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# Nomenclature

## Symbols

$a$	$\text{m}^2/\text{s}$	Thermal diffusivity
$b$	m	Cylinder bore
$c$	-	Reaction progress variable
$d$	m	Diameter
$e$	J/kg	Internal energy
$f$	Hz	Frequency
$h$	J/kg	Enthalpy
$h$	m	Height
$k$	$\text{m}^2/\text{s}^2$	Turbulent kinetic energy
$l$	m	Piston lift
$l$	m	Length
$l_t$	m	Turbulent length scale
$m$	kg	Mass
$\dot{m}$	g/s	Mass flow
$n$	1/min	Engine speed
$n$	-	Wavenumber
$p$	bar	Pressure
$r$	m	Radius
$s_L$	m/s	Laminar flame speed
$t$	s	Time
$u$	m/s	Velocity
$u'$	m/s	Velocity fluctuations
$u_l$	m/s	Stable laminar burning velocity
$u_n$	m/s	Unstable laminar burning velocity
$v_g$	m/s	Gas expansion velocity
$z$	-	Mixture fraction variable
$z''$	-	Mixture fraction variance

## Symbols (continued)

$A$	$m^2$	Area
$A$	-	Zimont model coefficient
$C$	-	Bradley model coefficient
$C_i$	-	Turbulence model coefficient
$\mathcal{D}$	-	Destruction term of ECFM model
$D$	$m^2/s$	Diffusion coefficient
$F$	-	Burning velocity enhancement factor
$H$	J/kg	Total enthalpy
$L_b$	m	Markstein Length
$P$	W	Power
$P$	-	Probability density function
$\mathcal{P}_i$	-	Source term of ECFM model
$Q$	W	Integral heat release
$R$	J/molK	Ideal gas constant
$S$	m/s	Stable laminar flame front velocity
$S_n$	m/s	Unstable laminar flame front velocity
$T$	K	Temperature
$U_t$	m/s	Turbulent flame speed
$V_{ki}$	$m^2/s$	Diffusion of species $k$ in direction $i$
$V$	$m^3$	Volume
$W$	kg/mol	Molecular weight
$X_i$	-	Volume fraction of species $i$
$Y_i$	-	Mass fraction of species $i$
$Z_T$	-	Tracer variable

## Greek Symbols

$\alpha$	-	ECFM model coefficient
$\alpha$	1/s	Flame stretch rate
$\alpha$	-	Temperature exponent of flame speed correlation
$\beta$	-	ECFM model coefficient
$\beta$	-	Pressure exponent of flame speed correlation
$\gamma$	-	Ratio between unburned and burned densities
$\gamma$	-	Residual gas factor of flame speed correlation
$\delta_l$	m	Laminar flame thickness
$\delta_{ij}$	-	Kronecker symbol
$\epsilon$	-	Compression ratio
$\epsilon$	$m^2/s^3$	Turbulent eddy dissipation
$\eta$	-	Efficiency
$\eta$	m	Kolmogorov length scale