Temps									
Tin	300	K							
Texit	325	K							
Tboiling,pot	373	K							
Tpasturization	350	K							
Tcoil,in	330	K							
Tcoil,out	350	K							
T kill out	355	K							
delta T1,T2	25	K							
delta Tlm	25	K							
Givens			**Heating Coil**			**Effects of Fouling**			
Volumetric flow ra	0.0001666666667	m^3/s	required q into the coil	13898.18	W	Rf,i"	0.0006	m2K/W	
Di,coil	0.0127	m	Re_D_coil	31,551.24		Rf,o"	0.0006	m2K/W	
HX coil thickness	0.001	m	Nu_D_coil	149.5285896		HX length required with fouling	26.47832025	m	
Cp water (325k)	4182	j/kg*K	h_inside coil	7,594.17	W/m^2K				
rho water	997	kg/m^3	Required coil length	1.835	m				
viscosity water	5.28E-04	N*s/m^2	UiAi	555.9272	W/K	q boil	50.728357	kW	
conductivity wate	6.45E-01	W/m*K	UoAo	833.8908	W/K	**Overall Performance (without fouling)**			
K copper	401	W/m*K				Heat replacement needed to the pot	17.372725	kW	
Cp copper	385	J/kg*K				Heat replacement needed per liter of water treated	104.23635	kJ	
rho copper	8933	kg/m^3	**Concentric Tube Heat Exchanger**			Heat needed to boil one liter of water	304.370142	kJ	q boil
Do,coil	0.0147	m	Counter or parallel flow	Counter		% Energy savings to purify a liter of water	65.75342466	%	
RF river water	0.0006	m^2*K/W	q removed from the hot water	20847.27	W				
mdot	0.1661666667	kg/s	Re_inside	31,551.24					
Re,D	31,551.24		Nu_inside	132.2142949					
Pr	3.42		h_inside	6,714.82	W/m2K				
Dtotal HX	0.0274	m	Re_annulus	11,741.71					
n (heating)	0.4		Nu_annulus	67.81037513					
n (cooling)	0.3		h_annulus	9,246.87	W/m2K				
Nu,D	149.5285896		U_o	3547.043529	W/m2K				
V	1.315683494	m/s	Required Length	5.090675999	m				
Ac inner	0.0001266768698	m^2	Temperature into the HX leaving the pot	355	K				
As	0.07320448551	m^2							
Dh	0.002	m	Plot 1			Plot 2			
As outer	0.4382035508	m^2	mdot	HX Length		mdot	HX Length		
Ac outer	0.0001697166891	m^2	0.05	3.951		0.05	9.38		
Rw (coil)	0.00003163546137	m^2K/W	0.1	4.57		0.1	16.83		
Rw (HX)	0.00001140204668	m^2K/W	0.15	4.98		0.15	24.13		
Do,o	0.01942627087	m	0.2	5.29		0.2	31.37		
Dh	0.00473	m	0.25	5.55		0.25	38.57		
As	0.2350946057	m^2	0.3	5.77		0.3	45.7		
Vcross	0.1666666667	L/s	0.35	5.97		0.35	52.9		
			0.4	6.14		0.4	60.1		
			0.45	6.30		0.45	67.2		
			0.5	6.45		0.5	74.4		
			0.55	6.584		0.55	81.45		
			0.6	6.71		0.6	88.5