RINSE WATER REUSE

TEA Rinse Water Reuse System
At Hilton Central Laundry, Las Vegas, NV:
The World's Largest Washer/Extractor Hotel Laundry
An Idea Whose Time Has Come

Water, like energy, is becoming a more and more expensive resource. It has been proven in hundreds of laundries that it is possible to reuse selected rinses for flush and suds operations at considerable savings in water costs. In many parts of the country, reduced water usage will also reflect in lower sewer surcharges for volume. Laundries without waste water heat recovery systems will even benefit from energy savings due to the heat contained in the reused rinse water. Less energy is needed to bring the recovered rinse water up to wash temperatures. The simplicity of the entire system also appeals to most users. No cleanup of the water is done except for some fine screening to remove solid materials. There are no chemical operating costs and the only electrical requirements are those needed for two pumps.

**Actual plant experience has shown that water can be reused at the 20% to 35% (and in very special cases 45%) level without any long term quality problems.**

How The System Works

Normally the final rinses selected for reuse are collected in a reuse water collection pit. Here the water is stored until it can be pumped to the reuse water storage tank. The pit also holds extra volumes of rinse water in case more than one washer dumps at a time. The collected water is pumped from the pit to a stainless steel reuse water storage tank as needed. This tank serves a dual purpose: It acts as a volume buffer for having sufficient water in storage to meet even high washroom demands and it allows a more even steam draw when in the reheating mode, giving the washers better temperature control. Water reheating is typically accomplished with steam immersion or side arm heating coils. The reuse tank is normally kept at the same temperature as the hot water storage tank.

A motor control center, which will control the complete operation of the rinse water reuse system, is included. It contains all of the electrical components necessary to operate the system automatically, or in manual mode. It also contains an auxiliary fresh water fill system for the reuse storage tank. If water in the reuse storage tank drops to a low level, this part of the control system will automatically add fresh water to the tank. This prevents running out of reuse water because of an inadequate balance between water collected and water used. A properly sized washroom delivery pump is included for supplying hot reuse water to the washers. The pumping system and reuse water tank are shipped from the factory in easily handled sub-assemblies, ready for rapid field assembly. A reasonably level floor and adequate head room are usually the only requirements for installation.
Caution – Not All Reclaimable Water Is Reusable Water

Untreated rinse water can offer laundries excellent savings in water bills. However, the desire to maximize savings should not supplant good laundry practices or common sense. Today laundries should be concerned with some of the "too good to be true" claims being made on how much money can be saved by installing "their" equipment. Very impressive computerized proposals with guaranteed savings seem to point out that the answer to all the water shortage problems lie in just installing a water reclaim system, even if the economies of a installation are unrealistic. Remember, there are no free lunches anywhere.

Some Of The Most Absurd Claims Are:

Quantity of usable reuse water:
Proposed reuse of all rinses in flush/suds operation. Actually only light soil loads even have potential for reusing so much reclaimed water. Remember, recovery of the first rinse for use as reuse water is the major cause of re-deposition, producing long term graying of product rendering them unusable. Normal product mixes of commercial and hospital laundries with several flush/suds/bleach operations and stain setting problems from using high temperatures reuse water flushes will be more limiting as to where hot reuse water can be reused. An industry average of reuse water usage in these plants is about 25%. Industrial plants, if processing sufficient uniforms and other light soil products to generate adequate quantities of rinse water for recovery, can be more aggressive in where rinse water reuse can be used. Shop towels, mats, and mop formulas all make excellent uses for recovered water. However, only laundries generating sufficient quantities of usable reuse water can even come close to meeting the demands of the above classifications. Consider 20% a good target for rinse water reuse in these plants.

Energy Savings:
Gross exaggerations are usually claimed for these savings. Most final rinses are in the 90 to 100 degree range. Recovering this water, minus ambient plant losses can mean saving the reheating cost of any recovered rinse water to what is needed for washing. The only saving is the energy that would be needed to heat the water from 50 to 60 degrees to the 90 degree plus recovered water. This is quite different from the claimed savings possible. Examination of the proposals will usually claim much higher rinse temperatures than possible. Proposals have been made which claim in light soil laundries all rinse operations were at 150 degrees. Naturally the energy savings were unachievable. If the laundry has a wastewater heat recovery system, energy savings are dramatically reduced. This is because the only heat lost is what goes down the drain. There is no difference in energy lost to the sewer from plants equipped with rinse water reuse compared to those who don't.
**Chemical Savings:**

**Ridiculous** – the function of the first rinse is to remove or flush out the residual chemicals and bleaches. This highly loaded rinse, if reused will cause re-deposition and graying. The following rinses (not including the sour/softener step) are generally so free of carry over chemicals they could be considered very equal to fresh water in quality. That is why they are reusable in place of fresh water. Claimed reductions in detergent costs of 35% just are not possible. In fact, under ideal conditions, reductions of more than a few percentage points would be questionable – regardless of claims. To conclude – rinse water reuse can be attractive, but it will require more care to insure overly aggressive recoveries are not attempted, dye loads are not collected and reused causing expensive product damage, and lint or re-deposition does not occur. Ignore these concerns and severe quality problems with possible expensive product replacement costs will occur.

For More Information about These Systems, Contact us at info@rwmartin.com or Call 800.635.4363