

Cairo - Totus Energy Recovery Calculation		Exchange rate £1.00 = 8.42 EGP		8.42											
Values in Yellow Cells can be changed, all other values will automatically recalculate															
Mean Room Design Deg C	21	Energy Cost per KW/h (Cooling)						Co2 per KW/h							
Airflow m3/s	1.92	EGP 0.30						1.04							
Efficiency	90%														
Climatological Data - BBC Weather Data, Cairo															
Daytime	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec			
Mean Daily Max (8.00am to 6.00pm) Deg C	18.00	21.00	24.00	28.00	33.00	35.00	38.00	35.00	32.00	30.00	26.00	20.00			
Temp Difference Deg C	-3.00	0.00	3.00	7.00	12.00	14.00	17.00	14.00	11.00	9.00	5.00	-1.00			
KW/h Gained/Lost To Vent	-7.05	0.00	7.05	16.45	28.20	32.90	39.95	32.90	25.85	21.15	11.75	-2.35			
Hours Run per Day	12	12	12	12	12	12	12	12	12	12	12	12			
Daily KW gained/lost to Vent	-84.60	0.00	84.60	197.41	338.41	394.81	479.42	394.81	310.21	253.81	141.00	-28.20			
Daily Energy Recovered (90%) KW	-76.14	0.00	76.14	177.67	304.57	355.33	431.47	355.33	279.19	228.43	126.90	-25.38			
Working Days/Month	21	20	22	22	21	22	23	21	22	22	21	23			
Evening/Nighttime	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec			
Mean Daily Max (6.00pm to 8.00am) Deg C	8	9	11	14	17	20	21	22	20	18	14	10			
Temp Difference Deg C	13.00	12.00	10.00	7.00	4.00	1.00	0.00	-1.00	1.00	3.00	7.00	11.00			
KW/h Gained/Lost To Vent	30.55	28.20	23.50	16.45	9.40	2.35	0.00	-2.35	2.35	7.05	16.45	25.85			
Hours Run per Day	12	12	12	12	12	12	12	12	12	12	12	12			
Daily KW gained/lost to Vent	366.61	338.41	282.01	197.41	112.80	28.20	0.00	-28.20	28.20	84.60	197.41	310.21			
Daily Energy Recovered (90%) KW	329.95	304.57	253.81	177.67	101.52	25.38	0.00	-25.38	25.38	76.14	177.67	279.19			
Working Days/Month	21	20	22	22	21	22	23	21	22	22	21	23			
Cooling losses With no Energy Recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Losses		
Monthly KW/h	-1776.66	0.00	1861.26	4342.95	7106.64	8685.90	11026.58	8291.08	6824.63	5583.79	2961.10	-648.62	54259		
Energy Costs	-EGP 533	EGP 0	EGP 558	EGP 1,303	EGP 2,132	EGP 2,606	EGP 3,308	EGP 2,487	EGP 2,047	EGP 1,675	EGP 888	-EGP 195	EGP 16,278		
Co2 Generated (KG)	-1848	0	1936	4517	7391	9033	11468	8623	7098	5807	3080	-675	56429		
Heating losses With no Energy Recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Losses		
Monthly KW/h	7698.86	6768.23	6204.21	4342.95	2368.88	620.42	0.00	-592.22	620.42	1861.26	4145.54	7134.84	41173		
Energy Costs	EGP 2,310	EGP 2,030	EGP 1,861	EGP 1,303	EGP 711	EGP 186	EGP 0	-EGP 178	EGP 186	EGP 558	EGP 1,244	EGP 2,140	EGP 12,352		
Co2 Generated (KG)	8007	7039	6452	4517	2464	645	0	-616	645	1936	4311	7420	42820		
Cooling savings with Energy Recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Saving		
Recovered Energy KW/hrs	-1599	0	1675	3909	6396	7817	9924	7462	6142	5025	2665	-584	48833		
Energy Cost Saved	-EGP 480	EGP 0	EGP 503	EGP 1,173	EGP 1,919	EGP 2,345	EGP 2,977	EGP 2,239	EGP 1,843	EGP 1,508	EGP 799	-EGP 175	EGP 14,650		
Co2 Saving (KG)	-1663	0	1742	4065	6652	8130	10321	7760	6388	5226	2772	-607	50786		
Heating savings with Energy Recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Saving		
Recovered Energy KW/hrs	6929	6091	5584	3909	2132	558	0	-533	558	1675	3731	6421	37056		
Energy Cost Saved	EGP 2,079	EGP 1,827	EGP 1,675	EGP 1,173	EGP 640	EGP 168	EGP 0	-EGP 160	EGP 168	EGP 503	EGP 1,119	EGP 1,926	EGP 11,117		
Co2 Saving (KG)	7206	6335	5807	4065	2217	581	0	-554	581	1742	3880	6678	38538		
Total Savings	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Saving		
Recovered Energy KW/hrs	5330	6091	7259	7817	8528	8376	9924	6929	6701	6396	5838	-584	85889		
Energy Cost Saved	EGP 1,599	EGP 1,827	EGP 2,178	EGP 2,345	EGP 2,558	EGP 2,513	EGP 2,977	EGP 2,079	EGP 2,010	EGP 2,010	EGP 1,919	EGP 1,751	EGP 25,767		
Co2 Saving (KG)	5543	6335	7549	8130	8869	8711	10321	7206	6969	6652	6071	-607	89324		
Payback Analysis															
Ventilation System installation Cost															
Supply & Extract Fan EGP 10,104															
Energy Recovery Ventilation Unit EGP 378,900															
Variance EGP 368,796															
Annual Savings															
Cooling only				Heating only				Heating & Cooling							
Basic Air conditioning Cost EGP 227,340				Reduction in Heating Cost				Reduction in Heating & Cooling PlantCost				-EGP 171,768			
Cooling recovered Energy Cost EGP 18,312				Heating recovered Energy Cost EGP 13,896				Reduction in Energy - recovered Energy Cost				EGP 32,208			
Total cooling cost EGP 245,652				Total Reduction EGP 13,896				Total Reduction				-EGP 139,560			
Running cost of the basic cooling system EGP 26,280															
Energy recovered system air conditioning cost EGP 30,312															
kw/hrs 48,833												kw/hrs 85,889			
kKg Co2 50,786												kKg Co2 89,324			
Payback Years 7.9												Payback Years 4.5			
Total cost for full cooling & ventilation EGP 237,444															
total cost for energy recovery units system EGP 409,212															
Total initial cost increment EGP 145,488															