



....a dialogue for California's water conservation community

December 2001

Volume 1, No. 7

Developed with funding and support from U.S. Bureau of Reclamation

Sponsored by the California Urban Water Conservation Council

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This issue.....

- **X-Ray Film Processors**
Film processors in hospitals use an average of 3.2 acre-feet of water per year. Package systems are now available for those units that reduce water use to only one-tenth of an acre-foot per year!
- **The Waterbroom**
This low-tech \$200 device has been studied in a variety of commercial locations and has been found to save around 50,000 gallons of water annually.
- **Membrane Technology**
The application of state-of-the-art membrane filtration technology to a food processing operation yields savings of 18 acre-feet per year.
- **Clothes Washers**
U. S. Water News reports on a clothes washer that needs no detergent and, thus, requires no rinse cycle.
- **Links to other articles and information related to water conservation**

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A Sad Note.....

We are very saddened to report the passing of Pat Higgins, who so very ably represented the plumbing industry for over 25 years. Pat was our "bridge" to the industry, and was most influential in the area of the national plumbing standards. He could always be counted upon by water conservation professionals to assist in resolving differences and bringing new water-saving products and technologies to the forefront. Pat was our colleague and our friend. He will be greatly missed by all of us.

(Read our interview of Pat Higgins in Volume No. 3 of the WaterLogue.)

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Full Details

1. Water-saving X-Ray Film Processors

A new development in the diagnostic medical equipment arena holds promise for saving extraordinary amounts of water. Recent projects and studies undertaken by the Los Angeles Department of Water and Power (LADWP), the City of Irvine, and the Metropolitan Water District (MWD) have demonstrated that the addition of a specially designed package system to existing medical X-Ray film processing systems can save an average of about 3.2 acre-feet annually per system in hospital settings.

Existing X-Ray processing systems in hospital applications consume extremely large amounts of water for the film washing process. None of the water used for this purpose is usually treated or recycled in any way. The Water Saver/Plus™ water recycling system, manufactured by a Southern California firm, uses a simple reservoir and pump to recirculate what had previously been "once-through" flow. They hold a patent on the concept. Check the website for the unit at:

http://www.caxray.com/products_water_saver_plus.html

A series of independent studies by the water utilities involved the retrofit of 38 X-Ray systems in seven major southern California hospitals with the Water Saver/Plus™ water recycling system. Prior to the retrofit, those 38 systems were consuming a total of 123 acre-feet of water per year, an average of about 3.2 acre-feet for each system. (In some cases, measurements taken by water utilities showed actual annual usage as high as 7.5 acre-feet per system!) Following the installation of the recycling unit, water use dropped to less than 1/10th of an acre-foot for each of the 38 systems.

Note: The seven hospitals were licensed for a total of 1,975 beds. All of the X-Ray film processors in the studies were operating full time (24 hours per day, 365 days per year). The largest hospital (408 licensed beds) operated 14 processors and ended up saving water at a rate of approximately 50 acre-feet per year as a result of the 14 recycling unit

installations. There is no evidence at this time that water savings in less-active medical installations (such as dentist offices, medical clinics, etc.) would approach that experienced in these seven hospitals.

For information on the completed LADWP studies, contact-

Mr. Mark Gentili, Los Angeles Department of Water and Power
213-367-0925
mark.gentili@water.ladwp.com

For information on the Water Saver/Plus™ Recycling System, contact-

Mr. Dave Crowe or Mr. Mike Ferrara, C&A X-Ray
562-602-2465
info@caxray.com

For information on a future joint study being planned by Irvine, East Bay Municipal Utility District, and the Upper San Gabriel Valley Municipal Water District, contact-

Ms. Leann Gustafson, East Bay Municipal Utility District
510-287-0898
lgustafs@ebmud.com

2. The Watermiser™ Waterbroom

Probably one of the more creative, low-tech avenues to water conservation is the Waterbroom by Watermiser™, a product of JV Manufacturing, Inc., in Carlsbad, California. This device replaces the all-too-common hose and nozzle approach to washing down large surface areas at commercial and industrial facilities. While it still uses water to clean hardscape areas (decking, patios, tennis courts, exterior walkways, entryways, etc.), the unit consumes about 60 percent less water to do so.

The Waterbroom uses a series of small-orifice nozzles to direct multiple high-intensity water sprays in front of the "broom." Water is supplied to the device through hose connection at the broom handle. Water travels down through the handle to a manifold fitted with the nozzles positioned at about 2.5 inches above the ground surface. Water exits the unit at a velocity and with a spray pattern that enables it to clean a smooth or uneven surface very effectively and quickly, thereby saving water and labor hours. See a photograph at the company's website: <http://www.watermiser.com/>

According to Cathy Templeton, City of Anaheim, the Waterbroom has been particularly successful at reducing water use at local hotels and the Anaheim Convention Center. A recent pilot study undertaken by the City and sponsored by the Metropolitan Water District involved 15 different Waterbroom applications at 12 locations. Annual savings per Waterbroom averaged about 50,000 gallons per year. The cost of the Waterbroom, available in various sizes, is generally less than \$200.

For a copy of the Anaheim pilot study, which includes the measured water savings resulting at each of the 15 applications, contact-

Ms. Cathy Templeton, City of Anaheim Public Utilities
Tel. 714-765-4256
cat@anaheim.net

To reach the manufacturer, contact-

Mr. Lloyd Luthringer, Watermiser - JV Manufacturing
Tel. 909-354-6744
watermiser@aol.com

3. Membrane Technology Saves Water at a California Dairy

Maintaining high quality standards in a milk processing plant requires frequent and effective equipment and processing line cleaning. At the Rockview Dairy Milk Plant in Downey, approximately 20,000 gallons per day of fresh water is used for this clean-in-place (CIP) process, all of which is ultimately released to the sanitary sewer.

According to engineers at the Southern California Edison Company (SCE), Rockview recently joined with SCE in a program to demonstrate the benefits and capabilities of innovative energy-efficient electrotechnologies. A membrane filtration system was installed at the Rockview plant to demonstrate recovery and concentration from CIP solutions. The filtration system produces a "clean" water stream that can be reused within the plant as cooling tower make-up water, boiler feed, or plant clean-up, tasks which currently also use fresh potable water.

The concentrated milk solids that result from the filtration system, amounting to an estimated 1,900 tons per year, could be a new product that could be suitable for animal feed. This potential is currently being evaluated.

Membrane filtration has not been used in dairy plants for processing CIP solutions due to the high fat content in whole milk. The milk fat has, in the past, caused membrane fouling and reduced filtration rates. The development of a new membrane substrate has greatly reduced the fouling problem and appears to hold good promise for this application.

Water savings at Rockview amounted to approximately 16,000 gallons per day in this demonstration project, or a rate of approximately 18 acre-feet per year.

In a typical application within a dairy plant, additional savings in sanitation fees could be as high as another \$350,000 annually as a consequence of this new process. These savings would be derived from reduced chemical oxygen demand and suspended solids, as well as a reduction in sanitation capacity units.

For further information on the demonstration project and for study results (water, energy, sanitation requirements and costs) contact-

Mr. Paul Williams, P.E., Southern California Edison Company
Tel. 626-633-7192
paul.williams@sce.com

4. Clothes Washers of the 21st Century!

New resin-based cleaning process results in a clothes washer that requires no hot water and no rinsing! Read about it in an article by Katherine Noble-Goodman of U. S. Water News:

<http://www.uswaternews.com/archives/arconserv/1wasmac10.html>



1. Pressure-Assist Toilets

Read how pressure-assist toilets work in this article by Paul DeBoo (Sloan Flushmate) in Reeves Journal:

http://www.reevesjournal.com/rj/cda/articleinformation/features/bnp_features_item/0,3815,61864,00.html

2. Kohler Unveils "New Flushing System"

Read this and judge for yourself:

<http://www.contractormag.com/articles/1001/kohler.html>

3. From Plumbing & Mechanical Magazine-----

See Tom Babcock's excellent response to Plumbing & Mechanical Magazine's coverage the University of Arizona's Study of Aging Low Consumption Toilets (see "The Toilet Paper" Vol. 1, No. 2):

http://www.pmmag.com/pm/cda/articleinformation/features/bnp_features_item/0,2379,25276,00.html

4. From PM Engineer Magazine-----

Read a discussion by Klaus Reichardt (Waterless Company) of the water crises facing California and the world in this article appearing in the July 2001 issue:

<http://www.pmengineer.com/pme/cda/articleinformation/coverstory/bnpcoverstoryitem/0,2730,29002,00.html>

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