Nomenclature

A : Absorber area (m$^2$)
A$_c$ : Aperture area (m$^2$)
A$_{ca}$ : Collector area (m$^2$)
A$_g$ : Glazed surface area (for BC) (m$^2$)
A$_t$ : Pot surface area (m$^2$)
C : Concentration ratio
C$_{pa}$ : Specific heat per unit volume at constant pressure of the mixture
C$_R$ : Heat capacity ratio.
C$_u$ : Specific heat of cooking utensil (J/kg$^\circ$C)
C$_w$ : Specific heat capacity of water (J/kg$^\circ$C)
C$_1$, C$_2$, C$_3$ : Coefficients used in equation (2.12)
D$_i$ : Inside diameter of the pot (m)
D$_o$ : Outside diameter of the pot (m)
F : Fin efficiency factor
F' : Heat exchange efficiency factor / Collector exchange efficiency factor.
F$_1$ : First figure of merit (m$^2$ K/W)
F$_2$ : Second figure of merit
G : Solar irradiance (W/m$^2$)
G$_{av}$ : Average solar radiation (W/m$^2$)
G$_{sb}$ : Average solar beam radiation on the plane of aperture (W/m$^2$)
G$_{NR}$ : Reference direct normal radiation (W/m$^2$)
G$_{av}$ : Average total solar radiation on the plane of aperture (W/m$^2$)
Gr : Grashof number
h$_c$ : Convective heat transfer coefficient (W/m$^2$-K)
h$_e$ : Mass transfer coefficient
\( h_{fi} \) : Heat transfer co-efficient from fluid to inner wall of the pot (W/m\(^2\)-K)

\( h_r \) : Radiative heat transfer coefficient (W/m\(^2\)-K).

\( h_w \) : Wind heat transfer coefficient (W/m\(^2\)-K).

\( K \) : Thermal conductivity of the pot (W/m-K).

\( L \) : Length (m), spacing

\( M \) : Mass / Mass of water,( Kg).

\( M_1 \) : Mass of water for BC (Kg)

\( M_2 \) : Mass of water for PCC (Kg)

\( N \) : Number of pots.

\( Nu \) : Nusselt number

\( P \) : Cooking power (Watt)

\( P_s \) : Standard cooking power (Watt)

\( P_T \) : Total gas pressure (kg/m\(^2\))

\( Pr \) : Prandtl number

\( \dot{Q}^* \) : Rate of heat gain or loss /area (W/m\(^2\))

\( \dot{Q}_{in} \) : Energy absorbed (W/m\(^2\))

\( \dot{Q}_L \) : Total heat loss from the cooker (W/m\(^2\))

\( \dot{q}_{f} \) : Rate of heat added to the fluid.

\( S \) : Absorbed radiation per unit area of unshaded aperture (W/m\(^2\)).

\( t \) : Time interval (sec., unless otherwise specified), thickness (meter)

\( t_b \) : Thickness of insulation

\( t_o \) : Decay constant in min.

\( T \) : Temperature (°C)

\( \bar{T}_a \) : Average ambiant température (°C)

\( T_{m12} \) : arithmetic mean temperature of absorber plate and glass cover.

\( T_{m23} \) : arithmetic mean temperature of glass cover 1 and glass cover 2.

\( T_{ps} \) : maximum plate surface temperature. °C

\( T_{px} \) : maximum absorber plate temperature. °C
\( T_{fx} \) : maximum achievable fluid temperature, °C

\( dt \) : Time interval (sec)

\( \Delta T \) : Temperature difference (°C)

\( U \) : heat loss (W/m²)

\( U_L \) : Total heat loss factor.

\( F'\eta_o \) : Optical efficiency factor.

\( F'U_L \) : Overall heat loss factor (W/m²K)

\( \alpha \) : Absorptivity.

\( \beta \) : Collector tilt from the horizontal.

\( \gamma \) : Intercept factor.

\( \varepsilon_g \) : emittance of the glass plate.

\( \varepsilon_p \) : emittance of the absorber plate.

\( \varepsilon_{eff} \) : effective emmissivity

\( \eta \) : Efficiency

\( \eta_c \) : over all cooker efficiency

\( \eta_{opt} \) : optical efficiency

\( \eta_u \) : Utilizable efficiency

\( \eta_{io} \) : instantaneous oven efficiency.

\( \sigma \) : Stefan–Boltzman constant (W/m²K⁴)

\( \tau \) : Time interval, sec, unless otherwise specified, transmittance

\( \tau_o \) : Time constant, hrs, unless otherwise specified

\( \tau_r \) : Time taken to achieve a reference cooking temperature, min (unless otherwise specified)

\( \tau_{hr} \) : Duration of heat retention, min (unless otherwise specified)

\( (\tau\alpha) \) : Transmissivity-absorptivity product.

\( \rho \) : Specular reflectance

**Subscripts:**

\( a \) - air, ambient

\( b \) - bottom

\( c \) - characteristic, cover,

\( c_1 \) - glass cover 1/ cover 1
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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<tr>
<td>$c_2$</td>
<td>glass cover 2/ cover 2</td>
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<tr>
<td>$f$</td>
<td>fluid</td>
</tr>
<tr>
<td>$g$</td>
<td>glass</td>
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<td>$i$</td>
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<td>$i_0$</td>
<td>instantaneous oven</td>
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<td>$m$</td>
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<td>opt</td>
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<td>$p$</td>
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<td>$p_1$</td>
<td>plate to glass cover</td>
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<td>$s$</td>
<td>specific, side</td>
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<td>$s_{in}$</td>
<td>concentrator to oven</td>
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<tr>
<td>$t$</td>
<td>top, thickness</td>
</tr>
<tr>
<td>$u$</td>
<td>utensil, useful, utilizable</td>
</tr>
<tr>
<td>$w$</td>
<td>water, water vapor, width</td>
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<tr>
<td>$w_{g}$</td>
<td>water to glass</td>
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<td>$w_1$</td>
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<td>12</td>
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<td>2a</td>
<td>glass cover 2 to ambient</td>
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