

LIST OF ABBREVIATIONS

| | |
|--------|--|
| HEV | Hybrid Electric Vehicle |
| TRS | Thermionic Regeneration System |
| TEC | Thermionic Energy Converter |
| TEG | Thermoelectric Generators |
| ECMS | Equivalent Consumption Minimization Strategy |
| IC | Internal Combustion |
| EV | Electric Vehicle |
| CVM | Cell voltage measurement |
| SOC | State of Charge |
| SOH | State of Health |
| SOF | State of Function |
| CVS | Constant Volume Sampling |
| PIC | Particle- In-Cell |
| EDM | Electric Discharge Machining |
| DRMOGA | Divided Range Multiobjective Genetic Algorithm |
| TSI | Thermal Stress Index |
| CMM | Coordinate Measuring Machine |
| CAD | Computer Aided Drawing |

LIST OF SYMBOLS

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|------------------|--|
| V | Voltage Supply for an electric heater |
| R | Resistance of heater |
| I | Current (A) |
| m_g | mass flow rate of gas kg/min |
| C_{pg} | specific heat of gas KJ/Kg K |
| T_2 | Input Temperature |
| T_1 | Output Temperature |
| M_g | Mass flow rate of gas Kg/sec |
| μ | Viscosity Kg/m.sec |
| D | Outer Dia. of Pipe |
| N_{ud} | Nusselt Number |
| Re_d | Reynolds Number |
| Pr | Prandtel Number |
| J | Current Density A/mm ² |
| T | Emitter Temperature |
| Φ | Emitter Work Function |
| A | Richardson Constant |
| K_B | Boltzmann's constant |
| T_{exh} | Engine exhaust temperature |
| h_{exh} | Exhaust manifold inlet-specific enthalpy |
| C_{pexh} | Exhaust gas specific heat |
| \dot{m}_{intk} | Intake port air mass flow rate |
| \dot{m}_{fuel} | Fuel mass flow rate |
| \dot{m}_{exh} | Exhaust mass flow rate |

| | |
|-------------------|---|
| $y_{in,fuel}$ | Intake fuel mass fraction |
| $y_{exh,i}$ | Exhaust mass fraction for $i = \text{CO}_2, \text{CO}, \text{HC}, \text{NO}_x, \text{air}, \text{burned gas}, \text{and PM}$ |
| $\dot{m}_{exh,i}$ | Exhaust mass flow rate for $i = \text{CO}_2, \text{CO}, \text{HC}, \text{NO}_x, \text{air}, \text{burned gas}, \text{and PM}$ |
| T_{brake} | Engine brake torque |
| N | Engine speed |
| $y_{exh,air}$ | Exhaust air mass fraction |
| $y_{exh,b}$ | Exhaust air burned mass fraction |