

Improving Performance of Grease Traps & Interceptors

(Prototype @ Flying J Restaurant Cools Dishwasher Effluent -- Saving Energy, Water & Maintenance)*



(a) Upper section of M2P4-60



(b) Three speed Grundfos UP15-42F Circulator
(Circulates cold & preheated water between 4 GFX-coils & 3 85-gallon gas water heaters @ 4.7, 5.8 or 6.5 gpm)



(c) GFX Model M2P4-60
Effectiveness: 72% (4.5 gpm balanced); 85% (4.5/6.5 gpm)



(d) Hobart dishwasher Models C-44A/C-44AW
(Discharge: 5/2 gpm; capacity 203/126 racks/hr, respectively)



(e) Variable speed wastewater pump



(f) Wastewater holding tank with automatic bypass

Problems

In 1884, Nathaniel Whiting patented the first grease trap in California; creating a new way to waste millions of Btu's protecting sewers from fats, oils and grease ("FOG"). Rather than foster conservation by improving his invention, some modern traps also waste water. Automatic interceptors called grease removal devices (GRD) waste additional energy re-heating trapped grease to 110°F to 140°F. (See "*Back to Basics: Grease Interceptors*", Ron George, CIPE, CPD; PM Engineer 11/04)

Flying J's Green Solution

Adding a GFX Drain Heat Recovery (DHR) system before a grease trap saves energy, enhances performance and eliminates the need to add cold water to solve the "Hot Trap" problem.

Single Loop System

This GFX-system has an open wastewater loop and closed cold-water loop. Operating conditions are set by pump speeds and time-delay relays. In busy restaurants, for example, with 55° city water and a C-44A operating at 90% capacity, the GFX must handle an average drain rate of 4.5 gpm. With the lowest coil flow rate, 160°F effluent will be cooled to about 77°F before entering the trap; 71°F at the highest circulation rate. Water heater load reduction will be 54.8 & 58.7 kW-thermal, respectively. Up to $0.9 \times 58.7 = 52.8$ kWh (180,309 Btu) will go back to the water heater to boost its capacity rather than heat the grease trap. **NOTE:** Converting the Flying J prototype to a proprietary closed-loop system will reduce maintenance by promoting self-cleaning. (Adding a GFX after a GFD can save more energy.)



(g) One of three A.O. Smith MasterFit® induced draft tank-type commercial gas water heaters (Model BTR 500)

* Photos courtesy of Joshua Cardana, Restaurant Manager Flying J Truck Stop Restaurant, Ripon, CA (CA99, Exit @ Jack Tone Road); (GFX unit was shipped 3/17/03, photographed 12/6/04)