Wastewater Treatment Plant
By
Advanced Sequential Biological Reactor (ASBR)

- *Brief Introduction:*

EMAS has developed the traditional method of Sequential Batch Reactor (SBR) to an Advanced Sequential Biological Reactor (ASBR).
In ASBR only one tank with three compartments is used instead of two typical units with decanters with intermittent operation in the (SBR).
The developed system of ASBR allows minimum land requirement, great savings, flexibility to accept shock loads and full automatic control.

- *Advantages:*

  - A compact and modular design, where 50% less space is required and the compact configuration results in a tailor-made installation, easy to supervise and operate
  - This process is proven technology, provides advanced treatment and a stable controlled process with high treatment efficiency.
  - Flexible and simple to operate and process is fully automated, and cyclic operation is adjustable.
  - ASBR is very flexible system that can successfully accept shock loads.
  - The power consumption is minimum.
  - No internal return sludge, and thus cost is reduced.
  - No noise or odor emissions are experienced.
  - Process results in stabilized sludge having a sludge volume index of normally < 100 ml/g.

- *Process Description:*

ASBR system consists of three rectangular compartments in series (A, B, C). All compartments are equipped with aeration equipment. Compartment B is a continuous aeration tank, while A and C intermittent aeration compartments on both sides, alternating as sedimentation and aeration tanks. The wastewater during the first main phase of a cycle is fed to compartment A and mixed with the activated sludge, where organic matter are partially degraded biologically. From compartment A, the mixed liquor flows to the continuously aerated compartment B, where sludge is further digested. Finally the mixture reaches compartment C, which is neither aerated nor mixed, to allow quiet and tranquil settling of sludge by gravity. The clean water flows to the effluent channel through the overflow weir and excess bio solids can be also removed from the same compartment. The second main phase of the cycle is reversed in direction, thus wastewater is fed at compartment C and flows to B and then to A, where sludge settles and clean water flows to the effluent channel, see (Fig. 3, 4) This system eliminates the traditional process in the primary sedimentation

tank and the sludge return facilities. The cyclical operation allows continuous influent feed and effluent discharge.

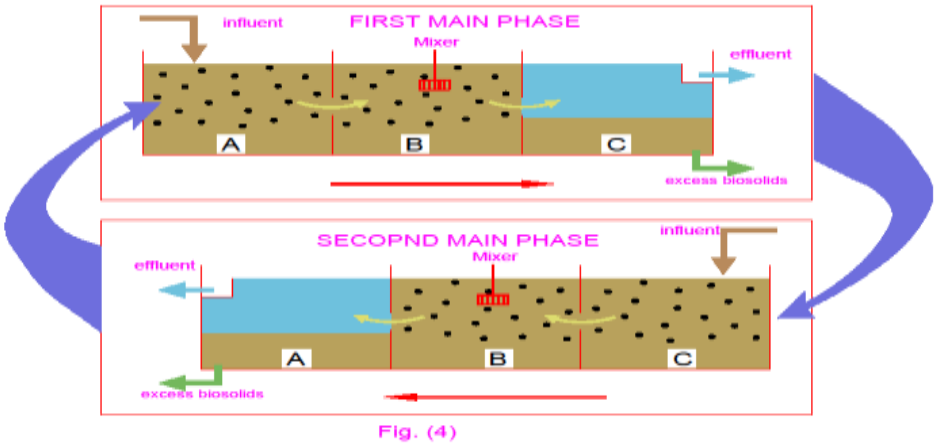


Fig. 4 Schematic view of the two main phases of a cycle.

- *Operation Principle:*

The proposed treatment plant consists of inlet structure with mechanical screen, equalizing tank, biological reactor, disinfection facility, pressure sand filter and excess sludge disposal facility.

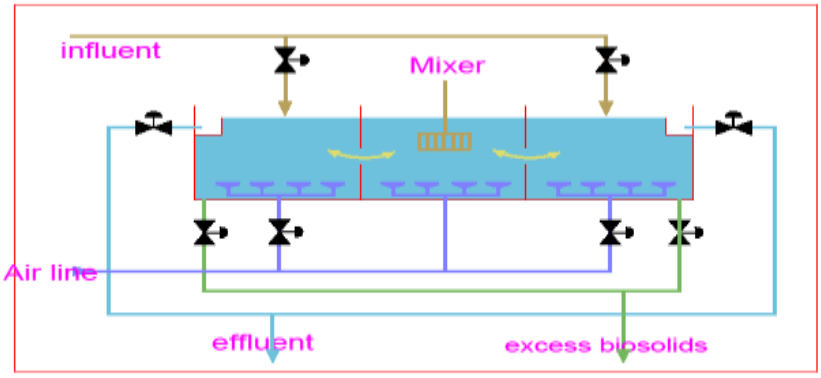
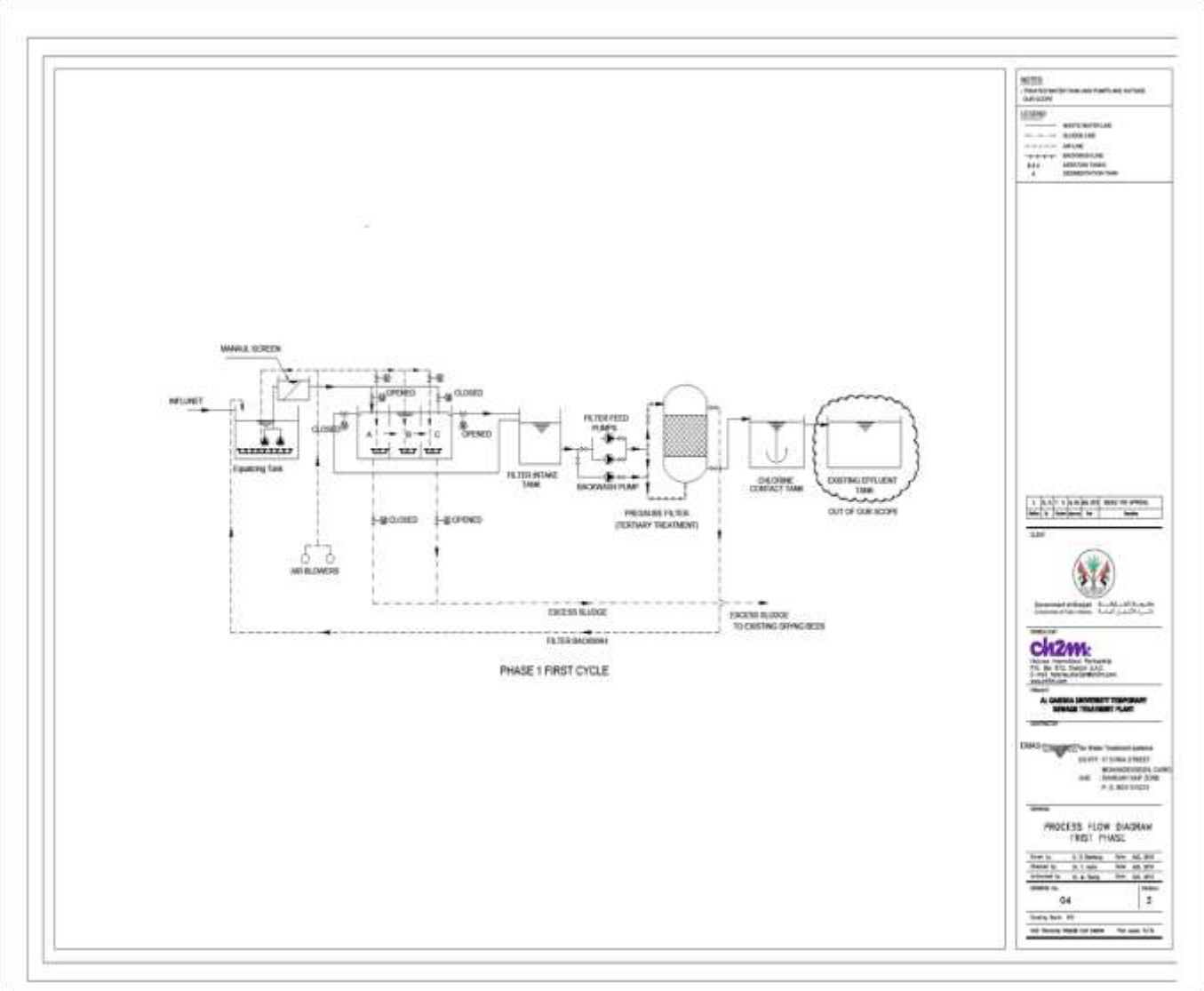


Fig. (3)



The nitrification and de nitrification processes took place by using smart set of instrumentation, control valves and PLC. The instrumentation includes Dissolved Oxygen monitor controller, active sludge blanket layer monitor controller, free chlorine monitor controller in addition to level controls. The direction of flow is controlled by 4 main control valves operated by timers through the PLC. The quality of secondary treatment effluent as well as tertiary treated effluent is complying with all international regulation standards.

EMAS
WATER TREATMENT SYSTEMS

الإمارات العربية المتحدة - حكومة الشارقة
بلدية مدينة الشارقة
United Arab Emirates – Sharjah Government
SHARJAH CITY MUNICIPALITY

22nd August, 2017

The Manager
EMAS
Sharjah, UAE

Dear Sir,

WATER SAMPLE ANALYSIS REPORT

Sampling date	:	17/08/2017
Sample received on	:	17/08/2017
Sample Site	:	Al Quasimiya University
Sample collected by	:	EMAS Staff
Sample container	:	Polyethylene bottles.
On site treatment	:	Nil

TEST RESULT.

S.NO	PARAMETERS	UNITS	TEST METHOD	RESULT		
				INFLUENT	EFFLUENT	MLSS
1	Suspended Solids.	mg/l	APHA 2540 D	86	10	2580
2	P.H	-----	APHA 4500-H+B	7.9	7.5	
3	Conductivity	Umhos/cm	APHA 2510 B	2700	2400	
4	Total Alkalinity as $CaCO_3$	mg/l	APHA 2320B	510	80	
5	Ammonia as N	mg/l	APHA 4500 NH_3E	64.8	Nil	
6	Total Dissolved Solids	mg/l	APHA 5210 B	1782	1584	
7	Phosphate as P	mg/l	APHA 4500 P C	8.6	3.92	
8	Nitrite	mg/l	APHA 4500 NO2	NA	5.54	
9	BOD_5	mg/l	APHA 5210 B	240	4.56	
10	COD	mg/l	APHA 5220 D	701	24	
11	Residual Chlorine	mg/l	APHA 2540 Cl	NA	Nil	

- NA - Not Applicable

Yours faithfully

22/08/2017

SMDD Lab in-Charge

إدارة الصرف الصحي
Drainage Dept