

Reuse of Treated Water for Washing at Printing Machine

Problem

- Screen is used for printing design. Designs or colours on design are changed then screen is washed.
- Frames also need washing on change over. One Printing machine requires 150 KL of water per day. During washing wash water is generated, which is treated in ETP.

Solution

- The ETP plant treated water is recycled for its use in cleaning process of screen & frames.
- In house piping arrangements were made to divert the ETP treated water for cleaning at printing machines through an overhead tank.

Benefits

- Reduced fresh water consumption by 150 KL per day
- Reduction of CETP charges in future for the volume of waste water reduced
- Capital cost = Rs. 1, 00,000
- Operating cost for running pumps of 6 HP = Rs 1, 69,000 per annum
- total savings = Rs 3, 46,500
- payback period = 10 months.



Replacement of alkaline scouring with bio-scouring enzyme for enzymatic scouring.

Problem

- Scouring is carried out to remove impurities that are present in cotton. Done at high temperatures (above 100 °C) with sodium hydroxide.
- Produces strongly alkaline effluents (around pH 12.5) with high organic loads, tend to be dark in colour and have high concentrations of Total Dissolved Solids (TDS), oil and grease in wastewater.
- The processing cost of fabric was Rs. 5.15 per kg of fabric

Solution

- Replacement of alkaline scouring in the manufacturing process with bio-scouring enzyme for enzymatic scouring with chemical supplied by Camex, Ahmedabad, also available with Novozyme.

Benefits

- Water consumption reduction: 45.45%
- Chemical consumption reduction: 8.65%
- Electrical power consumption reduction: 37.04%
- Fuel (coal) consumption reduction: 24.55%
- Processing cost of fabric reduced to Rs. 3.91 per kg of fabric.
- No capital cost required
- Replacement of chemical is required (although with 10% additional cost compared to existing chemicals)
- Total savings = Rs. 50, 22,000 per annum.

BEST AVAILABLE TECHNIQUES IN TEXTILE SECTOR

Caustic soda Recovery System

Problem

- Large quantity of caustic soda use in mercerization process in textile industry.
- Treatment of cotton under tension with caustic soda solution at 150 - 200 °C.
- Fibres and fabrics are impregnated within a caustic soda solution. Fabric is treated with caustic soda sol.
- After treatment, fabric is washed with water with starching tension to remove un-reacted caustic soda (98 to 99 % of unreacted caustic) from the fabric
- Wash water contains substantial amount of caustic soda. It's not only resource lost but also generates pollution in wastewater

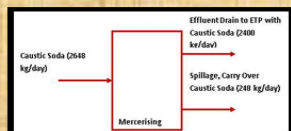
After

- Caustic Soda Recovery System separates the weak lye (wash liquor) into strong lye and vapour condensate
- condensate can be used for pre-washing and the caustic soda can be reused in the mercerizing process.

Benefits:

- Chemical (Caustic) consumption reduction: 75%
- Reduction in waste water generation (quality & quantity)

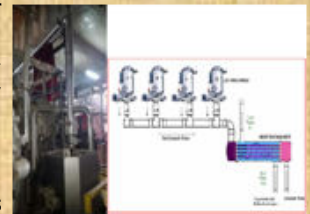
Total savings = Rs. 1, 42,00,000,
payback period = 12 months.



Batch washing in Place of Continuous Washing in Jet Dyeing Machine

Before

- Cooling water and condensate water are non-process water uses.
- Condensate water includes water from heat exchangers in dyeing machines, while cooling water includes hot water from jet dyeing machine and compressors.
- jet dyeing machines are equipped with common heat exchangers that are used for both heating and cooling which is normally drained with other effluent
- increasing fresh water consumption as well as effluent quantity & load at ETP.



After

- cooling water from jet dyeing machines is reused as process hot wash water
- Both the cooling water and the condensate is recovered completely from jet dyeing machines and reused as boiler feed water

Benefits:

- The total boiler feed water is being now catered by recovered condensate & cooling water amounting to 50 KL per day
- Boiler feed water consumption reduction: 100%
- Recovery of energy in form of heat from hot water: 15%
- Reduction in boiler emissions
- Reduction in waste water generation (quality & quantity)

Capital costs = Rs. 3,00,000 (operating costs includes the pumps operation of 10 HP = Rs. 3,13,000 per annum),
Saving of Rs. 33,00,000 per annum



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