



# Savings Analysis for Eco-GFX or ThermoDrain application in a Group shower configuration

---

Friday, August 27, 2010

Report Prepared by:



## Cost Benefit Analysis

### Eco-GFX installation in grouped shower configuration

#### 1. Objective

- 1.1 The objective of this analysis is to provide a cost-benefit comparison for two proposed Eco-GFX or ThermoDrain products.

#### 2. Method

- 2.1 Operating parameters are entered into the calculator.
- 2.2 With the hypotheses mentioned in section 3 efficiencies and savings have been calculated with recognized thermal engineering methods.
- 2.3 Eco-GFX and ThermoDrain data used was obtained in EcoInnovation's research and development laboratories using our standard test protocol.

#### 3. Hypotheses

- 3.1 The following values were used in the calculations:

- 3.1.1 There is a total of 1 showers at an occupancy rate of 100%
- 3.1.2 Total shower time per week is 4.66 hours
- 3.1.3 Total annual shower time is 242.99 hours
- 3.1.4 Configuration is in Cold water preheat 89%
- 3.1.5 Each shower has a flow rate of 9.5 lpm (2.5 gpm)
- 3.1.6 Maximum drain flow rate is 9.5 lpm
- 3.1.7 Average cold water temperature is 10 C°
- 3.1.9 Average drain temperature is 37 C°
- 3.1.10 Delta T is 27 C°
- 3.1.11 Total annual wasted energy is 5574.19 kWh
- 3.1.12 Energy used to heat water is Natural Gas at a cost of \$0.5 per m<sup>3</sup>
- 3.1.13 Efficiency of hot water heater is 78%

#### 4. Scenario comparisons

##### 4.1 Cost and savings scenario 1

- Number of ThermoDrain TD-340 units required is 1
- Price for model ThermoDrain TD-340 is \$500 per unit, for a total cost of \$500
- No installation costs have been considered in this calculation
- The potential efficiency of the ThermoDrain TD-340 is 45% in the selected configuration
- The maximum hypothetical design flow rate for the ThermoDrain TD-340 is 9.5 lpm
- This unit will be operating at a maximum hypothetical flow rate of 9.5 lpm
- Total recovered energy is 2508.39 kWh per year of operation
- **Total savings per year using a quantity of 1 ThermoDrain TD-340 units is \$120.66**
- **Total Payback period is 4.1 years**
- Total payback after 20 years with energy inflation at 2.5% per year is \$2945.5
- Rate of return after 20 years with energy inflation at 2.5% per year is 25.9%



#### 4.2 Cost and savings scenario 2

- Number of ECO-GFX 1430 units required is 1
- Price for model ECO-GFX 1430 is \$1200 per unit, for a total cost of \$1200
- No installation costs have been considered in this calculation
- The potential efficiency of the ECO-GFX 1430 is 43% in the selected configuration
- The maximum hypothetical design flow rate for the ECO-GFX 1430 is 11.4 lpm
- This unit will be operating at a maximum hypothetical flow rate of 9.5 lpm
- Total recovered energy is 2396.9 kWh per year of operation
- **Total savings per year using a quantity of 1 ECO-GFX 1430 units is \$115.29**
- **Total Payback period is 10.4 years**
- Total payback after 20 years with energy inflation at 2.5% per year is \$2814.41
- Rate of return with energy inflation at 2.5% per year is 9.2%

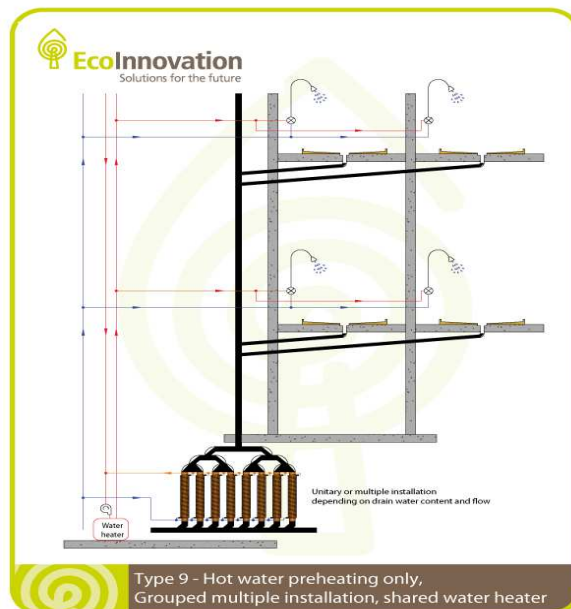
#### 5. Installation configuration

5.1 Based on the information provided, the following installation diagrams shall be used as a guide as to how the DWHR unit will be configured;

##### 5.1.1 Cold water installation configuration

The DWHR unit will be placed in cold water preheat 89% configuration  
Refer to configuration drawing type A

##### 5.1.2 Eco-GFX or ThermoDrain configuration drawing



Disclaimer: All **energy savings** listed on this page are by their nature, theoretical. The calculations performed are an estimate of the potential savings under the given circumstances and should be considered as such. EcoInnovation or its associates cannot be held accountable for differences between theoretical and actual energy savings.