

# JOHKASOU STP / easySTP

## 1. System Performance w.r.t. MOEF & KSPCB requirements

Parameter	UoM	KSPCB Norm 1-3-21	CPCB Norm	Expected Johkasou outlet *
pH		6.5 to 8.5	6.5 to 9.0	6.5 to 8.5
Total Suspended Solids	PPM	< 10	< 10	< 10
BOD5	PPM	< 10	< 20	< 10
COD	PPM	< 50	Not specified	< 50
Ammonical Nitrogen#	PPM	< 5	Not specified	< 5
Total Nitrogen@	PPM	< 10	Not specified	< 10
Fecal Coliforms	MPN / 100 ml	< 100	> 1000	< 100

\* easySTP With 50 micron Disk Filter as Tertiary Treatment

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\* Only Johkasou / easySTP has Anaerobic + aerobic + Anoxic process that can give reduced TN & Ammonical Nitrogen

## 2. Maintenance in 5 year Period

### easySTP Maintenance Schedule

Activity	Weekly	Monthly	Quarterly	Half Yearly
Bar Screen Cleaning	Yes			
Chlorine Tablet addition	Yes			
Sample Test by service Technician			Yes	
Sludge removal				Yes
Media Wash in Anaerobic Digester				Yes

Media in both aerobic and anaerobic digesters has a life of 15 years. However about 10% of media is expected to break into smaller pieces and get out of the system every year. To maintain water quality, it is advisable to add 10% of media volume in aerobic and anaerobic tanks every year after 5th year continuously.

#### MEDIA DETAILS:

**Anaerobic Tank:** Typical Anaerobic Tank has a process volume of 30% of the STP capacity. Media will be loaded to the extent of 30% of the tank volume. Pall Ring media of dia 40 mm is used here

**Aerobic Tank:** Typical Aerobic Tank has a process volume of 15%- 20% of the STP capacity. Media will be loaded to the extent of 30% of the tank volume. MBBR media of 22 mm dia is used. *Both MBBR & Pall Ring Media are available with multiple vendors locally in Bangalore.*

Chlorine Tablets: Chlorine Tablets used in Swimming Pools for dis-infection are used in easySTP. The usage rate is 5 PPM. For 100 KLD STP, the usage will be 500 grams per day.

### 3. Design Life & Expected Life

RCC tanks are expected to have a life of 50 years  
 Electro-mechanical equipment: Air Blowers: up to 5 years  
 Control Panels: Up to 10 years  
 Pumps: 3 to 5 years  
 Disk Filter: 7 years

All electro-mechanical equipments like air blowers, pumps, panels, disk filters are available locally and can be repaired or replaced without any problem.

### 4. COMPARISON OF PROCESS TANKS FOR 100 KLD STP

	SBR	MBBR	easySTP
Collection Tank	40	40	
Collection cum primary settling tank			25
Anaerobic Digester	0	0	25
Aerobic Tank / Bio Digester	100	25	15
Secondary Settling Tank	0	15	15
Chlorine Contact Tank	40	10	2
Total	180	90	82

Treated Water tank volume shall be same for all process based on re-use

### 5. POWER CONSUMPTION COMPARISON FOR 100 KLD STP

	SBR	MBBR	easySTP
Feed Pumps	3	1	0
Working hours	3	24	
Power Consumption per day in HP	9	24	0
Air Blowers	7.5	5	1.5
Working Hours	15	24	
Power Consumption per day in HP	112.5	120	0
Sludge Pumps	1	1	0
Working Hours	1	1	0
Power Consumption per day in HP	1	1	0

Filter Feed Pumps	3	3	1.5
Working Hours	15	20	24
Power Consumption per day in HP	45	60	36
Total power consumption / day	168.5	206	36
Power consumption in KW	134.8	164.8	28.8
Power Consumption / month (30 days)	4044	4944	864
Power Cost / Month @ Rs. 8/- unit	32352	39552	6912
Power Cost per annum (12 months)	388224	474624	82944
Savings with easySTP	78.6%	82.5%	NA

easySTP saves 79% power as compared to SBR and 82.5% as compared to MBBR.

## 6. Operating Cost Calculation

Item	SBR	MBBR	easySTP
Electricity Bill	32352	39552	6912
Operators required	2	2	0.25
Operator's salary / PM	18000	18000	18000
Operator's salary / PM	36000	36000	4500
Chemical Hypo / TCCA	4500	4500	4500
Media Replacement cost every year	75000	75000	0
Media replacement cost / month	6250	6250	0
Blower oil + Belt + electric repairs	30000	30000	0
Above cost per month	2500	2500	0
Total Maintenance cost / month	81602	88802	15912
Total Maintenance cost / annum	979224	1065624	190944
Savings with easySTP	80.5%	82%	NA

easySTP saves 80.5% on operating cost as compared to SBR and 82% as compared to MBBR. Every easySTP will be provided with an operational manual.

## 7. Operating Manual

Every easySTP will be provided with an operating manual.