LIST OF SYMBOLS

A - Surface area of heat transfer, m²
B - Constant (0.015 - 0.1)
C - Constant (0.04)
H - Heat transfer in one degree of crank travel, kJ
K - 1.33 - 0.394 x PS/100
L - Flame thickness = 3.6 V/A
M - Constant (0.2)
P - Cylinder pressure in N/m².
T - Working fluid temperature, K
V - Cylinder volume in m³
W - Wiebe's constant (6.908)
Z - Working fluid velocity, m/s
Cₐ - Fₐ x HV/θₐ
Cₐ - Co-efficient of discharge
Cₐ - Fuel cetane number
Cᵥ - Constant volume heat capacity of the mixture in (kJ/kg/K)
Eₐ - The apparent activation energy 618840/(Cₐ+25)
Hₘ - Enthalpy at temperature T.
HV - Heating value
ID - Ignition delay in degrees of crank angle.
Mₙ - Mass of the gases in the cylinder in moles
NA - Kg of air present
NX - Kg of residual gases remaining in the cylinder from the previous cycle.
Pₐₘ - Exhaust manifold pressure in N/m².
\( T_w \) - Wall temperature, K
\( T_g \) - Gas temperature, K.
\( T_1 \) - Temperature at the start of compression, K
\( T_2 \) - Temperature at the end of compression, K
\( U_{T3} \) - Internal energy at the start of expansion period.
\( U_{T4} \) - Internal energy at the end of expansion period
\( V_p \) - Mean piston speed in m/s
\( d_i \) - Diameter of inlet valve, m
\( dM \) - Mass of exhaust gases leaving the cylinder during one degree of crank travel, kg
\( d_v \) - Change of volume in one degree angle of crank travel.
\( h_c \) - Heat transfer co-efficient in kJ/m²/sec/K
\( m_c \) - Mass of gases in the clearance volume