The absorber or receiver (flat plate or parabolic) must have high absorptance in the wavelength range below 2 micron, as the main solar spectrum is in this range.Collector Power Output: We combine the following terms and substitute, Q_{conv}+Q_{rad}=Q_{RC} Q_{ref}= \tau \rho E A_{c} [Q_{out}= \tau E A_{c} \left (1−rho \right) − Q_{RC} For absorber, \alpha = 1− \rho So, Q_{out}= \tau \alpha EA_{c}− Q_{RC} = \eta _{o}EA_{c}−Q_{RC} where the product of transmittance and absorptance is replaced as the Optical Efficiency of the absorber or collector.Power ouput _{Qout} = \tau E A_{c} − Q_{ref} − Q_{conv} − Q_{rad} is reduced by losses due to reflection, convection and radiation.{m}'=\eta _{o}E− a1(T_{c}−T_{a})−a2(T_{c}−T_{a})^{2}/ C_{p}(T_{out}−T_{in}) This is the mass flow rate rewritten as a area flux, measured in kg/m^2 hr.Collector Performance: The collector converts solar irradiance, E, to absorber surface (Ac) heat.