

**FAME Award Of Excellence**

# **Innovative Pumping Systems Reduce Fuel Consumption, Saves Maintenance Repair Time**

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## **The New York City Housing Authority**

The New York City Housing Authority provides affordable housing for more than 178,464 families within the five boroughs of the City of New York. The Housing Authority is a governmental corporation centrally managed with eight subordinate district management groups and 14,000 employees.

## **The Department**

Plant management facilities personnel are responsible for maintaining the physical structure of more than 2,800 buildings, ranging from two story stick-type construction to fire proof, high rise buildings up to 32 stories.

## **The Problems**

Two problems were solved in the area of heat distribution. The first item was to move condensate from a low point to a high point using a steam syphon system rather than mechanical equipment. The second item was to salvage relatively new condensate vacuum pump sets that could not be kept operating due to poor construction and design. The total value of this equipment installed in 225 buildings over a ten year period is approximately \$6 million.

Both problems affected the ability of the boiler plant operators to provide continuous and uniform heat and hot water at different project locations. A boiler water treatment program could not be maintained properly. Extensive condensate water losses were recorded. Also, extensive fuel losses resulted from the high usage of make up water and poor steam distribution due to waterlogged steam piping. Other problems included expensive and frequent repairs to steam traps, failed equipment and pumping costs for flooded basements.

## **The Solutions**

When done by in-house personnel, the steam syphon system costs from \$1700 to \$7500 per building. When performed by contractors, the cost ranges from \$8,500 to \$12,500 per building.

Development of the system by Jacob Myron, plumbing section supervisor with New York's Housing Authority, took two days personal time with a one year test before being implemented. Steam syphon technology works on the principle that steam will provide a motive force to condensate resulting from the pressure drop when condensate partially flashes back into the vapor state. This method of condensate removal has been installed by the staff in 200+ buildings, and the Authority's design department now specifies it in all new retrofits.

## **The Results**

Cost savings for this situation are not immediately known, but it affects directly the ability of the Housing Authority's Boiler Plants to provide uniform heat and domestic hot water.

Item two, the modification of failed condensate vacuum pumps, has netted a three-and-a-half month pay-back. At one location with 30 buildings, it has returned, after cost of installation, a savings of \$115,000 per annum, more than 3 million gallons of boiler make-up water, and \$45,000 in repairs to failing equipment. The boiler water treatment program is back on track. Alternatives would have included the complete replacement of the newly installed plant. It took two plumbers and two electricians one year to modify 200+ buildings.

Both suggestions together have reduced fuel consumption by an average of 14% and saved an average of 50 hours a year in maintenance repair time per building for 200+ buildings, as well as in the cost of repair and replacement parts.