

**Es 1** Rankine

Tmin °C	40
Pmax bar	150
Tmax °C	450
etaPpompa	94%
etaTurb	100%

	T °C	P kPa	x	h	s		ideale	reale
1=LiqSat	40	7.384	0	167.6	0.5725	Qin	2959.61	2958.65
2	40	15000	nd (<0)	<b>182.6</b>	"	L_nu_Tid	1213.59	1215.03
2re				183.6		<b>eta1</b>	<b>41.0%</b>	<b>41.1%</b>
5	450	15000	nd (>1)	3142.2	6.1474	etaC	56.7%	56.7%
6	40	7.384	<b>0.725</b>	<b>1913.6</b>	6.1474	<b>eta2</b>	<b>72.3%</b>	<b>72.4%</b>
6re			<b>0.725</b>	1913.6	6.147			
VapSat	40	7.384	1	2574.3	8.257			

**Esercizio 2** compressore politrop in out-isoS politropica

R, Cp	286.69	1003.414	T °C	20	256.0	208.8
deltaT/delt	80%		T K	293	529.0	481.8
I, L' in	225054	1500	P_ass Pa	101325	801325	801325
delta h, H	189454	<b>1263</b>	ro kg/m3	1.206		<b>5.801</b>
m'	<b>0.0067</b>		v	0.8290162		0.172377
q, Q' in	-35600	<b>-237</b>	n			1.317
delta _s, S	-93.8	<b>-0.63</b>				
amb	121.5	0.8				
tot	27.7	0.2				

**es 3** pompa di calore

		K	°C
Q'sup W	5000	Tsup	319
<b>COPid</b>	<b>7.42</b>	deltaTcond	24
<b>COPre</b>	<b>4.45</b>	T esterno	22
<b>Lin</b>	<b>1123</b>	deltaT	43
<b>Q'inf W</b>	<b>3877</b>	T locali	12
euro/kWh	0.15	deltaTevap	9
		Tinf	276
			3

**Es 4** aria umida

	1	delta 12	2	liq_ev	3
T	5		45.0	10	<b>34.1</b>
UR	80%		7%		26%
Psat	872.1		9593		5383.1
Pvap	697.7	=	697.7		1395
x	0.0043	=	0.0043	0.0044	0.0087
h	15.9	40.5	<b>56.4</b>	0.2	56.5

Tsat°C	Psat_Pa
5	872.1
5.0	872.1
10	1227.6
0.01	611.3
5	872.1

**Es 5** lastre

lati, cm	3	lambda cera	3
L Re-Nu,m	<b>0.2</b>	ro ceramica	2600
T_iniz	20	Cp	800

T_finale	400	alfa	1.44E-06	
T_amb	900	facce	2	
T_film	555	Lc per Bi	0.015	
w_aria	8	<b>Bi</b>	<b>0.121</b>	
Ro_aria	0.47	lambda1	0.16	0.82
lambda_ar	0.058	A1	1.02	1.13
mi_aria	0.000035	teta	0.57	
Pr	0.701	Fo	22.86	
Re	21303	tempo s	3566	
Nu	83.6	tempo min	59	
h	24.2	tempo h	0.99	

Es 6 Biot					
T_amb	900	T_iniziale	20	lambda_ac	60
Tfilm	555	T_finale	400	ro acc	7800
ro_aria	0.47	w m/s	8	Cp acc	600
lambda	0.058	D= L_Re	0.040	spessore	0.005
mu	3.53E-05	Re	4261	Bi	0.029005
Pr	0.701	Nu	30.0	Tau	537.8
		<b>h</b>	<b>43.5</b>	t s	304

Es 7 aletta					
T_base	20	Tamb	900	lambda_ac	60
Tfilm	555	T_finale	400	spessore	0.005
ro_aria	0.47	w m/s	8	perim	0.1256
lambda	0.058	D= L_Re	0.040	Area	0.0005495
mu	3.53E-05	Re	4261	m	12.9
Pr	0.701	Nu	30.0	1/m	0.078
		<b>h</b>	<b>43.5</b>	L_ok	<b>0.044</b>

Es 8 Irraggiamento						
D	4	Area	eps	T °C	K	
R	2.00	Soffitto	12.56	0.8	70	343
altezza = L	3	Lati	37.68	0.8	70	343
L/R	1.5	Pavimento	12.56	0.7	25	298
R/L	<b>0.666667</b>					
F_BB	0.23	F12	Q'			
F_BL	0.77	Q' sup-lato	0.77	<b>0.00</b>		
F_LB	0.256667	Q' lato-inf	0.256667	<b>2342.29</b>		
B=base L=lato		Q' sup-inf	0.23	<b>843.74</b>		