



# With you at every step



## Keep up with COVID-19 by taking the right measures for your Water Treatment Equipment and Multiple Effect Evaporator

Bringing you knowledgeable insights and information that will keep your Water Treatment Equipment and Multiple Effect Evaporator 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/GEN/ 01	Rev No	0	SO NO:	GENERAL	Date	23/03/2020
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### Shut Down Preservation Procedure for RO Membranes

<b>A</b>	<b>LONG TERM SHUT DOWN ( More than 7 Days)</b>
1	Carry out a standard CIP as per guidelines of our O&M manual. As per the same a high pH CIP followed by low pH CIP can be done. <i>Care should be taken to ensure adequate flushing with RO permeate water in between each CIP's well as after the CIP. When the flushing water pH is equal to pH of RO permeate, the flushing can be considered to be complete. This step applies to cases wherein the membranes are known or assumed to be fouled based on previous operational history of the plant.</i>
2	Flush the CIP Tank thoroughly. Prepare 1 -1.5 % SMBS solution in the CIP Tank with RO Permeate Water. For Example: For 100 L of RO permeate Water, 1 to 1.5 Kg of SMBS powder is to be added. Ensure the solution is mixed till it is dissolved completely.
3	Recirculate the Preservative Solution through the RO system for 15- 20 min. Overflow the solution from the highest point in the system piping till all air is removed.
4	Alternately, the preservative solution can also be prepared in a known volume of water in the RO feed tank and pumped through the RO. Overflow the solution from the highest point in the system piping till all air is removed.
5	Close all valves: HPP discharge valve, reject valve, reject recirculation valve, all sample points. Install a dummy in the permeate piping also. This step will isolate the system and prevent any ingress of air into the system.
6	Check the pH of the preservative solution once a week. When the pH become lower than 3 change the solution
7	Change the preservation solution once in a month.
8	Before restarting system, flush out with RO permeate water OR feed water for 60-90 min till all traces of preservative are removed.
<b>B</b>	<b>SHORT TERM SHUT DOWN ( &lt; 7 Days)</b>
1	Carry out a standard CIP as per guidelines of our O&M manual. As per the same a high pH CIP followed by low pH CIP can be done. <i>Care should be taken to ensure adequate flushing with RO permeate water in between each CIP's well as after the CIP. When the flushing water pH is equal to pH of RO permeate, the flushing can be considered to be complete.</i>
2	Flush the RO membranes with RO Permeate Water once a day for 30-60 min.
<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>

