



Confederation of Indian Industry



GreenPro Ecolabelling Assessment Report

BioMicrobics Inc
(FAST and FITTee)

August 2018

GreenPro Certification Assessment Report

Company Name: Bio-Microbics Inc

Products applied for certification: FAST and FITTee

Review date: 27/08/2019

Purpose

The assessment docket submitted by 'BioMicrobics Inc' for GreenPro Ecolabelling of their 'FAST and FITTee (Waste Water Treatment System)' products were evaluated in accordance to the requirements of GreenPro Ecolabel for 'Innovative Product' category

GreenPro Evaluation Methodology

The product was assessed based on the following parameters:

- Product Description
- Product Application
- Product Performance
- Benefits to Green Built Environment
- Case Study

The evaluation has been carried out based on the details collected from products manufacturer, visit to the end user's site where the products are installed and the feedback from their customers.

Eligibility

'Fixed Activated Sludge Treatment (FAST) and Fixed Integrated Treatment Technology energy efficient (FITTee) manufactured by BioMicrobics Inc. qualifies for GreenPro Ecolabel – Green Product Certification.

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Executive Summary

Bio-Microbics Inc has applied for GreenPro Ecolabel – Green Product Certification for their ‘FAST and FITTee’ waste water treatment system manufactured in USA. They are biological type waste water (sewage and grey) treatment systems for residential and commercial buildings. CII appreciates the vision of leadership in enhancing the ‘Green’ performance of their products.

FAST and FITTee system can be installed in residential and commercial buildings to treat sewage and grey water. These systems are capable to produce odorless and clear treated waste water from sewage and grey water. The quality of effluent (treated waste water) from FAST and FITTee is meeting the standard for discharging environmental pollutants into inland surface water.

The performance claims such as effluent quality and treatment cost were evaluated based on test reports shared, operating details gathered from site and user feedback. The summary of test results on effluent quality for FAST and FITTee are as below,

S. No	Parameters	Unit	Test Results	
			FAST	FITTee
1	pH	-	8.6	8.1
2	BOD at 27°C for 3 Days	mg/l	25	9
3	COD	mg/l	80	25
4	Total Suspended Solids	mg/l	16	30

Based on operating parameters of FAST and FITTee installed at Baroda, the economics of treatment cost for FAST and FITTee system are estimated to be **Rs. 21.7** and **Rs. 20.2** respectively for treating 1 KL of waste water (sewage / grey).

CII Green Products and Services Council appreciates ‘BioMicrobics Inc’ for their efforts towards developing waste water treatment technologies for enhancing water management.

Based on the documents shared and the visit to end user’s premises where the products are installed, the ‘FAST and FITTee’ waste water treatment system manufactured by BioMicrobics Inc meets the requirements of GreenPro Ecolabel.

CII Green Products and Services Council is glad to award ‘GreenPro Ecolabel’ for FAST and FITTee waste water treatment system manufactured by BioMicrobics Inc.

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1. PRODUCT DESCRIPTION

Fixed Activated Sludge Treatment (FAST) and Fixed Integrated Treatment Technology energy efficient (FITTee) systems are biological type waste water treatment systems to treat sewage and grey water from residential and commercial buildings. It consists of two stages as below,

- Settling Zone
- Aeration Zone (Treatment Zone)

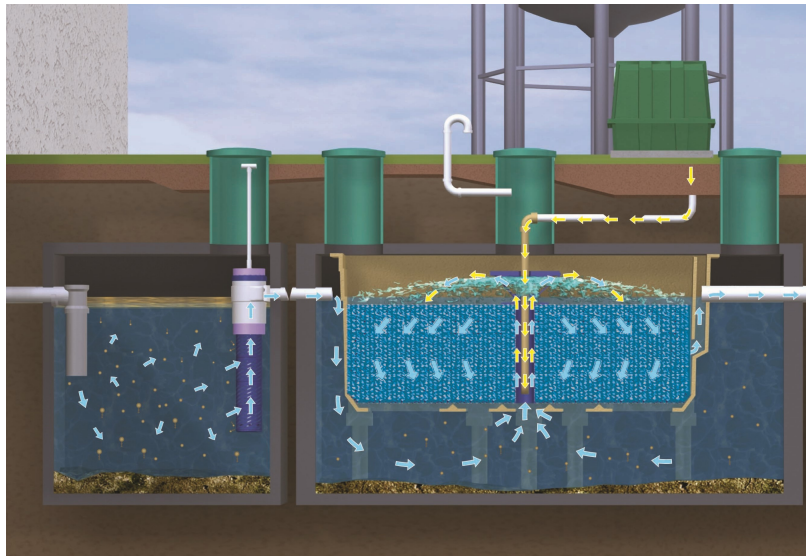


Figure 1: Working of FAST and FITTee

In settling zone, the separation of suspended solids from waste water is taking place by gravity. Then, the waste water is discharged into treatment zone through sanittee device to prevent entering of large suspended solids into aeration / treatment zone. At treatment zone, the air is supplied from ground mounted blower to facilitate a robust circulation of wastewater through the media channelled flow path. Aerobic microbes (Bacteria) in the aeration zone become fixed to the stationary media. This is where abundant, diverse and self-regulating population of microbes consistently metabolize the incoming waste.

These systems self-regulate the desired food to mass (F/M) ratio thereby requiring no operational adjustments. They produce a high density sludge which occupies less volume and increases the time between sludge pump outs. The media is completely submerged and anchored biomass also allows to quickly adapting to incoming loading conditions with a very low loss of microbes in the effluent. With no moving mechanical parts inside the treatment system, the operation and maintenance of FAST and FITTee are simple and do not require any human interventions. The cost of waste water treatment is low as ground mounted blower only requires electricity.

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Fixed Activated Sludge Treatment system has regenerative type blower for supplying pressurised air for aeration. In Fixed Integrated Treatment Technology energy efficient system has an energy efficient diaphragm type blower which consumes less electricity

2. PRODUCT APPLICATION

FAST and FITTee systems can be installed in residential and commercial buildings to treat sewage and grey water. These systems are capable to produce odorless and clear treated waste water from sewage and grey water. The potable water demand of green built environment including residential, commercial and factory buildings can be reduced by utilizing treated waste water for gardening and flushing applications.

These systems can be used for new construction or retrofitting projects including those in nitrogen sensitive areas or limitations with distance to groundwater and/or smaller dispersal field size requirements.

FAST and FITTee systems are customized products in terms of waste water treatment capacity. The capacity of FAST is ranging from 0.6 KLD to 600 KLD whereas the capacity of FITTee is ranging from 0.15 KLD to 1.5 KLD.

3. PRODUCT PERFORMANCE

BioMicrobics Inc has tested performance parameters of Fixed Activated Sludge Treatment (FAST) and Fixed Integrated Treatment Technology energy efficient (FITTee) at third party laboratory. The performance parameters are as below,

- pH
- BOD at 27°C for 3 Days
- COD
- Total Suspended Solids

The performance parameters of FITTee are tested in PIA – Prufinstitut fur Abwassertechnik GMBH. The test results are detailed below,

- pH : 6.9
- COD : 66 mg/l
- BOD : 16 mg/l
- TSS : 16 mg/l

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The performance parameters of FAST are tested in a NABL accredited third party laboratory. The test results are detailed below,

- pH : 7.5
- COD : 31.6 mg/l
- BOD : 12 mg/l
- TSS : 18 mg/l

It was informed by the manufacturer that the cost for treating 1 KL of sewage / grey water is about Rs. 21. The economics of treatment cost for FITTee system is as below,

Capacity	: 0.9 KLD
Electricity Consumption	: 1.89 kWh
Unit Cost of Electricity	: Rs. 7 / kWh
Treatment Cost	: Rs.13.3

General standard for discharge of environmental pollutants by Central Pollution Control Board (CPCB) is considered as baseline to assess performance of waste water treatment system. The threshold of performance parameters are given below,

- pH : 5.5 – 9
- COD : 250 mg/l
- BOD : 30 mg/l
- TSS : 100 mg/l

The quality of effluent (treated waste water) from FAST and FITTee is meeting the standard for discharging environmental pollutants into inland surface water.

4. BENEFITS TO GREEN BUILT ENVIRONMENT

Fixed Activated Sludge Treatment (FAST) and Fixed Integrated Treatment Technology systems are contributing significantly on water management aspect to green built environment by offering opportunities for waste water recycling. The potable water required for flushing and irrigating green areas at site can be reduced by using treated waste water from FAST and FITTee. Also, it helps the building / facility in achieving zero liquid discharge status.

These systems are affordable and energy efficient technology with lower operating cost. On ecology front, the clean effluent prevents formation of biomat and leach field clogging.

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5. CASE STUDY

Biowater Treatment System has installed many FAST and FITTee waste water treatment plants in and around Vadodara, Gujarat. During site visit, it was observed that FAST and FITTee waste water treatment systems were performing well without any system maintenance. The end users of FAST and FITTee are quite satisfied with performance as well operation and maintenance aspects. It was informed by the end users that operation and maintenance are hassle free and human intervention is not required for operating the system.

Biowater Treatment System has been providing comprehensive support during installation and post installation of waste water treatment system. The end users have been monitoring quality of influent and effluent at regular interval (six months).

The performance claims of Bio-Microbics Inc are evaluated based on test reports from third-party laboratory and operating parameters gathered from site. The summary of test results is as below,

S. No	Parameters	Unit	Test Results	
			FAST	FITTee
1	pH	-	8.6	8.1
2	BOD at 27°C for 3 Days	mg/l	25	9
3	COD	mg/l	80	25
4	Total Suspended Solids	mg/l	16	30

The economics of treatment cost for FAST and FITTee system are estimated based on operating parameters gathered from site as below,

S. No	Parameters	Unit	Value	
			FAST	FITTee
1	System Capacity	KLD	5	0.9
2	Blower Capacity	kW	0.75	0.14
3	Retention Time	Hrs	24	24
4	Quantity of Treated Waste Water	KL	5	0.9
5	Unit Cost of Electricity	Rs / kWh	7	7
6	Treatment Cost	Rs	100.8	19.5
7	Specific Treatment Cost	Rs / KL	21.7	20.2

It can be noticed that the treatment cost for treating 1 KL of sewage or grey water is Rs. 21 and quality of effluent is well within the limit set by Central Pollution Control Board.