

Prizes to be Presented at
International Hydrogen Fuel Cell
Conference (IHFC-2019)
in Mumbai during 8th – 10th Dec. 2019

1st Rs.50000 /-
2nd Rs.25000/-

Including:
Plaque / Free Conference Registration Worth
Rs.16,000/- for Two participants / To and Fro
Travel by Train 2nd AC



Hydrogen Association of India
In association with
International Association of Hydrogen Energy, USA

HY CONTEST - 2019
On
Modeling the Hydrogen Refueling Station for
Heavy Duty Bus Applications

For the UG / PG
/ Research
Students of
Institutes &
Colleges

Problem Boundaries / allowed assumptions:

- Station to be designed for refueling 50 & 100 buses operating on hydrogen fuel cells (Two models to be proposed) for travelling 400 kms per day. Realistic assumptions on the fuel economy or energy consumption can be made based on literature. Sources to be cited in the report.
- The source of hydrogen can be natural gas (centralized – 100 kms transportation and decentralized - onsite) and biomass gasification (centralized – 100 kms transportation and decentralized – onsite). The conversions rates based on the feed-stocks, pressure output / temperature of the process unit, emission factors, energy needed for processing etc. can be gathered from the literature and suitably reported with references.
- The hydrogen production cost from natural gas \$2.5-\$3 /kg and biomass gasification \$2- \$2.5 / kg can be assumed as a variabe, if needed.
- Students are free to consider multiple compression technologies, multiple storage technologies (compressed / liquid etc.) at the station in developing the model.
- Appropriate buffer storage and multiple dispensers can be considered for enhancing the reliability of the station. The dispensing technology shall meet the SAE J2601 standard with pre-cooling option
- The costing of each component can be obtained from the literature or from the suppliers of the specific equipment with suitable references / back-up documents.
- Safety devices shall be considered and appropriately mentioned in the report.
- Indian specific data to be used for all calculations

Output of the Study

- Levelized cost [Rs/kg] of hydrogen refueling
- Contribution of station components to levelized cost of hydrogen.
- Capital, operating and maintenance costs of station components (e.g., compressors, cryogenic pumps (if liquid hydrogen is considered), pre-cooling units, and dispensers)
- Annual and cumulative cash flows by station components and total infrastructure.
- Land area, energy use, efficiency, leakage, boil-off and net emissions considering energy supplied by Indian grid
- Utilization factor of the station including idle time calculation
- Sensitivity analysis w.r.t fuel cost, utilization factor, number of vehicles to be refueled and electricity prices

The final report through email should reach not later than 31st October 2019

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