

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	5.9	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	-21.66	0.00	21.66	50.55	86.66	101.10	122.77	101.10	79.44	64.99	36.11	-7.22				
Hours Run per Day	12	12	12	12	12	12	12	12	12	12	12	12				
Daily KW gained/lost to Vent	-259.98	0.00	259.98	606.61	1039.91	1213.23	1473.21	1213.23	953.25	779.93	433.30	-86.66				
Daily Energy Recovered (90%) KW	-233.98	0.00	233.98	545.95	935.92	1091.91	1325.89	1091.91	857.93	701.94	389.97	-77.99				
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	93.88	86.66	72.22	50.55	28.89	7.22	0.00	-7.22	7.22	21.66	50.55	79.44				
Hours Run per Day	12	12	12	12	12	12	12	12	12	12	12	12				
Daily KW gained/lost to Vent	1126.57	1039.91	866.59	606.61	346.64	86.66	0.00	-86.66	86.66	259.98	606.61	953.25				
Daily Energy Recovered (90%) KW	1013.91	935.92	779.93	545.95	311.97	77.99	0.00	-77.99	77.99	233.98	545.95	857.93				
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	-5459.53	0.00	5719.51	13345.52	21838.12	26691.03	33883.75	25477.80	20971.53	17158.52	9099.22	-1993.16	166732			
Energy Costs	EGP 1,638	EGP 0	EGP 1,716	EGP 4,004	EGP 6,551	EGP 8,007	EGP 10,165	EGP 7,643	EGP 6,291	EGP 5,148	EGP 2,730	-EGP 598	EGP 50,020			
Co2 Generated (KG)	-5678	0	5948	13879	22712	27759	35239	26497	21810	17845	9463	-2073	173402			
Heating losses With no Energy Recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Losses			
Monthly KW/h	23657.96	20798.21	19065.02	13345.52	7279.37	1906.50	0.00	-1819.84	1906.50	5719.51	12738.90	21924.78	126522			
Energy Costs	EGP 7,097	EGP 6,239	EGP 5,720	EGP 4,004	EGP 2,184	EGP 572	EGP 0	-EGP 546	EGP 572	EGP 1,716	EGP 3,822	EGP 6,577	EGP 37,957			
Co2 Generated (KG)	24604	21630	19828	13879	7571	1983	0	-1893	1983	5948	13248	22802	131583			
Cooling savings with Energy Recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Saving			
Recovered Energy KW/hrs	-4914	0	5148	12011	19654	24022	30495	22930	18874	15443	8189	-1794	150059			
Energy Cost Saved	EGP 1,474	EGP 0	EGP 1,544	EGP 3,603	EGP 5,896	EGP 7,207	EGP 9,149	EGP 6,879	EGP 5,662	EGP 4,633	EGP 2,457	-EGP 538	EGP 45,018			
Co2 Saving (KG)	-5110	0	5353	12491	20440	24983	31715	23847	19629	16060	8517	-1866	156061			
Heating savings with Energy Recovery	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Saving			
Recovered Energy KW/hrs	21292	18718	17159	12011	6551	1716	0	-1638	1716	5148	11465	19732	113870			
Energy Cost Saved	EGP 6,388	EGP 5,616	EGP 5,148	EGP 3,603	EGP 1,965	EGP 515	EGP 0	-EGP 491	EGP 515	EGP 1,544	EGP 3,440	EGP 5,920	EGP 34,161			
Co2 Saving (KG)	22144	19467	17845	12491	6813	1784	0	-1703	1784	5353	11924	20522	118425			
Total Savings	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Saving			
Recovered Energy KW/hrs	16379	18718	22306	24022	26206	25738	30495	21292	20590	20590	19654	17938	263929			
Energy Cost Saved	EGP 4,914	EGP 5,616	EGP 6,692	EGP 7,207	EGP 7,862	EGP 7,721	EGP 9,149	EGP 6,388	EGP 6,177	EGP 6,177	EGP 5,896	EGP 5,382	EGP 79,179			
Co2 Saving (KG)	17034	19467	23198	24983	27254	26767	31715	22144	21414	21414	20440	18656	274486			
Payback Analysis																
Ventilation System installation Cost																
														Supply & Extract Fan		EGP 25,260
														Energy Recovery Ventilation Unit		EGP 631,500
														Variance		EGP 606,240
Annual Savings																
Cooling only				Heating only				Heating & Cooling								
Basic Air conditioning Cost				Reduction in Heating Cost				Increase in Heating & Cooling PlantCost				-EGP 395,740				
Cooling recovered Energy Cost				Heating recovered Energy Cost				Reduction in Energy - recovered Energy Cost				EGP 98,973				
Total cooling cost				Total Reduction				Total positive variation				-EGP 296,767				
Running cost of the basic cooling system				Energy recovered system air conditioning cost saving				EGP 20,240								
Energy recovered system air conditioning cost				kw/hrs				113,870				kw/hrs				
kWhrs				150,059				kWhrs				263,929				
kKg Co2				156,061				kKg Co2				274,486				
Payback Years				5.5				Payback Years				14.2				
Payback Years				3.1												
Total cost for full cooling & ventilation				EGP 303,120												
total cost for energy recovery units system				EGP 698,860												
Total initial cost increment				EGP 308,140												