LOGEfuel

Provides detailed and reduced reaction schemes to help you model the combustion of different fuels.

LOGEfuel reaction schemes describe the oxidation and emission formation of various representative fuel mixtures (surrogate fuels). These multicomponent schemes are developed to model combustion features such as ignition delay time or laminar flame speed and are also able to predict the formation of emissions such as soot precursors, NOx or unburned hydrocarbons.

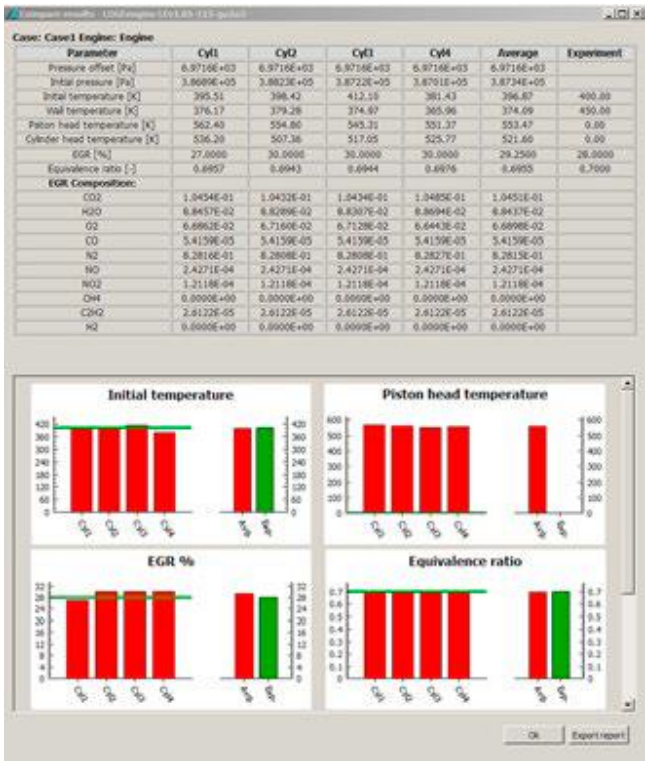
Features include:

- Build up chemistry for poly-aromatic hydrocarbons compatible with common soot models.
- Fast laminar flame speed table generation: for a given multicomponent mixture tables can be generated for a wide range of pressures, temperatures, fuel equivalence ratios and EGR levels.
- Reaction schemes in a detailed and/or reduced state, all non-stiff and available in ASCII standard format.
- Mechanism reduction strategy targeted specifically for engine conditions.
- Compatibility with all LOGE products and common CFD solutions.

Properties	Target	Mixture
RON	95	95
LHV [MJ/kg]	40.1 – 41.8	41.0
Ethanol [vol %]	*5*	5
Aromatic [vol %]	*35*	34
Density [kg/L	0.72 – 0.775	0.74

LOGEfuel includes surrogate fuel models for:

- Hydrogen and Syngas
- LPG (Autogas)
- Gasoline
- Diesel
- Dual fuel solutions (e.g. Diesel / Gasoline)
- Common oxygenated fuels, e.g. from renewable sources, are or can be included.



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LOGE

LOGEfuel contains a set of well validated fuel data for reliable multi-fuel / multicomponent reference fuels.

The Variable Chemistry Concept of LOGEfuel enables merging of mechanisms for different fuels:

- A well validated H2 / C1-C5 chemistry serves as foundation for larger fuels.
- All fuels (see table below) are validated against published experiments in various configurations such as:

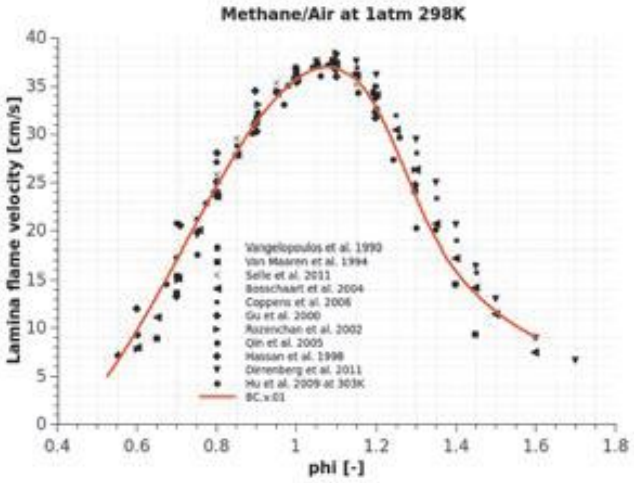
➢ Shock tubes ≫ Ignition delay

➢ Jet stirred reactors ≫Intermediates and emission

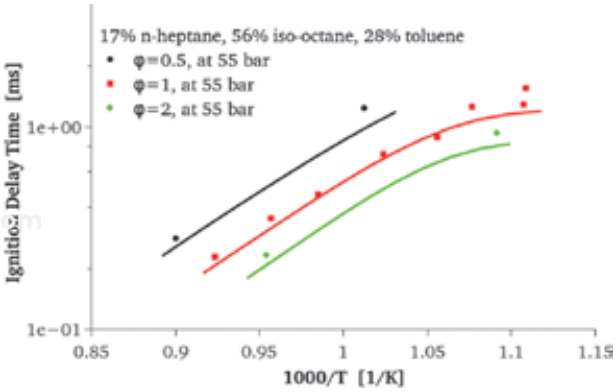
➢ Laminar flames ≫ Flame speed

➢ Burner stabilized flames ≫ Intermediates and Emission

This approach allows the formulation of complex reference fuels e.g. gasoline with varying ethanol content or diesel / bio-diesel mixtures including a detailed description of natural gas combustion.



Predicted and experimental laminar flame speeds of methane at standard conditions.



Predicted and measured ignition delay times of TRF mixtures at different fuel equivalence ratios.

Group	Chemistry	Reference fuel for
Oxygenated	methanol, ethanol, propanol	Gasoline, Bio fuels
Mono-aromatics	toluene, *m*-xylene, *n*-propylcyclohexane	Gasoline, Diesel, Jet
Large aromatics	*α*-methylnaphthalene	Diesel, Jet
Linear alkanes	*n*-petane, *n*-hexane, *n*-hexene, *n*-heptane, *n*-decane, *n*-dodecane	Gasoline, Diesel, Jet
Branched alkanes	*iso*-butane, *iso*-butene, *iso*-pentane, *iso*-octane, *iso*-dodecane	Gasoline, Diesel, Jet
Ester	Methyldecanoate	Biodiesel
Ether	Dimethyl ether	DME, Diesel
Other	methane, ethane, propane, butane and butene isomers, ethylene, acetylene, propene, hydrogen	Natural gas, Biomass to gas / liquid, turbines
Emission	NO_X, soot, formaldehyde, unburned HC and other	Combinable with all fuels

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