

Nomenclature

Symbol	Description
C_c	= contraction coefficient of the holes
C_p	= Specific heat of air, (J/kg K)
d_c	= cyclone central axis diameter, (m)
d_h	= diameter of substrate hole, (mm)
d_p	= particle diameter, (m)
D	= diameter of pipe, (mm)
D_c	= cyclone body diameter, (m)
D_i	= tangential inlet diameter, (m)
D_o	= gas outlet diameter, (m)
D_p	= particles outlet diameter, (m)
Eu	= Euler number
F_b	= Buoyant force, (N)
F_c	= Centrifugal force, (N)
F_d	= Drag force, (N)
FCR	= Fuel consumption rate, (kg/hr)
ER	= Equivalence ratio
G	= It is related to the cyclone configuration, (-)
h_f	= height of the liquid in the main reservoir with internal diameter of 3.5 cm \times 2.54 cm.
H	= cyclone separation efficiency, (-)
H_t	= total height of cyclone separator, (m)
H_b	= barrel height, (m)

H_c	= cylinder height, (m)
K	= Consistency constant or proportionality constant = μ/g .
L	= vortex finder length, (m)
L_c	= length of the capillary tube = 1m
M	= molecular weight.
n_h	= number of holes
N	= number of filters
P	= Pitch
P_g	= Gauge pressure, Nm^{-2}
Pr	= Prandtl number
Re	= Reynolds number
SR	= means stoichiometric rate
SGR	= specific gasification rate, $(kg/hr \times m^2)$
t/d_h	= thickness ratio
T	= temperature, (K)
U	= Average velocity of the fluid and d is the internal diameter of the capillary tube ($d = 2mm$).
V	= volume from where the vortex turns, (m^3)
V_i	= inlet gas velocity, (m/s)
V_o	= inlet volumetric flow rate, (m^3/s)
V_s	= secondary volumetric flow rate, (m^3/s)
V_t	= tangential inlet velocity, (m/s)
ΔW	= weight of the liquid collected in time t seconds, kg
$x_1, x_2,$	= mole fraction of a components in a mixture.
Z_c	= natural length, (m)

Greek symbols

β	= porosity
ε	= equivalence ratio
ρ_a	= density of air, (kg/m ³)
ρ_g	= gas density, (kg/m ³)
ρ_p	= particle density, (kg/m ³)
ρ_r	= density of the fuel, (kg/m ³)
σ_R	= Uncertainty in R.
λ	= friction factor
τ_w	= shear stress at wall, (Nm ⁻²)
Φ_{ij}	= dimensionless constant.
μ_m	= viscosity of the mixture.

Abbreviations

BSFC	= Brake specific fuel consumption
SBME	= Soyabean methyl ester
UBHC	= unburnt hydrocarbons