PRODUCTION ENERGY BALANCE

Preliminary comparison of Traditional Pellets vs. Torrefied Pellets

	(a) Weight of Feedstock	(b) Moisture in Feedstock	(c) Feedstock Btu	(d) Feedstock Btu Spent	(e) Other Energy Spent, Btu	(f) Actual Energy in Product, Btu	(g) Net Product Energy, Btu	(h) Final Weight	(i) Energy Efficiency
Traditional Pellets	1 lb	40%	4500	0	585	4500	3915	0.6 lbs	87%
	1 lb	50%	3750	0	690	3750	3060	0.5 lbs	82%
Torrefied Pellets	1 lb	40%	4500	405	45	4095	4050	0.42 lbs	90%
	1 lb	50%	3750	510	45	3240	3195	0.33 lbs	85%

Notes:

(c) Energy content in feedstock is assumed to be 7,500 Btu/dry lb.

(d) and (e) Torrefaction generates volatiles from semicellulose in feedstock which is used to dry and torrefy feedstock, and a small amount of electrricity is used to grind and pelletize. Since traditional pellets don't have this option, all plant energy needs will come from external energy sources.

(f) (f) = (c) - (d)

(g) (g) = (c) - (d) - (e)

(h) Hemicellulose may have 10% of feedstock energy but 30% of feedstock mass. If feedstock moisture is 50% rather than 40% , 26% more energy from feedstock is needed to dry and torrefy.

(i) (i) = (g)/(c)*100