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Nomenclature

A	Effective heat transfer area (m ²)
A _c	Collector plate area (m ²)
A _f	Frontal area (m ²)
A _o	Cross-sectional area of pitot tube (m ²)
a _v	Specific surface area per unit volume (m ⁻¹)
c _p	Specific heat of air (J/Kg K)
C _v	Coefficient of velocity for pitot tube
D	Depth of rectangular duct (m)
d _e	Equivalent diameter of aluminium wool (m)
f _p	Friction factor of packed bed
G _o	Relative mass flow rate of air in the duct (kg/s m ²)
g	Acceleration due to gravity (m/s ²)
h	Average heat transfer coefficient (W/m ² K)
h _v	Volumetric heat transfer coefficient, h a _v
I	Intensity of solar radiation (W/m ²)
L	Length of rectangular duct (m)
m	Mass flow rate of air (kg/s)
P	Porosity
ΔP	Pressure drop across the duct (N/m ²)
Q	Heat transfer rate (W)
Re _p	Reynolds number of packed bed, 4r _h G _o /μ
r _h	Hydraulic radius, Pd _e /4(1-P)
t _f	Average air temperature (K), (t _i + t _o) / 2
t _i	Air inlet temperature (K)
t _o	Air outlet temperature (K)
t _p	Average packed bed temperature (K)
u	air velocity in the packed duct, u=G _o /ρ
V	Volume of packed bed (m ³)
V _e	Volume of material element (m ³)
V _s	Total volume of storage material packed in the duct (m ³)
W	Width of rectangular duct (m)
x	Manometer reading (m)
Greek letters	
μ	Dynamic viscosity of air (N s/m ²)
ρ	Density of air (kg/m ³)
ρ _m	Density of manometer fluid (kg/m ³)
η	Thermal efficiency