

Identifying the Parameters for Saving Energy and Water, Costs and Benefits of a Hot Water Demand Pumping System, a Flue Gas Baffle, and a Flue Damper

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The objective of the project is to explore the savings of water and energy through more efficient heating and distribution of hot water for both commercial and residential use. The methods are the potential benefits of using a hot water demand pumping system, a flue gas baffle and a flue damper in commercial and residential applications. The study describes the three technologies, identifies a method to properly account for the benefits of these water and energy savings technologies, explores the magnitude of the benefits, and highlights areas for further study.

The concepts presented results in improving the flue gas baffle which increases heat transfer from the flue gasses to the water during the combustion cycle. The flue damper decreases the losses up the flue during the stand-by cycle. The hot water demand pumping system reduces the time waiting for hot water to get to the fixture, increasing convenience, while reducing the amount of water that runs down the drain. Reduced water consumption translates into less energy used, both in the home and at the water delivery and waste water treatment plants. Results of this analysis indicate that widespread use of these three devices is likely to have significant energy, chemical and water resource savings, with corresponding reductions in pollutant emissions.

This presentation is valuable because it shows how existing technologies can be improved to save water and energy, reduce air pollution, and reduce sewage waste. The presentation is unique because in addition to the savings, the hot water demand pumping system increases consumer convenience.