



The Socioeconomic and Political Factors for Achievement of Net Zero Scenario

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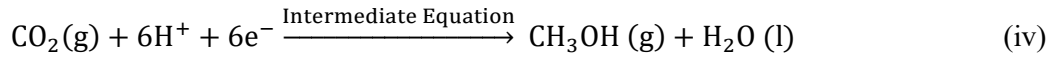
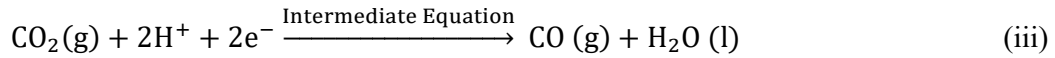
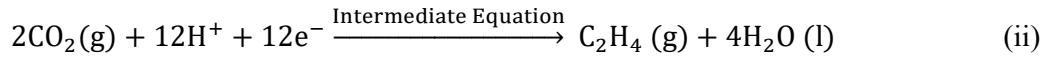
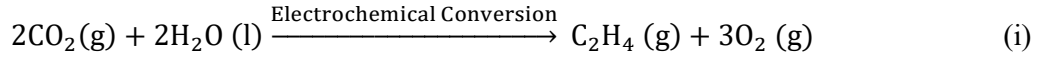
Abstract

The role of friction at rubbing mechanical surfaces had evolved carbon load for modulation of work-life balance in reducing CO₂ loadings. Friction, lubrication, and wear of engineered mechanical contacts accounted for 1/3rd of energy dissipation for researching in a domain of green technology. The mechanical efficiency of transport sector of leading urban cities is gradually enhanced by reinforcement of Hybrid and EVs.

Keywords: Friction, Human thermodynamics, Socioeconomy, Political regulations

1. Introduction

The word tribology was the first time coined by Peter Hans Jost in the writing of a socioeconomic report for saving of economy as a function of rubbing or sliding mechanical contacts [1-2]. The fuel energy consumed in passenger cars to overcome friction with braking friction excluded is 28% of the fuel energy, 21.5% of the fuel energy is expended to move the car, and tribology can save 290 Mt CO₂ emission for strengthening socioeconomic domain [3]. The wear and wear-related failures are the major concern for condition monitoring to be a factor of economic savings by as much as 95% in ten years by tribological solutions, about 74% by friction reduction, and 26% by wear protection [4]. The friction and wear impact of the energy consumption, CO₂ emissions, and costs have been analysed due to the large-scale implementation of new tribological solutions based on the industries, transportation, and other parts of our society [5]. The transport sector alone contributes 25 percent of CO₂ atmospheric growth, in addition to energy, buildings, industries, and residual factors for the advancement of carbon dioxide capture to create economical products [6]. Re-searching for a technological means to utilize environmental CO₂ evolved from mechanical machineries fuel combustion has the potential to reduce emissions as per the advancement of sustainability by electrochemical conversion of CO₂ into hydrocarbons such as ethylene for producing raw materials useful for lubricants [7-8]. The electrochemical conversion equation is interpreted for understanding of sustainability from tribology such as;



2. Environmental reactions

Friction is not a fundamental type of force and is predicted from the action-reaction hypothesis in consideration of supramolecular chemistry, interface materials properties, state variables, and environmental third bodies for a synergistic materials-energy balance [9]. The supramolecular interactions of nanomaterials over lipid membrane, cytotoxicity, environmental reactions, economy, and sustainability have been observed during political lockdowns [10-11]. The Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme with Phase I & II was initially launched in April 2015 for urban Electric Mobility for providing financial subsidy to electric vehicles manufacturing industries [12-13]. The hybrid technology transforms sink loss into useful mechanical work using electric motor and battery observe macroscopically on roads of India for achievement of environmental sustainability by enhancement of mechanical efficiency of engines [14]. The climate action of anthropogenic fossil fuel combustion has streamlined green technology towards reducing environment harm for achievement of environmental sustainability from CO₂ absorption, storage, and utilization into useful matter [15-17]. The rubbing of surfaces, interfaces, and interphases with environmental influence energy dissipation is included (Table 1) for effective materials and energy interface.

Synergy	Nomenclature
Friction, lubrication, and wear consume ~23% (119 EJ) of the global energy, annual GDP savings amount to 1.4%, and the CO ₂ reduction to 3.14 Gt for a longer term by modulation of rubbing contacts of machines from transport, energy, manufacturing, and buildings	Tribology
Passengers' cars and transport, fossil fuel-based energy generation, buildings and mixed land use, manufacturing industries altogether evolve	Carbon Emission

carbon footprints for creating reactive forces over green health of planet or promotion of green technology and advancement of green tribology

Environmental reaction of charged and oxidised air suspended particulate matter, black carbon, and nanoparticles evolved from anthropogenic activities in urban atmosphere influencing general health, reactive oxygen species (ROS), and oxidative stress expressed from covid#19 pandemic in India **Cytotoxicity**

Faster Adoption and Manufacturing of Electric vehicles manufacturing industries adopted the scheme in April, 2019 for electric mobility to reduce carbon emissions in streamline with Paris Agreement for Rs 10,000 crores budget allocation for manufacturing of 500,000 EV3W, 55,000 EV4W and a million two wheelers **FAME**

The leading manufacturers in India are manufacturing best fuel-efficient cars (≥ 25 percent mechanical efficiency than conventional engines) have more than one engine (conventional and electric motor), running on either petrol or diesel namely; **Hybrid Vehicles**

(i) Toyota Urban Cruiser Hyryder (ii) Maruti Suzuki Grand Vitara (iii) Honda City Hybrid e: HEV (iv) Toyota Camry Hybrid (v) Toyota Vellfire Hybrid

Table 1 Fundamental nomenclature useful for underlying environmental action and reaction from rubbing mechanical contacts, mechanical contact with natural surface, and health effect of “Cytotoxicity” observed in India during 21st century for advancement of sustainability through tribology by reducing CO₂ loadings with biosphere as per the requirement of good health and well-beings

3. Conclusions

The energy dissipation at rubbing engineered contacts have evolved CO₂ footprints due to industrial revolution for last few decades. The following expression is included for fundamental understanding of friction influence on socioeconomic indicators;

- The socioeconomic frontier of CO₂ emission at rubbing mechanical contacts for achievement of rational mechanical efficiency of machines

- The electrochemical conversion of CO₂ to hydrocarbon such as ethylene/methane for reducing emission to improve sustainability

The human body is a thermodynamic system for consuming fuel energy, delivering mechanical work for achievement of an optimum mechanical efficiency above resting, and release residual energy to environment of biosphere.

Author Contribution

Author wrote paper by inclusion of a few author preprints

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Conflict of Interests

None conflict of interests to declare

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Data availability statement

Expressed academic data is borrowed from enumerated references

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