

# A SUSTAINABLE GREEN INITIATIVE THROUGH

## SIBF SYSTEM

*- a natural, eco-friendly & sustainable wastewater treatment technology that indeed works!*

- **SIBF (Solid Immobilised Bio-Filter) system is developed by M/S. ENERGY TECH SOLUTIONS PVT. LTD. - an environmental engineering firm based in Pune since 1996.**
- **We offer our technology (SIBF system) which is based on ecological engineering. The wastewater treatment is brought about by the ecosystem developed for the specific requirement.**
- **The pollution problem is solved and the treated water is available for reuse, thereby contributing to a cleaner and better environment.**

**APPLICATION: SIBF system is designed and installed for organic (biodegradable) wastewater generated from townships, educational institutes, ashrams, canteens, hotels & resorts, entertainment parks & multiplexes, food processing industries, slaughter houses, etc.**

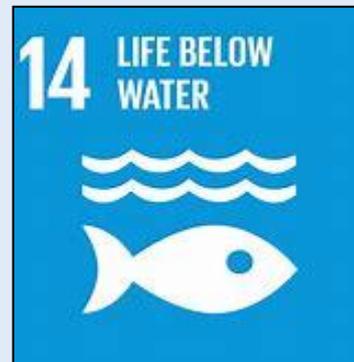
## ABOUT US

- Energy Tech Solutions P. Ltd. was founded in 1996 by 3 post graduates in Environmental Engineering from VJTI, Mumbai
  - Navin Singh (COEP-1991), Gopikrishna KVS & Rahul Babar (MIT-1991)
- Aggregate Experience of over 60 years in waste water treatment
- Unique technology developed as SIBF system
- Installations at 100+ places where users are enjoying the benefits since many years of reusing treated water for landscaping & gardening, organic farming, toilet flushing, construction, etc.
- SIBF System is entirely different from conventional STPs/ETPs & other similar looking natural methods such as Root zone, Reed bed system, Phytorid, SBT, Dewats, Ecosan etc.

## WHY SIBF SYSTEM SHOULD BE ADOPTED?

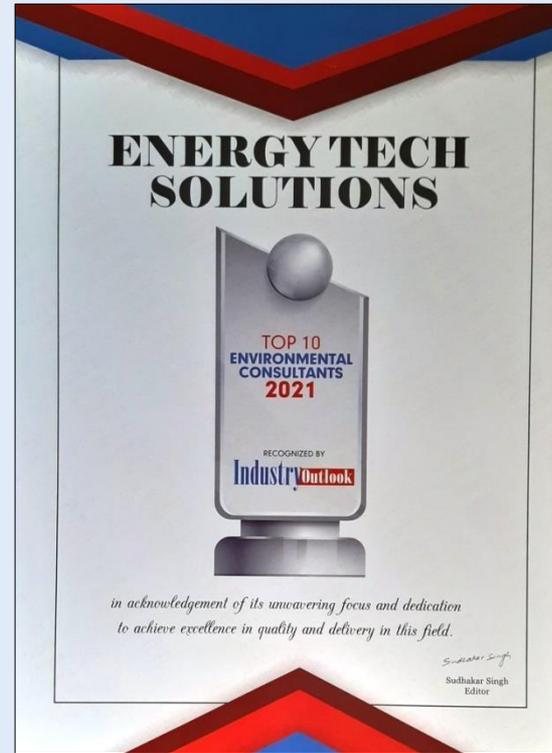
- Dual benefit of pollution abatement and solving water scarcity problem by reuse of treated water.
- Saves 80 - 90% on electricity.
- Easy to operate - only gardener level operator required.
- Hence, saves 80 - 90% on O & M cost (**thus, saves lakhs / crores of rupees**).
- No problem of flow fluctuations in holidays / vacations.
- No secondary sludge.
- Maintaining green and beautiful areas of the institution / industry throughout the year.
- Building the green image of the institution / industry by adopting green technology.
- Becoming a role model for other institutions / industry.
- Water conservation; use of treated water shall reduce the drinking quality water / tanker water demand.
- Providing treated water to nearby villages for sustainable agriculture , thereby, recharging of groundwater.
- Scoring rating points for green building certifications like GRIHA, LEED etc.
- Nation building through conservation of water and energy.
- **In fact, due to the above mentioned benefits, implementation of this really working STP can also be a good business model.**

## SIBF SYSTEM HELPS IN REACHING 5 SDGs





**CII - NATIONAL AWARD WINNER  
'MOST INNOVATIVE TREATMENT METHOD  
- SIBF SYSTEM'**



# ECONOMICS OF SIBF vs CONVENTIONAL STP

For STP capacity: 2,50,000 lit/day

	Item	Conventional STP	SIBF system
1	Capital cost	X	Y
2	Power requirement	Very high	Very low
3	Skill requirement	High level skill 24 hours x 365 days	Gardener level skill One shift only
4	Sludge (Secondary)	Produced & needs to be disposed	Not produced
5	Annual O & M cost	About Rs. 100 per KL; Rs. 90 lacs per annum <u>*No recovery</u> as treated water availability is remote possibility	About 90% saving <b>*Additional savings on reuse of treated water</b>
6	O & M cost for 5 years	Expenditure of more than 4.5 Cr	Savings of @ 4.2 crores in O & M cost. Additional savings through reuse of treated water.
7	Annualized cost in 5 years	<b>Capital cost + Rs. 4.5 Cr O &amp; M cost</b>	<b>Payback within few years!</b>

**SAVE TANKERS! - By having a REALLY WORKING STP [SIBF SYSTEM]**

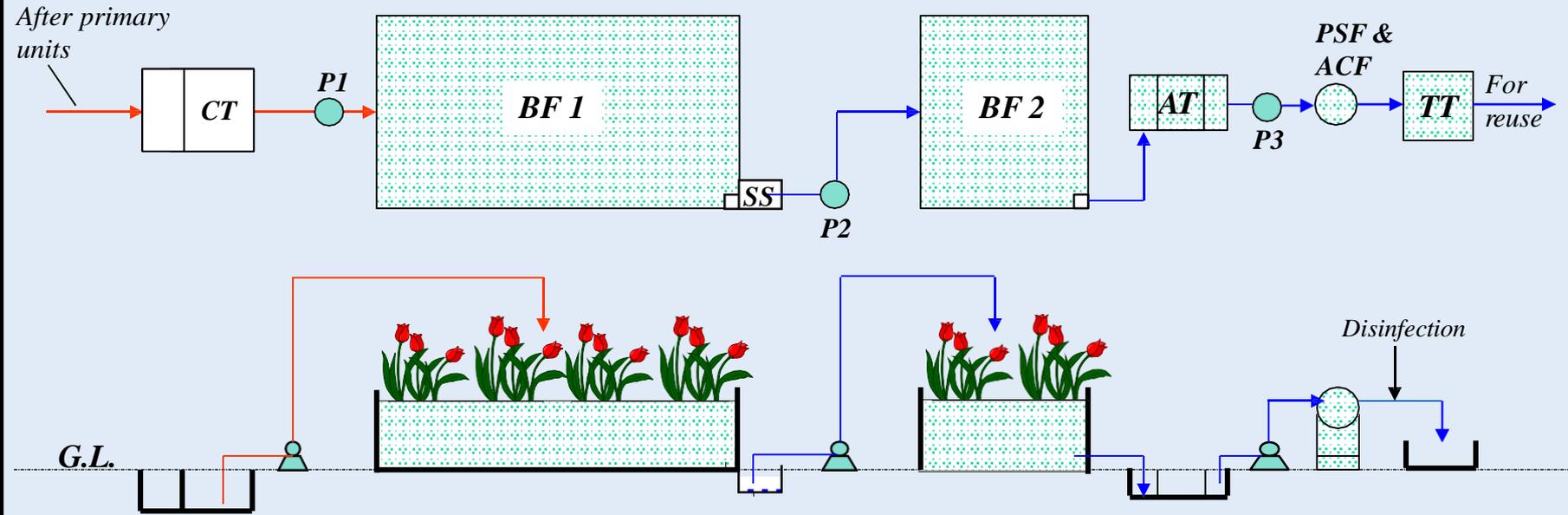
**SIBF SYSTEM AT NANDANVAN PARK APARTMENT  
[M/s. SWAGAT BUILDERS, BHUGAON]**

YouTube link: [https://youtu.be/GD\\_7fH0W6Z8](https://youtu.be/GD_7fH0W6Z8)

<b>Location</b>	: Pune, Maharashtra	<b>Installed in</b>	: 2021
<b>Wastewater</b>	: Sewage	<b>Design Flow</b>	: 25 m <sup>3</sup> /day
<p><b>Need:</b> Nandanvan Park Apartment has been built by M/s. Swagat Builders at Bhugaon. The building houses 42 residential flats. They have a daily water requirement of 2-3 tankers. As the results and reports of various available treatment systems (conventional, package STPs, other type of natural technologies, etc.) were not convincing, the builder was looking for a REALLY WORKING STP.</p>		 <p>SIBF system set up in side margin</p>	
<p><b>Solution / Benefits:</b> After proper evaluation, the builder opted to install the eco-friendly SIBF system.</p> <ul style="list-style-type: none"> <li>➤ Daily 2.5 tankers of odour-free treated water are available for reuse. The potable water requirement is reduced by 50%.</li> <li>➤ Meets pollution norms. Daily disposal problem / cost of untreated wastewater is solved permanently.</li> <li>➤ Savings: Rs. 2,000/- daily (Rs.7.5 lakh annually).</li> <li>➤ Very low O &amp; M costs: Rs. 75/- daily (Rs. 30,000/- annually) because of: <ul style="list-style-type: none"> <li>○ negligible power (only about 8 units daily)</li> <li>○ unskilled operator: The society watchman operates the system.</li> </ul> </li> <li>➤ The treated water is being reused for toilet flushing and gardening. The surplus treated water can be used / sold for construction purpose.</li> <li>➤ Payback period is within few years.</li> <li>➤ Thus, the STP is contributing to revenue generation for the apartment.</li> <li>➤ 90% STP area looks like garden and can be part of landscaping / side margin / above driving or parking area on the podium / terrace / amenity space.</li> </ul>		 <p>SIBF system - a beautiful garden!</p>	
		 <p>Final treated water</p>	
		 <p>STP treated water reused for flushing</p>	

*Environmental Protection – it's Now or Never!*

# TYPICAL HYDRAULIC FLOW DIAGRAM FOR SIBF SYSTEM



## **Legend:**

**CT** – Collection tank  
**BF1** - Biofilter 1  
**SS** – Side sump  
**BF2** - Biofilter 2  
**AT** – Alum tank  
**PSF** – Pressure Sand Filter  
**ACF** – Activated Carbon Filter  
**TT** - Treated water tank  
**P** - Non clog, self priming pumps with automation

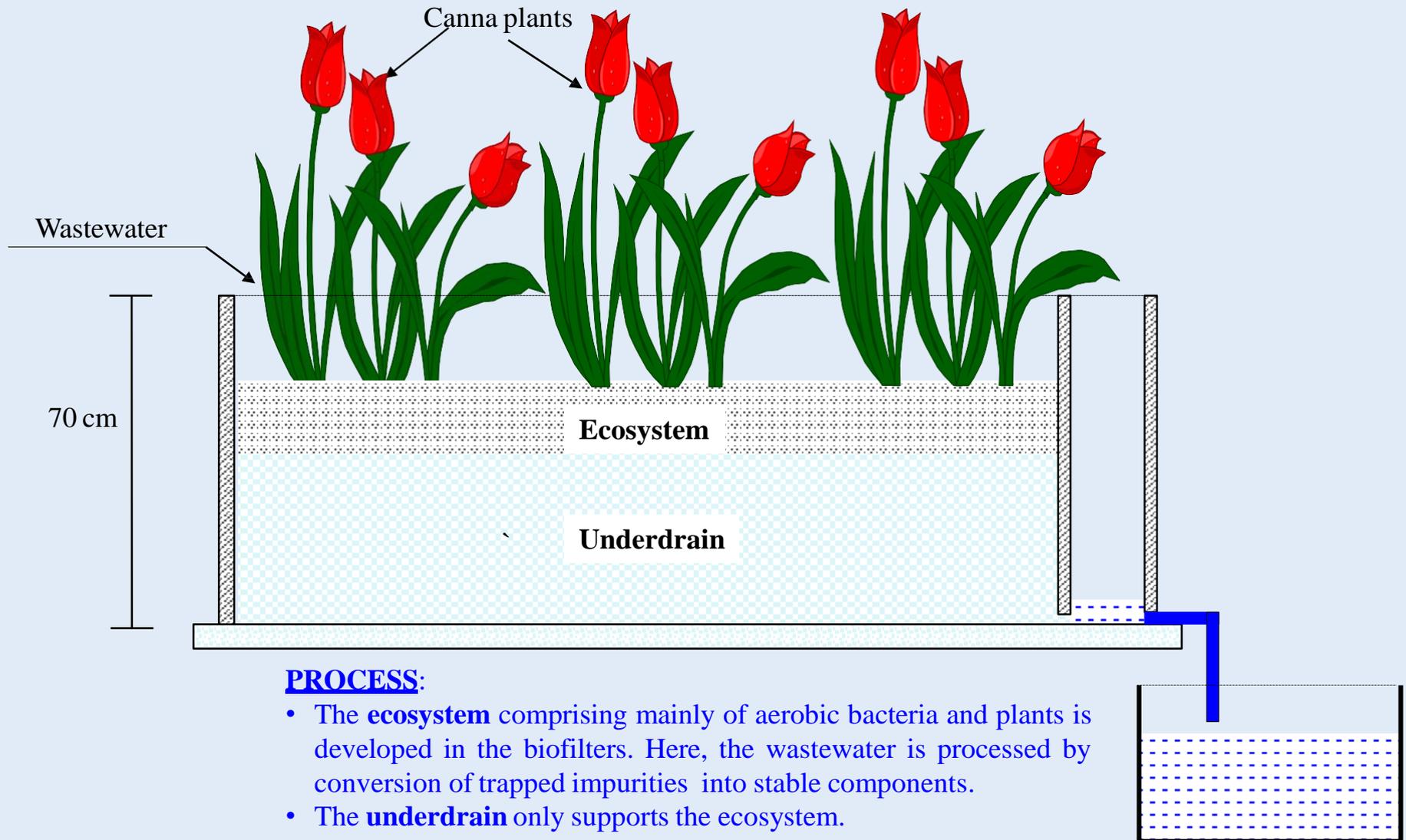


*Canna plants (flowering plants)*

## **Note:**

**The biofilters can be built in the landscaping / side margin / elevated areas like podium, above parking area, terrace / amenity space, etc. This biofilter area looks like a beautiful flowering garden, thus, merging with landscaping.**

## CROSS SECTION OF BIOFILTER



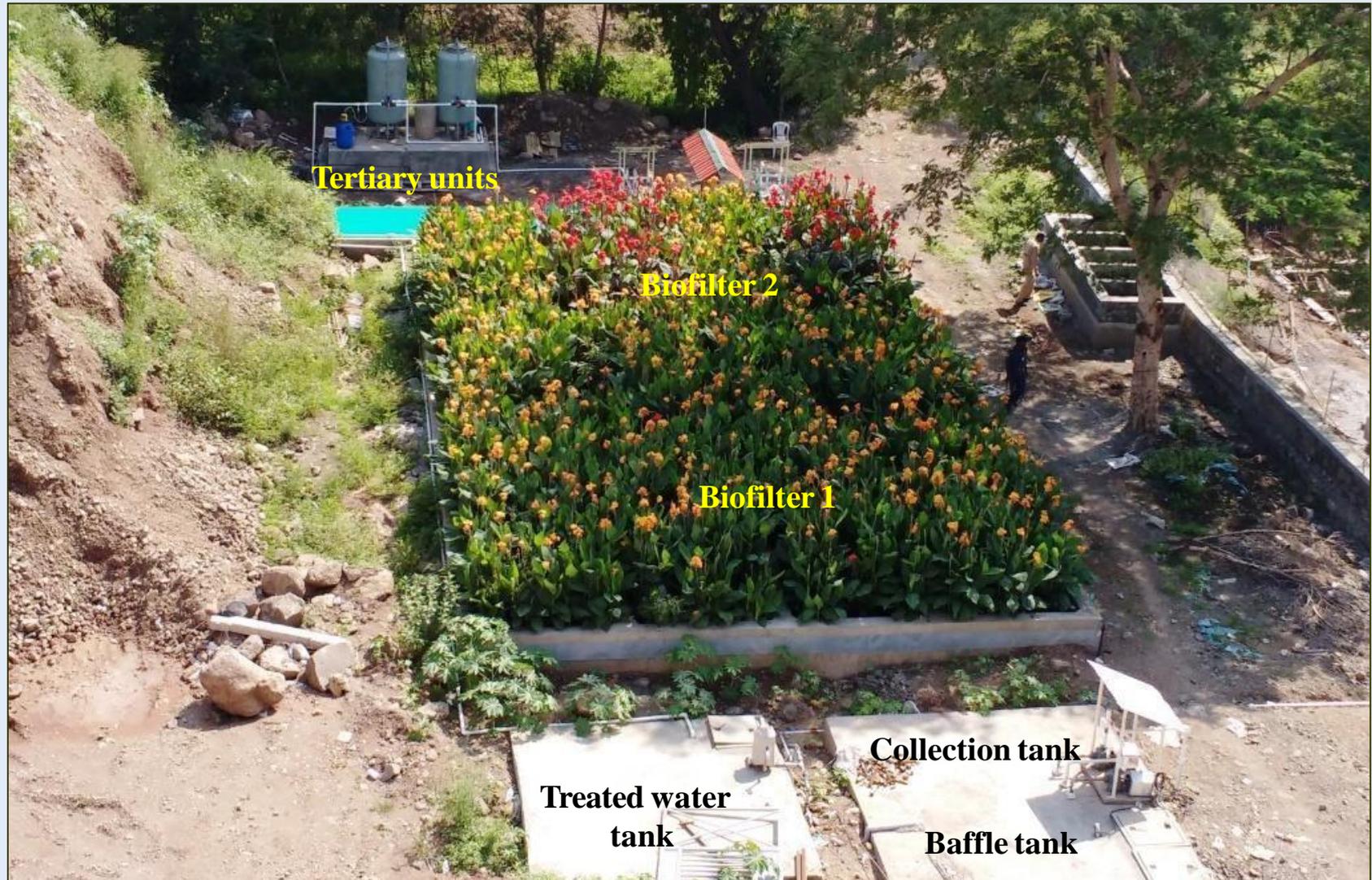
### PROCESS:

- The **ecosystem** comprising mainly of aerobic bacteria and plants is developed in the biofilters. Here, the wastewater is processed by conversion of trapped impurities into stable components.
- The **underdrain** only supports the ecosystem.

## TYPICAL PIPING DISTRIBUTION IN BIOFILTERS



**SIBF SYSTEM AT AT MAHARSHI KARVE'S SOFT, PUNE**  
**[50 KLD – SINCE 2015]**



➤ *YouTube link for video clip: <https://youtu.be/niVCfVeZtIo>*

## **YouTube LINKS FOR SOME SIBF SYSTEM INSTALLATIONS**

*Latest clip of SIBF system at Zorabian Chicks Pvt. Ltd., Khopoli, Maharashtra (since 2007)*

<https://youtu.be/y4zd1uMih3w>

*Latest clip of SIBF system at Bharati Medical Hospital, Sangli (Since 2009)*

<https://youtu.be/bsdOXyUBUnM>

*SIBF system at Art of Living main ashram, Bangalore (Since 2009)*

<https://youtu.be/PShMdcNtLG8>

*SIBF system at J Krishnamurti Foundation's Sahyadri School, Pune (Since 2018)*

[https://youtu.be/OFW8teiA\\_Bc](https://youtu.be/OFW8teiA_Bc)

*SIBF system at Abhiruchi Resort, Pune (Since 2012)*

<https://youtu.be/G4FSXkPdlgs>

*SIBF system at Maharshi Karve institute (SOFT), Pune (Since 2015)*

<https://youtu.be/niVCfVeZtIo>

*SIBF system at Swagat Nandanwan Apartment, Bhugaon, Pune (Since 2020)*

[https://youtu.be/GD\\_7fH0W6Z8](https://youtu.be/GD_7fH0W6Z8)

*SIBF system at Chaitanya old age home where non-functional Root zone converted (Since 2009)*

[https://youtu.be/nwqAmR\\_uqyw](https://youtu.be/nwqAmR_uqyw)

*SIBF system at Atmantan Health Resort, Mulshi (Pune) (Since 2015)*

<https://www.youtube.com/watch?v=S9D08t3c6n8>

*SIBF system at Zorabian Chicks, Khopoli (Since 2007)*

<https://youtu.be/NJ2wc33Wjrc>

*SIBF system at Swaminarayan Temple, Pune (Since 2017)*

<https://youtu.be/joCoVu50Odo>

*SIBF system at Chinmaya Vibhooti, Pune (Since 2009)*

<https://youtu.be/OSCynipYEBM>

*SIBF system at Jnanprabodhini Residential School, Osmanabad (Since 2011)*

<https://youtu.be/5Q6F83vMON8>

*SIBF system at Star Oxochem, Gujarat (Since 2008)*

<https://youtu.be/Ykfxw3Du8X0>

*SIBF system at Skoda Volkswagen (I) Pvt. Ltd., Pune (Since 2019)*

<https://youtu.be/CjffXz2B9Uc>

*SIBF system at Millennium National School, Pune (Since 2019)*

<https://youtu.be/qj2oil7n-HU>

*SIBF system at Raigad Ropeway (Since 2025)*

<https://youtu.be/gv0aQYAPWFc>

*SIBF system at Scarlet Hotel, Matheran (Since 2024)*

<https://youtu.be/3d6h4PUcBOq>

# TEST REPORTS OF FINAL TREATED WATER



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Fringet, Pune 412 115, India.

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polytest@polytestlabs.com  
www.polytestlaboratories.com



TEST REPORT  
No. **30640-23**

Page 1 of 1  
Lab. No. NTC/MS/2023/0000000000

## SAMPLE DATA

Sample: **P: 0302, Final Treated Water (Phase 1)**  
 Sender: **Zombles Chicks Pvt. Ltd.**  
 Address: **Chiknalk, Knight Khogad Road, Dist- Raigad**  
 Container: **1 no(s) 1 L Plastic Bottle, 1000 ml sample**  
 Sampling type: **Grab**  
 Collected on: **25-Sep-23 at 15:43 hrs**  
 Received at lab on: **25-Sep-23 at 15:53 hrs**  
 Testing completed on: **26-Sep-23**  
 Test results issued on: **30-Sep-23**

## TEST DATA

Test	Unit	Result	Test Method
1. BOD3 at 27°C	mg/l	4.2	IS 3023 (Part 4)
2. COD	mg/l	24	APHA 23rd Edition, 5200 B
3. Total Suspended Solids	mg/l	9	APHA 23rd Edition, 2540 D
4. Total Oil & Grease	mg/l	<1	APHA 23rd Edition, 9250 B

**OPINIONS, INTERPRETATIONS & REMARKS**

- The results expressed as 'C' are below Method Detection Limit.
- The above analysis pertains only to 'as received' sample and without prejudice to its source or process.
- The contents of this Test Report shall not be reproduced in part or in full in such a way that it will distort the findings.
- The sampling is not done by Polytest Laboratories.
- The uncertainty value of test results is available upon request for the tests covered under our current scope of NABL accreditation.

END OF OFFICIAL, INTERPRETATIONS & REMARKS  
 END OF TEST REPORT

Authorized by



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TEST REPORT  
No. **41818-23**

Page 1 of 1  
Lab. No. NTC/MS/2023/0000000000

## SAMPLE DATA

Sample: **P: 0302, Final Treated Water**  
 Sender: **Chiknalk Wellness Resort**  
 Address: **S. No. 277, Phase V/6B, Vengal Village, Tal. Mulshi, Dist. Pune**  
 Container: **1 no(s) 1 L Plastic Bottle, 1000 ml sample**  
 Sampling type: **Grab**  
 Collected on: **20-Jun-23 at 11:20 hrs**  
 Received at lab on: **20-Jun-23 at 14:20 hrs**  
 Testing completed on: **26-Jun-23**  
 Test results issued on: **26-Jun-23**

## TEST DATA

Test	Unit	Result	Test Method
1. BOD3 at 27°C	mg/l	5.2	IS 3023 (Part 4)
2. COD	mg/l	40.5	APHA 23rd Edition, 5200 B
3. Total Suspended Solids	mg/l	12	APHA 23rd Edition, 2540 D
4. Total Oil & Grease	mg/l	<3	APHA 23rd Edition, 9250 B
5. pH	-	7.58	APHA 23rd Edition, 4500 B-1

END OF OFFICIAL, INTERPRETATIONS & REMARKS  
 END OF TEST REPORT



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Website: www.polytestlaboratories.com



TEST REPORT  
No. **14178-21**

Page 1 of 1  
Lab. No. NTC/MS/2023/0000000000

## SAMPLE DATA

Sample: **P: 0302 Final Treated Water**  
 Sender: **Bharati Vidyapeeth Medical Foundation**  
 Address: **Waleswarwad, Sangli- Miraj Road, Miraj**  
 Container: **1 no(s) Plastic Bottle, 1000 ml sample**  
 Sampling type: **Grab**  
 Collected on: **19-Mar-22 at 14:15 hrs**  
 Received at lab on: **23-Mar-22 at 12:21 hrs**  
 Testing completed on: **24-Mar-22**  
 Test results issued on: **24-Mar-22**

## TEST DATA

Test	Unit	Result	Test Method
1. BOD3 at 27°C	mg/l	6.8	IS 3023 (Part 4)
2. COD	mg/l	25	APHA 23rd Edition, 5200 B
3. Total Suspended Solids	mg/l	10	IS 3023 (Part 1)

**OPINIONS, INTERPRETATIONS & REMARKS**

- The above analysis results pertain only to 'as received' sample and without prejudice to its source or process.
- The contents of this Test Report shall not be reproduced in part or in full in such a way that it will distort the findings.
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END OF OFFICIAL, INTERPRETATIONS & REMARKS  
 END OF TEST REPORT

Authorized by



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TEST REPORT  
No. **90844-23**

Page 1 of 1  
Lab. No. NTC/MS/2023/0000000000

## SAMPLE DATA

Sample: **P: 0701 Final Treated Water**  
 Sender: **Abharuchi Property**  
 Address: **Bhale Dong, Lohagad Road, Wagholse - Badliwad, Pune - 41**  
 Container: **1 no(s) 1 L Plastic bottle, 1000 ml sample**  
 Sampling type: **Grab**  
 Collected on: **07-Jul-23 at 15:30 hrs**  
 Received at lab on: **13-Jul-23 at 15:30 hrs**  
 Testing completed on: **18-Jul-23**  
 Test results issued on: **18-Jul-23**

## TEST DATA

Test	Unit	Result	Test Method
1. BOD3 at 27°C	mg/l	3.4	IS 3023 (Part 4)
2. COD	mg/l	20.5	APHA 23rd Edition, 5200 B
3. Total Suspended Solids	mg/l	<5	APHA 23rd Edition, 2540 D

**OPINIONS, INTERPRETATIONS & REMARKS**

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END OF OFFICIAL, INTERPRETATIONS & REMARKS  
 END OF TEST REPORT

Authorized by

# SOME DEFUNCT OTHER NATURAL STPs CONVERTED INTO SIBF SYSTEM

**Chaitanya Home  
Jambhulpada**



**Defunct reed bed ...**



**to SIBF system**

**Millennium School  
Pune**



**Defunct DEWATS...**



**to SIBF system**

**Sahyadri School  
Rajgurunagar**



**Defunct DEWATS...**



**to SIBF system**

# SIBF SYSTEM *at* SWAGAT NANDANVAN APARTMENTS, PUNE

- Capacity: 25 KLD (42 flats)
- Installed in the side margin along the boundary wall.
- Treated water used for toilet flushing and gardening; it can also be used for construction.
- Potable water requirement for the apartment reduced by 50%.



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**Test Report**  
 No: **43231-20**

LAB: TQ73M000000001

**SAMPLE DATA**

Source Location: **R-001 ETP Final Treated Water**

Container Details: **1 nos. Plastic Bottle**

Collection: **03-Mar-21 at 10:30 hrs with grab method**

Release at lab: **03-Mar-21 at 10:00 hrs**

Tester: **Swagat Promoter & Builders**

Address: **Shriwasti, Tal - Mulshi, Pune**

Testing completed on: **08-Mar-21**

**TEST DATA**

Test	Unit	Result	Method
1. BOD <sub>5</sub> at 20°C	mg/l	8	IS 3025 (Part 4)
2. COD	mg/l	32	APHA 521 (Part 5), IS 3025 B
3. Total Suspended Solids	mg/l	<5	IS 3025 (Part 1)

**OPINION, INTERPRETATION & REMARKS**

- The results expressed as "m" are based on the detection limit.
- Above analysis results apply only to the analyzed sample and without prejudice to its further analysis.
- The contents of this Test Report shall not be reproduced in part or in full in such a way that it will distort the findings.
- The responsibility is not shared by Polytest Laboratories.

Verified by: **Anand**

Authorized by: **Dr. S. S. Anand**  
 QM - Testing

Test Report No: **43231-20** Page 1 of 1

Issue 09/2018 - New structure - PGP 2018

ISO 9001 | ISO 14001 | ISO 45001 | ISO 17025 | SAAS/PC

Whom reliability matters the most

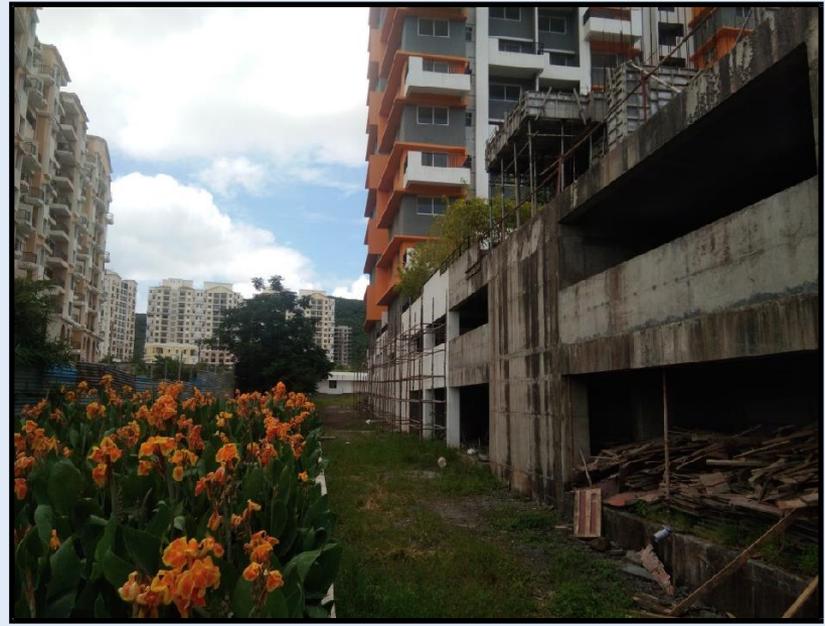


## SIBF SYSTEM

*at*

### DEVI CREST TOWNSHIP VADGAON, PUNE

- This is a 1,000 flat township.
- STP of 500 KLD has been planned in the side margin along the boundary wall.
- Phase I of 50 KLD has been installed.
- Treated water to be used for gardening and toilet flushing. Also, it can also be used for construction.



Environment  
Consultants

**ENERGY TECH**  
SOLUTIONS PVT. LTD.

# SOME SIBF SYSTEM INSTALLATIONS

**Bharati Hospital, Sangli  
Maharashtra [400 KLD]**



**Atmantan Wellness Centre, Pune  
Maharashtra [300 KLD]**

- MBBR converted to SIBF system
- Gold Rating – LEED Certification



**Abhiruchi Mall & Multiplex, Pune  
Maharashtra [200 KLD]**



# SOME SIBF SYSTEM INSTALLATIONS

**ZCPL – Food Industry,  
Maharashtra [250 KLD]**



**Jnanaprabodhini Institute,  
Osmanabad [50 KLD]**



**Sahyadri School,  
Rajgurunagar [40 KLD]**



# SOME SIBF SYSTEM INSTALLATIONS

**Art of Living - Main Ashram  
Karnataka [500 KLD]**



**Chinmaya Vibhooti, Pune  
Maharashtra [155 KLD]**



**Haailand Theme Park, Vijayawada  
Andhra Pradesh [300 KLD]**



# SOME SIBF SYSTEM INSTALLATIONS

**Star Oxochem Pvt. Ltd.,  
Gujarat [30 KLD]**



**Kimmins High School,  
Panchgani [40 KLD]**



**Swagat Apartments,  
Pune [30 KLD]**



## SOME SIBF SYSTEM INSTALLATIONS

**Chitale Bandhu Mithaiwale, Pune,  
Maharashtra [50 KLD]**



**Kalyani RND Center , Pune,  
Maharashtra [15 KLD]**



**Swaminarayan Temple, Pune  
Maharashtra [60 KLD]**

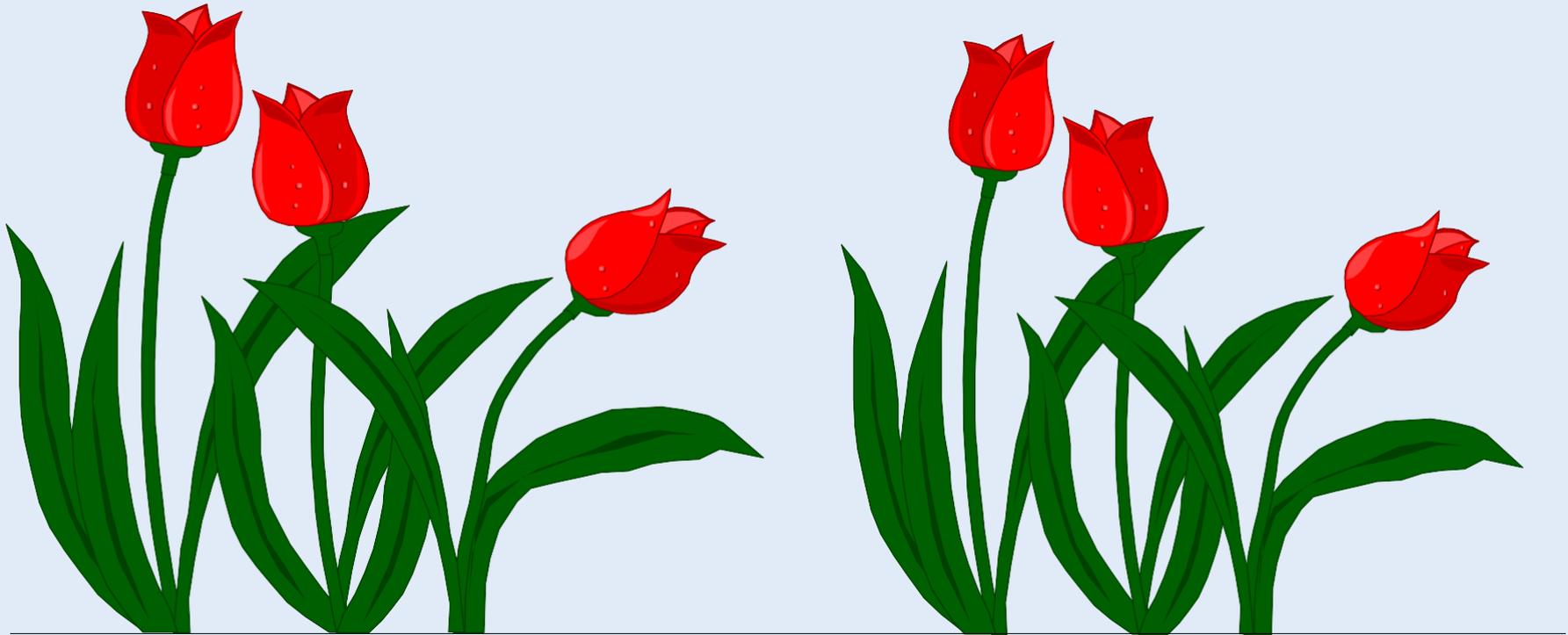


## LIST OF SOME SIBF SYSTEM INSTALLATIONS

- Bharati Vidyapeeth, Maharashtra State [3 STPs]
- Skoda Auto Volkswagen (India) Ltd., Pune [3 STPs]
- Art of Living International Centre, Karnataka State
- Kimmins High School, Panchgani, Maharashtra State
- Zorabian Chicks. P. Ltd., Khopoli, Maharashtra State
- God's Valley International School, Panchgani, Maharashtra State
- Jnanaprabodhini, Solapur, Maharashtra State
- Abhiruchi Multiplex, Pune, Maharashtra State
- Sri Sri Ayurveda Trust, Karnataka State
- Chinmaya Mission (Head Quarter), Maharashtra State [2 STPs]
- Haailand Theme based Entertainment Park, Andhra Pradesh State
- Star Oxochem Pvt. Ltd., Gujarat State
- Maharshi Karve Engineering Institute, Nagpur, Maharashtra State
- Akkha Masur Restaurant, Maharashtra State
- Kirloskar Oil Engines Ltd., Maharashtra State
- Chaitanya Sahniwas, Maharashtra State

- Atmanatan Resort, Maharashtra [**Gold Rating – LEED Certification**]
- Chitale Bandhu Mithaiwale, Maharashtra
- Jnanaprabodhini, Solapur, Maharashtra (Phase-II)
- Maharshi Karve Institute, Pune, Maharashtra
- Hotel Kkanchan Veg, Maharashtra
- Zorabian Chicks. P. Ltd., Khopoli, Maharashtra State (Phase-II)
- Mahabal Industries, Miraj [3 STPs]
- Kalyani Group, Pune
- J Krishnamurti Foundation's Sahyadri School, Pune,
- Millennium National School, Pune
- Isera Biological, Kolhapur
- Jal Sparsh Resort, Mulshi, Pune
- Swagat Promoters & Builders, Pune
- Raigad Ropeway, Raigad, Maharashtra
- Devi Group [A 1000 flats township], Pune
- Umasons Auto Compo Pvt. Ltd., Chh. Sambhajinagar
- Auto LEK India Pvt. Ltd., Supa MIDC, Ahilyanagar
- Pavna Goyam Auto Pvt. Ltd., Chh. Sambhajinagar
- Goyam Wheels Pvt. Ltd., Chh. Sambhajinagar

# THANK YOU



**ENERGY TECH SOLUTIONS PVT. LTD., PUNE**

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