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ABBREVIATIONS

A	=	Ash
A_{bp}	=	Biomass Plantation Area (Rai)
A_V	=	Area per Vehicle a Year (km^2 $vehicle^{-1}$ $year^{-1}$)
AD	=	Anaerobic Digestion
AL	=	Ash Landfilling Cost (baht $year^{-1}$)
A_r	=	Reactor Cross-Sectional Area (m^2)
ASTM	=	American Society for Testing Materials
B	=	Benefits from Sale of Produced Electric Energy (baht $year^{-1}$)
B_j	=	The Total Benefits of the j^{th} Year
BCR	=	Benefit Cost Ratio
BG	=	Biomass Gasifier
BGBPP	=	Biomass Gasification Based Power Plant
BGPGS	=	Biomass Gasified Power Generation System
BGT	=	Biomass Gasification Technology
C	=	Fixed Carbon Content
C_0	=	Initial Capital Cost at the Year 0
C_3	=	3-Carbon Acid Phosphoglycerate
C_4	=	4-Carbon Acid Oxaloacetate
C_B	=	Specific Purchased Biomass Cost (baht t^{-1})
C_e	=	Electricity Consumption (kWh)
C_j	=	The Total Costs of the j^{th} Year
C_{oil}	=	An Oil Price (baht L^{-1})
C_p	=	The Employed Personnel Average Fee (Baht $unit^{-1}$ $year^{-1}$)
C_{pp}	=	Power Plant Capacity (kW)
C_{SV}	=	Specific Vehicle Consumption (km L^{-1})
C_{TP}	=	Transport Operations Employed Personnel Fee (Baht $unit^{-1}$ $year^{-1}$)
C_{VT}	=	Specific Vehicle Transportation Cost (baht km^{-1})
CAM	=	Crassulacean Acid Metabolism
CHP	=	Combined Heat and Power

ABBREVIATIONS (CONT.)

CO	=	Carbon-monoxide
COE	=	Cost of Energy (baht kwh^{-1})
CRF	=	Uniform Series Capital Recovery Factor
D	=	Displacement Volume in Cylinder of the Engine (L)
D_A	=	Average Round Trip Transportation Distance (km)
D_{BD}	=	Biomass Distribution Density (t km^{-2} $year^{-1}$)
DCS	=	Devices to Control System
EB	=	Environmental Benefit (baht $year^{-1}$)
EGAT	=	Electricity Generating Authority of Thailand
EP	=	Current Market Price of Produced Electricity with Government Subsidies (baht kWh^{-1})
EPC	=	Energy Policy Committee
EPPO	=	Energy Policy and Planning Office
FB	=	Fluidized Bed
H_g	=	Heating Value of the Gas (kJ m^{-3})
H_s	=	Lower Heating Value of Gasifier Fuel (kJ kg^{-1})
Hp	=	House Power
HC	=	Hydrocarbon
HHV	=	High Heating Value
i	=	Effective Interest Rate (% $year^{-1}$)
I_p	=	Phase Current (A)
IC	=	Investment Cost (baht)
ICEs	=	Internal Combustion Engine
IRR	=	Internal Rate of Return
LHV	=	Low Heating Value of Biomass Fuel (kJ kg^{-1})
LPG	=	Liquefied Petroleum Gas
LPM	=	Liter per Minute
M	=	Biomass Consumption Rate, (t $year^{-1}$)
M_s	=	Gasifier Solid Fuel Consumption (kg s^{-1})
$M_{\%wet}$	=	Biomass Flow Rate as Wet Basis (t $year^{-1}$)

ABBREVIATIONS (CONT.)

$M_{\%dry}$	=	Biomass Consumption Rate as Dry Basis (t $year^{-1}$)
M.C.	=	Moisture Content
MAN	=	Maintenance Cost (baht $year^{-1}$)
MEA	=	Metropolitan Electricity Authority
N	=	Total Annual Working Personnel (unit)
N_{AV}	=	Times of Vehicle per Year of Plantation Area (vehicle $year^{-1}$)
N_{VC}	=	Times of Vehicle Capacity per Square Kilometer a Year (vehicle km^{-2} $year^{-1}$)
n	=	Useful Life of the Asset (year)
n_T	=	Number of Operators Employed in Transport Operations (unit)
NEPC	=	National Energy Policy Council
NPV	=	Net Present Value
OH	=	The Plant Annual Operating Hours (h $year^{-1}$)
$P_{dry\ basis}$	=	Productivity of Biomass as Dry Basis (kg $Rai^{-1}year^{-1}$)
P_i	=	Fuel Power (kW)
P_o	=	Output Power (kW)
P_T	=	Total Population (capita)
PB	=	Payback Period
PEA	=	Provincial Electricity Authority
PEP	=	Phosphoenol Pyruvate
pf	=	Power factor (%)
Q_g	=	Volume Flow of Gas (m^3 s^{-1})
R	=	The Rotation of Short Rotation Forest (year $times^{-1}$)
RE	=	Renewable Energy
RHA	=	Rice Husk Ash
RuBP	=	Riburose Bisphosphate
rpm	=	Number of Revolutions Per Minute
s	=	Distance of circular section area
S_b	=	Biomass Storage (kg $year^{-1}$)
SBGPGS	=	Sustainable Biomass Gasified Power Generation System

ABBREVIATIONS (CONT.)

SERT	=	School of Renewable Energy Technology
SGR	=	Specific Gasification Rate (kg h^{-1} m^{-2})
SPRERI	=	Sardar Patel Renewable Energy Research Institute
SRF	=	Short Rotation Forest
SS	=	Suspended Solid (mg L^{-1})
TB	=	Biomass Transportation Costs (baht $year^{-1}$)
TCI	=	Total Capital Investment (baht)
TD	=	Total Annual Traveled Distance (km $year^{-1}$)
TDS	=	Total Dissolved Solid (mg L^{-1})
TOC	=	Total Operating Cost (baht $year^{-1}$)
TP	=	Transportation Personnel Costs (baht $year^{-1}$)
V	=	Vehicle Cost (baht $year^{-1}$)
V_p	=	Phase Volts (V)
VC	=	Vehicle Capacity (t $vehicle^{-1}$)
VM	=	Volatile Matter
VSPP	=	Very Small Power Producer
η_e	=	The Plant Energy Conversion Efficiency (%)
$\eta_{gasifier}$	=	Gasifier Efficiency (%)
$\eta_{gas\ engine\text{-}generator}$	=	Gas Engine-Generator Efficiency (%)
θ	=	Radian Angle