HEAT RECOVERY PRIORITIZATION GUIDE

How to find your prime target for heat recovery

Every HVAC/R system generally possesses some amount of inefficiency resulting in wasted energy. The quantity and temperature of the waste heat is which determines some equipment to be a better targets for Doucette Heat Recovery products. Some common applications, and performance comparisons are shown below to illustrate which projects will yield the greatest, and fastest returns.

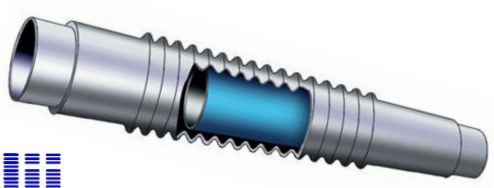
Typical Applications for Domestic or Reheat Water Heating:

-- Hotels/Motels
-- Condominiums
-- Restaurants
-- Schools/Universities
-- Hospitals
-- Military Bases
-- Office Buildings
-- Supermarkets
-- Ice Rinks

(1) ***Multiply performance values by actual system tonnage (TR) to calculate total heat recovered.***

Condenser Type	Operating Conditions ET/CT	Reciprocating *R-22*		Scroll *R-410A*		Screw *R-134a*	
		dt (°F)	Btuh/TR	dt (°F)	Btuh/TR	dt (°F)	Btuh/TR
Air-Cooled	38/120°F	200	3640	180	3160	145	2320
Water-Cooled	38/105°F	185	3065	165	2550	130	1780
Evaporative	38/95°F	175	2670	155	2150	120	1370

**performance assumes 0.2 GPM/TR of water entering at 75'F*



1.800.445.7511
www.doucetteindustries.com

doucette industries, inc.
Innovators of the Double-Wall Tube

dii 05/13

The energy savings of a Doucette Desuperheater/Water Heater can be estimated by using the following simple formula. This estimate is conservative because it does not take into account the reduction in energy consumption by the refrigeration compressor(s) due to the lower discharge pressure resulting from the use of a desuperheater in series with the condenser.

	④	⑤
Fuel Type	**Heat Content**	**Efficiency**
Generalized	100,000 btu/THERM	See below for fuel type
Grade 1 Fuel Oil	135,000 btu/THERM	0.75
Grade 2 Fuel Oil	139,000 btu/THERM	0.75
Grade 4 Fuel Oil	145,000 btu/THERM	0.80
Diesel	129,500 btu/THERM	0.80
Natrual Gas	1000 btu/ft3	0.80
Propane Gas	2500 btu/ft3	0.80
Propane	91,500 btu/gal	0.80
Butane	3200 btu/ft3	0.90
Electricity	3413 btu/kW-hr	0.95

② **Hours/Year Operation**

*Total compressor run hours. Doucette estimates approx. 50% operation, for a total of: 12hr/day x 365 = 4,380 hrs

③ **Fuel Cost**

*Current fuel cost in $/x, where x is either ft3, btu, or THERM, as indicated in the chart.

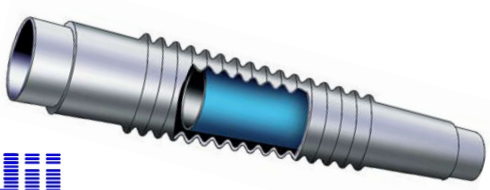
YEARLY ENERGY SAVINGS =

$$\frac{\overset{①}{(Heat\ Recovered)}\ x\ \overset{②}{(Run\ Hours)}\ x\ \overset{③}{(Fuel\ Cost)}}{\underset{④}{(Fuel\ Conversion)}\ x\ \underset{⑤}{(Efficiency)}}$$

SAMPLE:

Consider a facility with a 100TR, Air-Cooled R-410A Scroll Chiller, operating approximately 4,380 hrs/year, currently heating domestic water via electricity at $0.30/kW-hr.

$$SAVINGS = \frac{(316{,}000)\ x\ (4380)\ x\ (0.30)}{(3413)\ x\ (0.95)} = \$128{,}063 \text{ per year}$$



1.800.445.7511
www.doucetteindustries.com

doucette industries, inc.
Innovators of the Double-Wall Tube