Impact of H$_2$ in power yielded by thermoelectric generators

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Motivation and Context

**Thermoelectrics**
- vast range of applications
- reliability, low maintenance
- use the heat from a small flame
- can be employed at any scale
  - small power generator
  - follow the trend of portable devices

**Biomass AD is a promising technology**
- waste management tool
- competitive cost of electricity (0.06€/KWh to 0.14€/KWh) [1]
- raw Biogas has weak combustion properties

**Hydrogen is drawing attention**
- combustion of pure $H_2$ has challenges to overcome
- superior combustion properties allow it to be used as fuel dopant

[1] IRENA, Renewable Power Generation Costs in 2018
Objectives

- Optimize TEG power output with a flame as direct heat source varying...
- Wall material
- Heat exchanger
- Fuel and flame conditions
- Velocity field
- Flame structure
- Quenching distances
- Effect of H₂ in flame wall interaction as biogas dopant on...
- Develop mathematical model