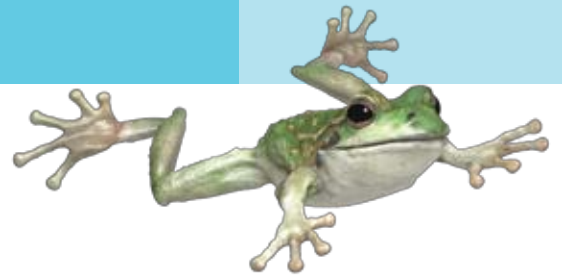


Waterwise Checklist



Textile operation water conservation

This checklist provides water conservation options, and raises awareness of water issues. Specific information is available in the Waterwise Business series of Information Sheets .

Getting started

To reduce water consumption in an office or commercial/industrial setting, consider the three-step process below:

- 1 Educate and involve employees on water conservation through team briefs, management meetings etc.
- 2 Locate all water using sources (bathrooms, wash sinks, hoses, dish washing machines, HVAC, cooling water, etc.) in your building and estimate how much water is used.
- 3 Identify and implement water conservation options by establishing a Water and Environment Team (W.E.T).

It is important that employees understand how their job affects the amount of water used in their work environment. Seek ideas from those most involved with the daily operations and activities of the organisation. Make water conservation partly their responsibility by asking them to identify where water is used.

Once the areas of water consumption have been determined, employees can help to implement conservation measures.

Specific information is presented in Waterwise Business Information Sheet – Water Efficiency Program.

Immediate conservation options

General

- Check existing flow rates on high use process equipment and adjust accordingly.
- Reduce frequency of external equipment and floor cleaning.
- Eliminate use of fill and drop rinsing for mixing tank and rinse with spray nozzles.
- Reduce water pressure in water lines to manufacturer's recommendations.
- Increase maximum conductivity or TDS level for blow down in cooling towers and boilers.

- Improve efforts of leak detection and repair on cooling towers, air washers and boilers.
- Check float valves on all sumps in cooling towers and air washers.
- Eliminate use of heat exchanger on make-up water, for direct contact heat exchanger, to reduce loss of steam from system. Cooler make-up water entering water heater condenses steam.

Batch wet processing

- Eliminate final rinse bath for select goods (light and white shades).
- Utilise final rinse of white and light shades for initial bath of next lot.
- Schedule dyeing of light shades prior to dark shade dyeing to eliminate the need for tank boil-out.
- Dedicate white goods to selected machines to eliminate tank boil-outs.
- Reduce volume of rinse bath in drop and fill rinse stages.
- Adjust overflow rinse time; base on rinse water quality analysis.
- Shift goods requiring more cycles to lower liquor ratio dyeing equipment.
- Utilise extraction cycle between rinses.

Continuous wet processing

- Reduce flow rates on wet out tanks. Often these rates exceed 110 litres/min while flow rates of 60 litres/min or less can maintain low contaminant buildup.
- Reduce flow rates of countercurrent rinse tanks during standby mode on automated lines.
- Automated rinse tank systems will reduce flow rates by 10 percent or less from operational flow rates while the equipment is in standby mode. The rates can be dropped significantly lower during standby mode to reduce wasted water.
- Adjust rinse water flow rates based on greige, good quality or weight.
- Adjust tension on squeeze rollers to reduce contaminant carryover between rinse stages.

Waterwise Checklist



Fabric printing

- Reduce flow rates on blanket wash systems.
- Reduce timed cleaning cycle on pipe and screen cleaning systems.

Short term options

General

- Have contact and non-contact water flows regulated automatically so that when the machine shuts down, water flow stops for contact and non-contact purposes.
- Install high pressure low-volume spray nozzles. These modified spray nozzles require the attachment of a 3/8-1/2 inch air hose with 75-250 psi, along with a 3/4-inch water line. This setup has the potential to reduce the water usage more than 50 percent in washing applications. At 75 psi these nozzles use 110 litres/min of air and 15 litres/min water.
- Install equipment that facilitates a consistent ratio of water to goods. Dye equipment controllers adjust water volume based on weight of goods.
- Install side stream filter on cooling towers to reduce blowdown frequency.
- Install a tank system to collect once-through cooling water to be used as process makeup water, or install cooling tower to recycle cooling water.
- Increase condensate recovery on boiler system.

Batch wet processing

- Review additives to formulations that may lead to increased rinsing requirements. For example, some stabilisers in peroxide bleaching require additional rinsing.
- Use enzymes in bleaching formulation to reduce number of rinses after bleaching.

Continuous wet processing

- Utilise countercurrent rinsing on wash stages and adjust flow rates accordingly.
- Reuse rinse waters from mercerising to bleach, bleach for scour, and from scour for desize.
- Install conductivity controllers in the final rinse bath to control

the flow rate, or program computer to adjust flowrates based on fabric weight.

- Install vacuum or squeeze rollers to improve cleaning efficiency and reduce required flow rates.
- Install a filtering system on wet-out tanks to allow for continuous recycling of rinse waters.

Fabric printing

- Install systems to improve rinsing efficiency of blanket wash (i.e. spray nozzles, scrubber pads, doctor blades, etc.).
- Identify grey water from other sources that can supplant demand of blanket wash.
- Reduce length piping for colour transfer to printing line or dedicate line to specific high-use colours to reduce flushing requirements.
- Reduce length of chemical transfer lines to reduce flushing.

Long term options

General

- Install air-cooled air compressors.
- Install gas heated dry cans.
- Install treatment systems to recycle wastewater, including the use of ultrafiltration for PVA wash water, dissolved air flotation or filtration for preparation rinse waters, nanofiltration for dye rinse waters, resin treatment of selected rinse waters, etc.
- Install holding tanks to collect and reuse selected rinse waters.
- Install horizontal washers which consume approximately 25 percent of the water of vertical washers.

Batch wet processing

- Use cold pad scouring, bleaching and/or dyeing.
- Install ultra-low liquor ratio (4:1) dyeing equipment.
- Install a system to collect bleaching water for reuse.

Continuous wet processing

- Install countercurrent rinsing systems.
- Install squeeze rollers or vacuum extractors between rinse stages.
- Install computer-controlled wet processing equipment with flow control.

Waterwise Checklist



Success stories

A circular knit goods processor reduced water consumption by 1140 kL per month through reuse of final rinse bath of 'whites' lot for the initial bleach bath of the next lot. A textile manufacturer reduced the amount of water used per kg of cloth by an average of 190 litres by increasing loading of machines, operating lower liquor ratio equipment, combining processes (scour/dye) in same bath, and minimising prebleaching of shades.

A small screenprinting operation reduced water consumption by 500 litres/day through the installation of a reclamation tank to recycle and reuse screen-cleaning solution.

A textile knit goods wet processor reduced water consumption by 53,200 kL per year by installing flow meters and differential pressure transmitters on all of its pressure dye machines to allow for variable fill water loading based on weight of fabric to be processed.

A textile manufacture of knit goods reduced the amount of water used per kg of cloth processed by 33 litres by installing bleaching machines that use one third the volume of conventional bleach rinsing machines.

A textile package dyeing facility reduced the amount of water consumed per kg of cloth procedure by 52 percent by optimising its dye cycles to reduce unnecessary rinses and process baths.

A textile manufacturer installed a holding tank system to capture the once-through cooling water for use as dye process makeup water. A small bleaching operation reduced water consumption by 19 kL per year through reuse of final rinse for bleach bath makeup.

References

DPPEA FY02-08 – North Carolina Division of Pollution Prevention and Environmental Assistance.

Further information

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