



Sun-Breo (SB) Ability Test

1. Experimental method

The test was done to define the ability of the SB with the test rig shown in the fig 1.

T1: Water tank with activated sludge method with MLSS (Blank).

T2: Water tank with activated sludge method with MLSS and SB.

T3: Water tank with SB Bio film method (Without MLSS).

Test conditions are shown in the Table 1.

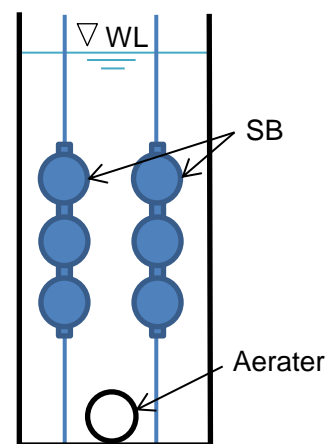


Fig1. Test Rig (Water tank with SB:T2)

Table1. Experiment Conditions Terms from Nov/2014 to Apr/2015

No.	Volume	No. of SB	MLSS	Loaded BOD kg/m ³ ·day	Method	Sludge withdrawal	Effluent to
T1	2.6L	0	Yes	0.2~1.6	Batch	In place	River
T2		6pcs	Yes				
T3			No		Continuous	No	sewage line

We used skimmed milk as the ground substance of raw water(Influent).

For T1 and T2 we stopped aeration for 1 hour and withdrew 500ml of clear supernatant liquid then added 500ml of skimmed milk liquid.

For T3 we withdrew 1,770ml of water without stopping the aeration then added 1,770ml of the water liquid with the same amount of skimmed milk as T1 and T2.

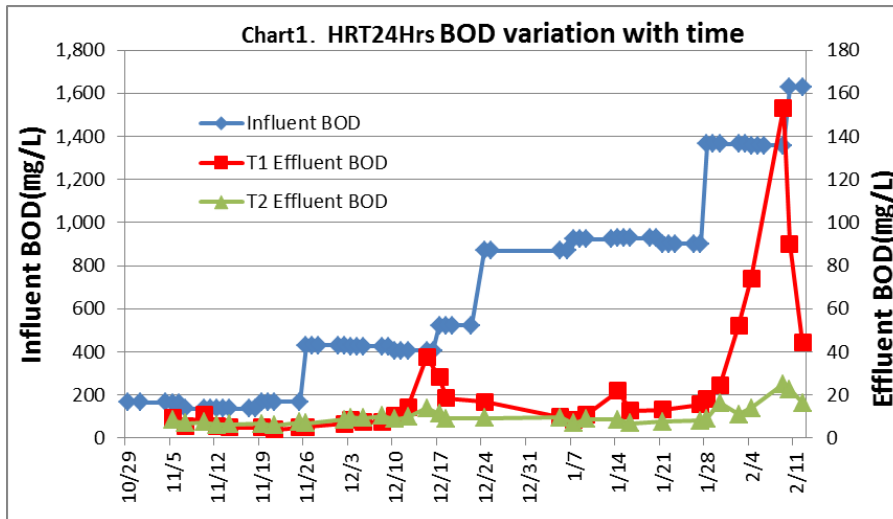
We did water survey and mirror inspection once a week.

We inspected the volume of the bonded sludge on the SB at the time the test ended.



2. Test Results

Chart 1: Concentration ratio of the BOD. The test method of the water is HRT 24Hrs, so at the time of 1,000mg/L shows BOD load of 1.0kg/m³·d.



Pictures: Sludge bonded on SB.
T2 (Left), T3 (Right)

Table2. Test Result

No	Max. BOD Load	SB-BOD Load	Sludge Volume bonded on SB	Excess sludge Rate
T1	0.9kg/m ³ ·D	-	-	9.4%
	BOD of the treated water started to fluctuate from the BOD load of 0.4kg/m ³ D and over.			
T2	1.6kg/m ³ ·D	0.7g/Each SB·D	0.17g/each SB	8.9%
	Max BOD load turned out about 1.8 times of T1. Excess Sludge rate is slightly low and the treated water was stable.			
	SB-BOD load is used for finding the numbers of SB need to treat the target raw water. Sludge volume bonded on SB is used for the calculation of the aeration volume.			
T3	1.6kg/m ³ ·D	0.7g/Each SB·D	0.34g/each SB	-
	Fluctuation of the treated water BOD is large. We assume we need multiple tanks even for draing to the sewage line.			

We found more various kinds of microorganisms in the tank with SB, and the ones with SB were more stable against the BOD load change.

The type of unicellular animals found in the tanks differed, from the tank with MLSS, and without MLSS.