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Chapter 3 – Tools and methodology

Nomenclature

Acronyms

AFR	Air-to-Fuel Ratio
AP	Acidification Potential
ATS	Aftertreatment System
BMEP	Brake Mean Effective Pressure
BSEC	Brake Specific Energy Consumption
BSFC	Brake Specific Fuel Consumption
BSFCeq	Equivalent Brake Specific Fuel Consumption
BTE	Brake Thermal Efficiency
BTL	Biomass-to-Liquid
CA50	Combustion Phasing/Crank Angle at which 50 % of the heat from combustion has been released
CC	Catalytic Converter
CCS	Carbon Capture and Storage
CCU	Carbon Capture and Utilization
CDPF	Catalyzed Diesel Particulate Filter
CED	Cumulative Energy Demand
CFCs	Chlorofluorocarbons
CFPP	Cold Filter Plugging Point
CH4	Methane
CI	Compression Ignition
CN	Cetane Number
CNR	Combined Normalized Response
CO	Carbon Monoxide
CO2	Carbon Dioxide
COME	Castor Oil Methyl Ester
CP	Cloud Point
CR	Compression Ratio
DAC	Direct Air Capture
DI	Direct Injection
DICI	Direct Injection Compression Ignition
DMF	Dimethyl Furan
DNPE	Di-n-pentyl Ether
DOC	Diesel Oxidation Catalyst

DOE	Design of Experiments
DPF	Diesel Particulate Filter
ECU	Engine Control Unit
EEPS	Engine Exhaust Particle Sizer
EF	Environmental Footprint
EGR	Exhaust Gas Recirculation
EGT	Exhaust Gas Temperature
EOC	End of Combustion
EOL	End of Life
EP	Euthrophication Potential
ET	Energizing Time
EV	Electric Vehicle
EVO	Exhaust Valve Opening
FAME	Fatty Acid Methyl Ester
FFA	Free Fatty Acid
FID	Flame Ionization Detector
FIS	Fuel Injection System
FSN	Filter Smoke Number
FT	Fischer-Tropsch
FTIR	Fourier-transform infrared spectroscopy
FU	Functional Unit
GBE	Gross Brake Efficiency
GHG	Greenhouse Gas
GM	General Motors
GREET	Greenhouse Gases, Regulated Emissions and Energy Use in Technologies
GTL	Gas-to-Liquid
GWP	Global Warming Potential
HC	Hydrocarbons
HCLD	Heated Chemiluminescence Detector
HHV	Higher Heating Value
HOFP	Human Ozone Formation Potential
HPA	Heteropoly Acids
HRL	Total Heat Released
HRR	Heat Release Rates
HTP	Human Toxicity Potential
HVO	Hydrotreated Vegetable Oil
ICE	Internal Combustion Engine

ICEV	Internal Combustion Engine Vehicle
IDID	Internal Diesel Injector Deposits
IDT	Ignition Delay Time
IMEP	Indicated Mean Effective Pressure
IP	Injection Pressure
IQR	Interquartile Range
ISCC	International Sustainability and Carbon Certification
ISFC	Indicated Specific Fuel Consumption
ITE	Indicated Thermal Efficiency
IVC	Inlet Valve Closing
LCA	Life Cycle Assessment
LCF	Low Carbon Fuel
LCI	Life Cycle Inventory
LCIA	Life Cycle Impact Assessment
LHV	Lower Heating Value
LNT	Lean-Nox Trap
LO	Lemon Oil
LTHR	Low Temperature Heat Release
MFB	Mass Fraction Burned
MPD	Magneto-Pneumatic Detector
N2O	Nitrous Oxide
NDIR	Non-Dispersive InfraRed
NG	Natural Gas
NMVOC	Non-Methane Volatile Organic Compound
NO	Nitrogen Monoxide
NO2	Nitrogen Dioxide
NOx	Nitrogen Oxides
NP	Nanoparticles
NR	Normalized Response
NVH	Noise Vibration and Harshness
ODP	Ozone Depletion Potential
OEF	Organization Environmental Footprint
OESI	Oxygen Extended Sooting Index
OMEx	Oxymethylene Dimethyl Ethers
PAHs	Polycyclic Aromatic Hydrocarbons
PCS	Post-combustion Capture System
PEF	Product Environmental Footprint

PKME	Pistacia Khinjuk Methyl Ester
PM	Particulate Matter
PMFP	Particle Matter Formation Potential
PODEs	Polyoxymethylene Ethers
POME	Palm Oil Methyl Ester
PRR	Pressure Rise Rates
PSO-NS	Particle Swarm Optimization-Novelty Search
PSZ	Partially Stabilized Zirconia
PTG	Power-to-Gas
PTL	Power-to-Liquid
PY	Pyrogallol
RDE	Real Driving Emissions
RME	Rapeseed Methyl Ester
RSB	Roundtable of Sustainable Biofuels
RSM	Response Surface Methodology
SCR	Selective Catalytic Reducer
SI	Spark Ignition
SO2	Sulfur Dioxide
SOC	Start of Combustion/State of Charge
SOI	Start of Injection
SR	Standardized Response
SX	Specific Emissions
TDC	Top Dead Center
THC	Total Hydrocarbon
TTW	Tank-to-Wheel
TWC	Three-way Catalyst
VGT	Variable Geometry Turbine
WCP	Water Consumption Potential
WLTC	Worldwide harmonized Light vehicles Test Cycle
WPO	Waste Plastic Oil
WSD	Wear Scar Diameter
WTT	Well-to-Tank
WTT CI	Well-to-Tank Carbon Intensity
WTW	Well-to-Wheel