In general:

$$k\frac{\partial^2\theta_j}{\partial x^2} = \rho c\frac{\partial\theta_j}{\partial t} \tag{2.1}$$

Boundary conditions:

$$-k\left.\frac{\partial\theta}{\partial x}\right|_{x=0} = h_0[\theta_{SA}(t) - \theta|_{x=0}] \tag{BC 1}$$

$$-k\left.\frac{\partial\theta}{\partial x}\right|_{x=\mathrm{X}} = h_i[\theta(x=\mathrm{X}, t) - T_R] \tag{BC 2}$$

where:

$$\theta_{SA} = \frac{\alpha_S S(t)}{h_0} + T_A - \frac{\varepsilon\Delta R}{h_0} \tag{2.2}$$

θ_{SA} : sol air temperature
$S(t)$: intensity of solar radiation
α_S : absorptivity of surface
ΔR : difference between radiation from surrounding and that emitted by a black body at ambient air temperature