

Water- Recycle and Reuse with Waste Water Management Techniques



Raghvendra Khaitan

ABSTRACT

In every Industry, where water is used, generates waste water, whose recycle and reuse is now more important than earlier. Water is Paper Industry's back bone, hence recycle of process water and reuse has become mandatory to reduce fresh water consumption and also to maintain ecological systems. In Paper Industry, waste water generated is a mixture of fines/ fibers & Chemicals. This needs to be treated with proper design and selection of fiber recovery/ waste water treatment equipment like Clarifier/ Belt filter press/ Lamella/ Ultra Filtration/ RO/ ETP etc. These proper installations results in drastic reduction in contamination, thereby allowing reuse of treated water, resulting in reduction of fresh water consumption.

WATER – ITS RECYCLE & REUSE

Water- Its flexibility to reuse, in today's world of technology is possible and there can be no excuse for discharge of untreated effluent, in fact, lets apply our mind to treat it to the extent possible, so we don't rely on fresh water and that is exactly what we did at Sripati Paper mills, Tamil Nadu.

TODAY'S PRESSURE ON WATER REUSE?

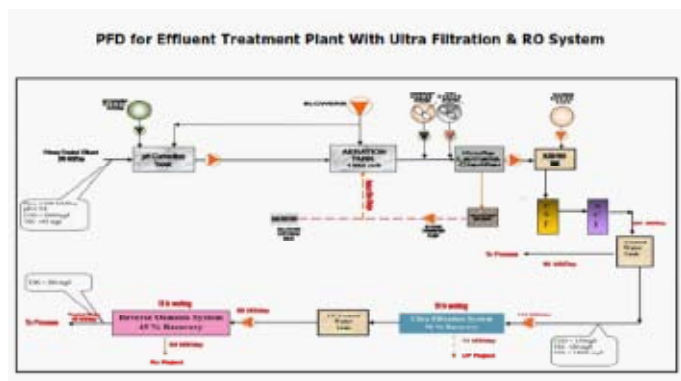
- Besides reusing the backwater for process, paper mills can reuse their ETP treated water.
- We have implemented this at Sripati Paper mills, Tamil Nadu
- An efficient and well-designed system can certainly save a lot of water and reduce pressure on fresh water demand.

- We also avoided the build up of COD and TDS.
- a) the aeration basin was designed for reduction of BOD and COD to the extent, wherein it doesn't foul the membranes.



- The UF membranes allow removal of fine colloidal solids, thereby using this water for chemical preparation, showers.

- a) the accept of the RO can be used for boiler thereby eliminating the need for fresh water
- b) the reject of RO is used for spraying and ash handling, toilet flushings, agriculture.



ADVANTAGES OF ETP AND ITS TREATED WATER

- By purging a certain volume of water, we avoided the build up of slime and fines in the system.

ETP VERSUS CETP?

- Many paper mill clusters don't have CETP in their area. Hence having their own ETP will help reduce the pressure on fresh water and contribute towards water reuse.
- A well structured and designed ETP can give pristine quality water to the mill for reuse.
- The Key factor is to ensure resource recovery at the every stage in the mill and only allow excess waters / rejects to go to ETP to reduce the load on the ETP

CASE STUDY

- **Water Consumption:** The customer was using fresh water for their chemical preparation. The customer tried to use treated water after the Krofta Sedicell for the same but that did not allow proper mixing and preparation of the chemical dosage. Hence separate stream of 200 m³/day from the Sedicell was diverted and this new ETP followed by Tertiary Treatment was created. Hence to that much extent fresh water consumption was reduced.
- **Production:** About 290 TPD of Duplex Board.
- **Water saving:** Approx. 80–90 m³/day has been saved for application in showers and for chemical preparation.
- **Capital and running cost:** Capital cost including equipment and civil was approximately Rs.60 lacs.

• Dosage:

- 0.02 kg/hr. to 0.05 kg/hr. SMBS dosing in RO
- Sodium Hypo-chloride; Primary Polymer dosing for secondary clarifier in ETP is 0.016 kg/hr. to 0.024 kg/hr. and Coagulant dosing – 1.6 kg/hr. – 2.4 kg/hr. in ETP

• BENEFITS:

- Clear water used in wire & Felt showers which helped in increase in Felt and Wire life;
- Reduction in smell;
- Consumption of few chemicals came down;
- Machine life is expected to be increased;
- All leading to fresh water consumption being reduced to that much extent.

CONCLUSION:

A proper design/selection and installation and operation of good quality Water treatments equipment support in waste water management and benefits are enumerated are as under:

- Reduction in fresh water consumption;
- Better utilization of treated water;
- Adequate sludge handling;
- Increase in Wire/ felt and also machine life;
- Maintain of ecological systems;
- Follow of Government Rules/ norms.

Below photos are just for better understanding.

