



# With you at every step



## Keep up with COVID-19 by taking the right measures for your Sewage Treatment Equipment

Bringing you knowledgeable insights and information that will keep your Sewage Treatment Equipment up and running during and post lockdown period. Kindly refer to the Standard Operation Procedures (SOP) for the equipment that is applicable to you.

Document No:	TL/WWS/SPG/SOP/275332/ 01	Rev No	0	SO NO:	275332	Date	23/03/2020
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### Shut Down Preservation SOP for MBR System

	<i>This procedure is applicable in cases where no effluent or sewage feeding is possible for an extended period of time. In cases wherein effluent or sewage is available partially, continue operating at a flow rate proportional to the quantity of the incoming sewage / effluent available, such that uniform feeding is done for 24 Hrs continuously, supplement with Addition of Jaggery, Urea and DAP.</i>
1	Isolate the Membrane Tank from the Bioreactor. Stop RAS Pump.
2	Drain Contents of Membrane Tank ( OR Transfer to bioreactor) and flush thoroughly with Potable Water
3	Carry Out a Recovery Cleaning of the Membrane as per relevant SOP.
4	Fill the Membrane Tank with Potable Water till Membrane is completely submerged. ( Maintain level around 300 mm above membrane fibres)
5	Add Sodium Hypochlorite (NaOCl) in membrane tank and maintain Free Residual Chlorine (FRC) of 2-3ppm.
6	After every 7 days, drain the Membrane Tank and fill with fresh water (refer step 4) and repeat step 5.
7	<b>Food and Nutrient Addition for the Bioreactor</b>
a	Air Blower will continue to remain on to ensure aeration in the Bioreactor. Air Flow can be reduced to ensure sufficient mixing only OR DO of 1.5-2.0 mg/l.
b	Dissolve required quantity of Jaggery and Urea in a 200 L barrel. Add required quantity of DAP and mix well till a homogenous mixture is formed. The quantities mentioned are for every 24 hrs.
c	Add the Contents of the barrel in the bioreactor Tank within 24 hrs at regular intervals of once in 4 hrs.
d	Check the pH of Mixed Liquor in the bioreactor once a day , if pH drops below 6.5 add NaOH or Sodium bicarbonate to increase the pH to 7.0- 7.5
e	Check the SV 30 Value in the bioreactor once a day and record the same.
8	<b>CALCULATION OF REQUIRED QUANTITY OF JAGGERY, UREA AND DAP</b>





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a	Calculate Design COD Loading in Kg/d as per formula: (Design COD in mg/l X Design Capacity in KLD)/1000
b	Consider 30% of the design COD loading. This is approximately equal to Jaggery requirement in Kg/d.
c	Consider Nutrient Addition in the following ratio. Jaggery: Urea: DAP= 100: 3.5: 1.7.
9	Before restarting, check the SV 30 in the Bioreactor. Also check if supernatant water is clear before feeding the membrane tank. If required some fresh Activated Sludge may need to be added to the bioreactor.
<b>NOTE</b>	<i>Some loss of biomass is expected as it has to get acclimatized to the change in nature of food source both during the shutdown period as well as during restarting the plant with effluent. Hence some recommissioning time or re-stabilization period (15-20 days) maybe expected. Also if required some Activated Sludge may need to be added.</i>
<b>NOTE</b>	<i>Shut down preservation procedures must be strictly followed to prevent irreversible changes during long term shut down. TL will not be responsible for any loss of productivity or performance caused by the non-implementation of the proper shutdown preservation procedures and guidelines.</i>

