Notations

A	–	Linear constant; a pre-exponential factor
a, b	–	Van–der–Waal's constants
a_1, b_2	–	Redlich and Kwong defined constants
a, b, c	–	Lattice parameters
at%	–	Atomic percent
C	–	Coulomb
$(C_\alpha)_\infty$	–	Far-zone concentration of α in reactor
°C	–	Degree Celsius
cm	–	Centimeter
d	–	Plane separation
D_P	–	Diffusion coefficient through species βH_2 of α
E	–	Electric energy
E_a	–	Apparent activation energy
E_b and E_e	–	Energy diverted to burner and energy input to IC engine, respectively
E_c	–	Energy per mole of hydrogen, which is stored in the Mg based alloy composition
E_{el}	–	Electrical energy to load per one mole liberated from reactor
E_m and E_X	–	Energy of mechanical and exhaust energy input to Genset, respectively
E_r	–	Energy required to liberate one mole of hydrogen from reactor
eV	–	Electron volt
F	–	Faraday constant; degree of freedom
Fe^{af}, Mg^{af}, Mn^{af}, Ni^{af}, Pd^{af}, Ti^{af}, V^{af} and Zr^{af}	–	Atomic fraction of Fe, Mg, Mn, Ni, Pd, Ti, V and Zr, respectively
Fe^{aw}, Mg^{aw}, Mn^{aw}, Ni^{aw}, Pd^{aw}, Ti^{aw}, V^{aw} and Zr^{aw}	–	Atomic weight of Fe, Mg, Mn, Ni, Pd, Ti, V and Zr, respectively
Fe^{w}, Mg^{w}, Mn^{w}, Ni^{w}, Pd^{w}, Ti^{w}, V^{w} and Zr^{w}	–	Weight of Fe, Mg, Mn, Ni, Pd, Ti, V and Zr, respectively
g	–	Gas
gm	–	Gram

h	–	Hour
$H_{(ch)}$	–	Chemisorbed hydrogen
$H_{(ph)}$	–	Physisorbed hydrogen
H^O	–	Protium in crystalline lattice
HP	–	Horse Power
k	–	Ratio of specific heats (C_P/C_V); rate constant
K	–	Kelvin
k_α	–	Convective transport coefficient of species α at $r = r_p$
kg	–	Kilogram
kJ	–	Kilo Joule
K_P	–	Equilibrium constant of the hydriding reaction
k_r	–	Reaction rate constant at $\beta/\beta H_2$ interface
kV	–	Kilo Volt
kWh	–	Kilo-Watt hour
l	–	Liter; liquid
M	–	Metal; mass of synthesized alloy composition
m	–	Mass of absorbed or desorbed hydrogen; meter
mA	–	Micro-ampere
M_β	–	Molecular weight of species β
M_c %	–	Mass percent hydrogen during absorption
M_d %	–	Mass percent hydrogen during desorption
meV	–	Milli electron Volt
MH_x	–	Metal Hydride (α–phase)
MH_y	–	Metal Hydride (β–phase)
min	–	Minute
MJ	–	Mega Joule
mm	–	Micro-meter
mol	–	Mole
MPa	–	Mega Pascal
MW	–	Mega Watt
n	–	Number of moles; Avrami exponent; integer value
N	–	Number of chemical species
n_1	–	Number of moles in a reaction chamber before charging / discharging
n_2	–	Number of moles in a reaction chamber after charging / discharging
nm	–	Nano-meter

P	–	Pressure
P_1	–	Initial pressure
P_2	–	Final pressure
P_{H2}	–	Equilibrium pressure; plateau pressure
P_O	–	Equilibrium pressure at t=0
r	–	Radius
R	–	Gas constant
$\left(R_0^2\right)_{Charging}$	–	Coefficient of correlation for charging
$\left(R_0^2\right)_{Discharging}$	–	Coefficient of correlation for discharging
r_p	–	Mean radius of spherical powdered phase of reactant
s	–	Solid; second
$	–	US dollar
t	–	Wall thickness; time; crystallite size / grain size
t^*	–	Dimensionless time
T	–	Temperature
T_1	–	Room temperature
T_2	–	Charging / discharging temperature
T_H	–	High temperature source
T_L	–	Low temperature source
T_M	–	Medium temperature source
V	–	Volume; cell voltage / potential
V_1, V_2, V_3 and V_4	–	Different valve numbers
V_a	–	Volume of reaction chamber without reactor connected
V_p	–	Volume of connected pipelines between valves V_2 and V_3
V_{pr}	–	Volume of connected pipeline between valve V_3 and rector
V_R	–	Volume of reservoir
V_r	–	Volume of reactor
wt%	–	Weight percent
X	–	Magnification
$\hat{X}$	–	Expectation value of variable X
x, y	–	Electron efficiency
X_1, X_2	–	X – rays

X_H	–	Fraction of hydrogen into metal
$\hat{Y}$	–	Expectation value of variable y
Z	–	Valency

Greek Symbols

Å	–	Angstrom
α	–	Solid solution of H_2; fraction reacted of H_2; ramp rate
α_c	–	Charging reaction constant
$\hat{\alpha}_c, \hat{\beta}_c$	–	Estimated values of the constants for charging kinetics
α_d	–	Discharging reaction constant
$\hat{\alpha}_d, \hat{\beta}_d$	–	Estimated values of the constants for discharging kinetics
$\alpha(r_0)$	–	Interstitial sites in the α–phase
$\alpha(r_\beta)$	–	Interstitial site in the α–phase at the α/β interface
β	–	Metal hydride phase; full width at half maximum
$1/\beta_c$	–	Charging time constant
$1/\beta_d$	–	Discharging time constant
β_M	–	Full width at half maximum of XRD peak
$\beta(r_0)$	–	Interstitial sites in the β–phase
$\beta(r_\alpha)$	–	Metal/gas interface of the spherical particles
β_S	–	Full width at half maximum of XRD peak of standard material
Δ	–	Path difference
$\Delta G°$; ΔG	–	Gibbs free energy
$\Delta\overline{H}$	–	Specific enthalpy
ΔH; ΔH_0	–	Standard enthalpy of formation
ΔP	–	Pressure drop; differential power
ΔQ	–	Net heat liberated
ΔS; ΔS_0	–	Standard entropy of formation
$\Delta\overline{S}_{Pseudo}$	–	Pseudo specific entropy
η_S	–	Efficiency of system
λ	–	Wavelength of X–ray
π	–	Number of phases
Φ_1	–	Ratio of the external diffusion resistance and diffusion resistance in product layer

Φ_2	–	Ratio of the diffusion resistance in product layer and reaction resistance at solid/gas interface
ρ_β	–	Density of species β
σ_{YY}	–	Principal stress
θ	–	Angle of diffraction
$\overline{v}$	–	Molar specific volume
ω	–	Acentric factor
χ_β^t	–	Hydrogen converted mass fraction of β at time t

Subscripts

a	–	Activation; reaction chamber without reactor
af	–	Atomic fraction
aq	–	Aqueous
aw	–	Atomic weight
b	–	Burner
c	–	Charging; composition
ch	–	Chemisorption
d	–	Discharging
e	–	Energy input to IC engine
el	–	Electrical energy to load
∞	–	Far infinitive zone
H	–	High; fraction of hydrogen
L	–	Low
P	–	Particle
p	–	Pipeline between valves V_2 and V_3; powdered phase
ph	–	Physisorption
pr	–	Pipeline between valves V_3 and reactor
M	–	Maximum; medium
m	–	Mechanical energy
r	–	Reactor
R	–	Reservoir
S	–	Standard sample; system
W	–	Weight
X	–	Exhaust