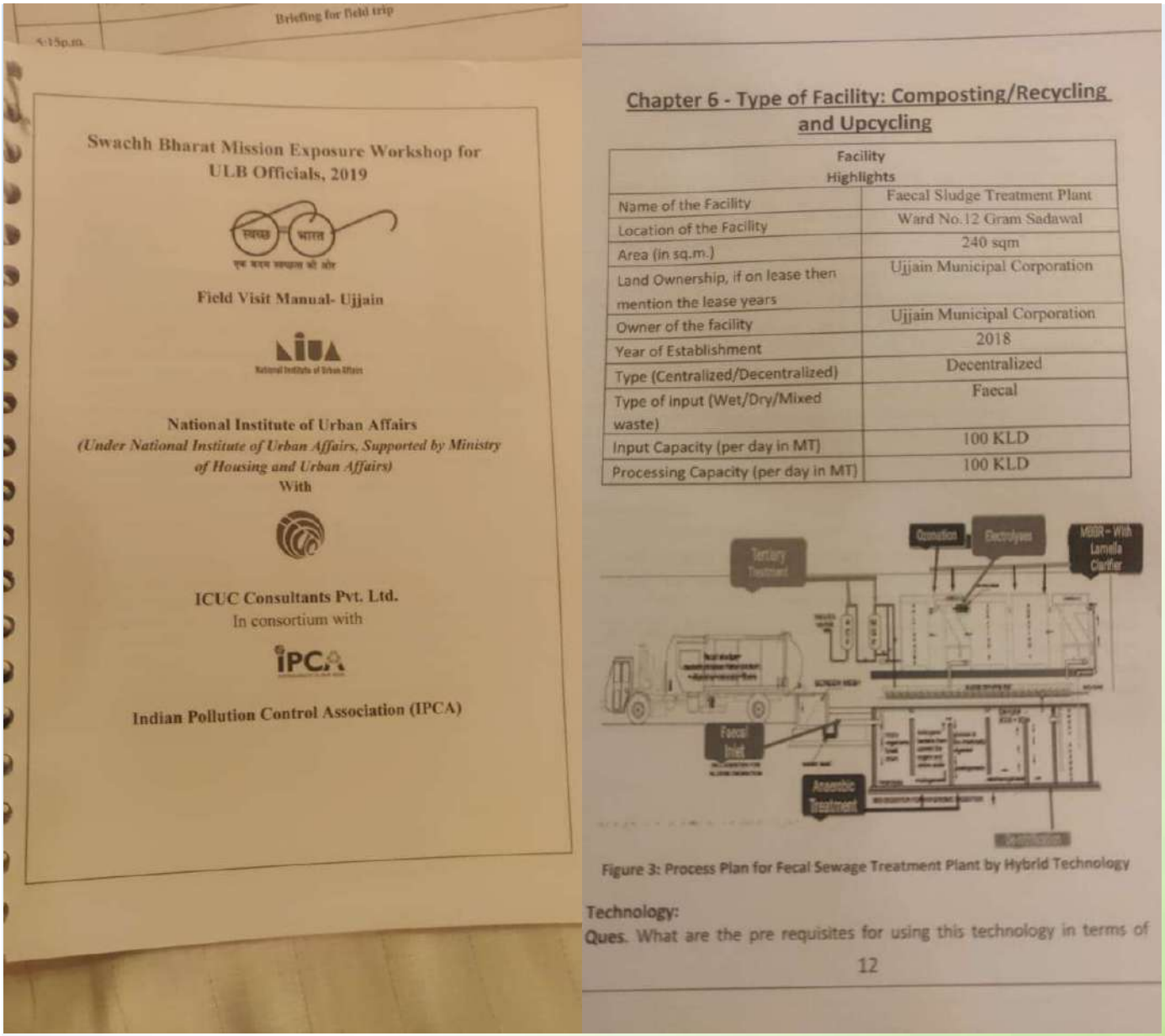
*9 –10 January, 2020 in New Delhi*

**Nicolas Osbert,** Chief of WASH, UNICEF



unicef | for every child


Presentation of this new technology in Exposure Workshop 2019, conducted by NIUA



Swachh Bharat Mission Exposure Workshop for ULB Officials, 2019

Field Visit Manual- Ujjain

National Institute of Urban Affairs
*(Under National Institute of Urban Affairs, Supported by Ministry of Housing and Urban Affairs)*
With

ICUC Consultants Pvt. Ltd.
In consortium with

Indian Pollution Control Association (IPCA)

Chapter 6 - Type of Facility: Composting/Recycling and Upcycling

| Facility Highlights | |
|---|---|
| Name of the Facility | Faecal Sludge Treatment Plant |
| Location of the Facility | Ward No.12 Gram Sadawal |
| Area (in sq.m.) | 240 sqm |
| Land Ownership, if on lease then mention the lease years | Ujjain Municipal Corporation |
| Owner of the facility | Ujjain Municipal Corporation |
| Year of Establishment | 2018 |
| Type (Centralized/Decentralized) | Decentralized |
| Type of input (Wet/Dry/Mixed waste) | Faecal |
| Input Capacity (per day in MT) | 100 KLD |
| Processing Capacity (per day in MT) | 100 KLD |

Figure 3: Process Plan for Fecal Sewage Treatment Plant by Hybrid Technology

**Technology:**

**Ques.** What are the pre requisites for using this technology in terms of

12

NIUA (National Institute of Urban Affairs) 2019 mentioned our technology in workshop Manual For ULBs (Chapter 6)



Represented Madhya Pradesh in national workshop conducted by Ministry of housing And urban affairs, on 150th anniversary of our father of the nation, Swachh Bharat Mission.


**National Water Award 2018**

Awarded by Shri Nitin Gadkari Ji, organized by Water resources, River Development & Ganga Rejuvenation

**Citation** by Commissioner Municipal Corporation Ujjain

MUNICIPAL CORPORATION UJJAIN (M.P.)
OFFICE :- (0734) 2550659
FAX :- (0734) 2560200, 2535200
e mail : nagarnigamujjain@yahoo.com
website :www. nagarnigamujjain.org

क्रमांक/स्वा.वि./SBM /2019/ उज्जैन, दिनांक :

## प्रशस्ति पत्र

"स्वच्छ भारत मिशन"

स्वच्छ भारत मिशन के अंतर्गत "स्वच्छ सर्वेक्षण 2019" (SS-2019), G.F.C- Star rating एवं ODF ++ के संदर्भ उज्जैन शहर को ODF ++ करने हेतु 50 KLD का फिकल स्लज ट्रीटमेंट प्लांट (HYPER CORE F.S.T.P. PATENTED TECH.) डी. डी. बिल्डर्स एवं डी .डी इनवाईरो इंजीनियरिंग जबलपुर मध्यप्रदेश द्वारा स्वच्छ भारत मिशन अंतर्गत के रूप में विशेष सहयोग प्रदान किया गया।

**डाइरेक्टर इंजी. दुष्यंत दुबे** द्वारा पूर्ण निष्ठा, ईमानदारी व लगन से प्रदाय किये गए कार्यो को गुणवत्तापूर्ण तरीके से पूर्ण किया गया ।

आपके द्वारा अनुशासित रूप से "स्वच्छ सर्वेक्षण 2019" में किये गये सहयोग हेतु संस्था हृदय से आपका आभार व्यक्त करती है, और आपके उज्जवल भविष्य की कामना करती है ।

शुभकामनाओं के साथ

(सुश्री प्रतिभा पाल) I.A.S.
आयुक्त
उज्जैन नगर पालिक निगम

D.D. BUILDERS
& Infrastructure Services

# Thank You