

# Exergy Analysis of Latent Heat Thermal Energy Packed Beds

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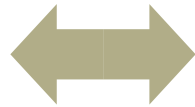
# Introduction

## *Problems*

Global warming

Energy availability  
versus demand

Cost



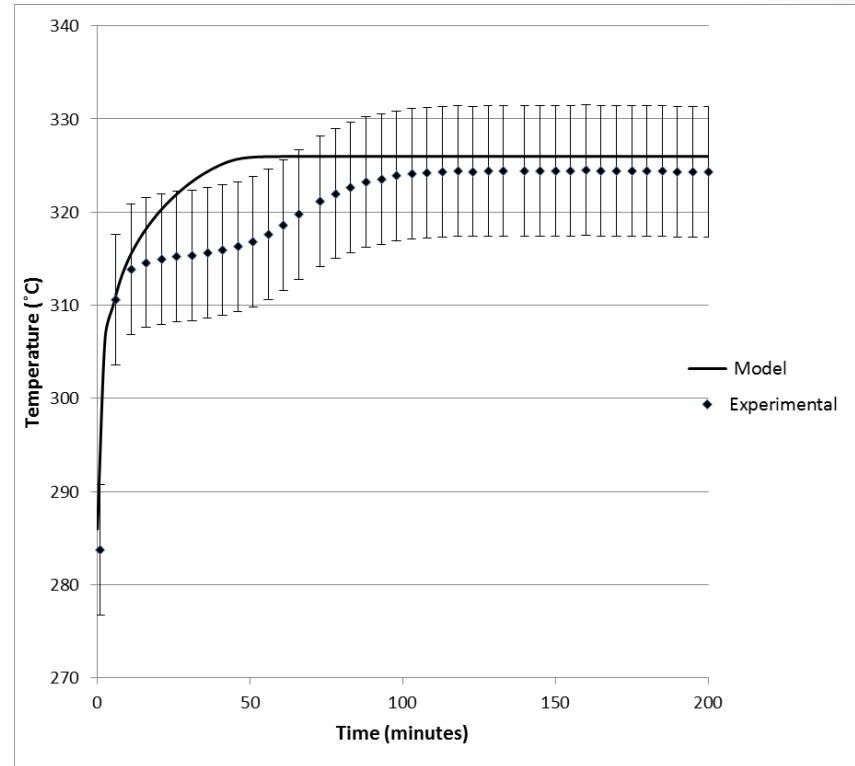
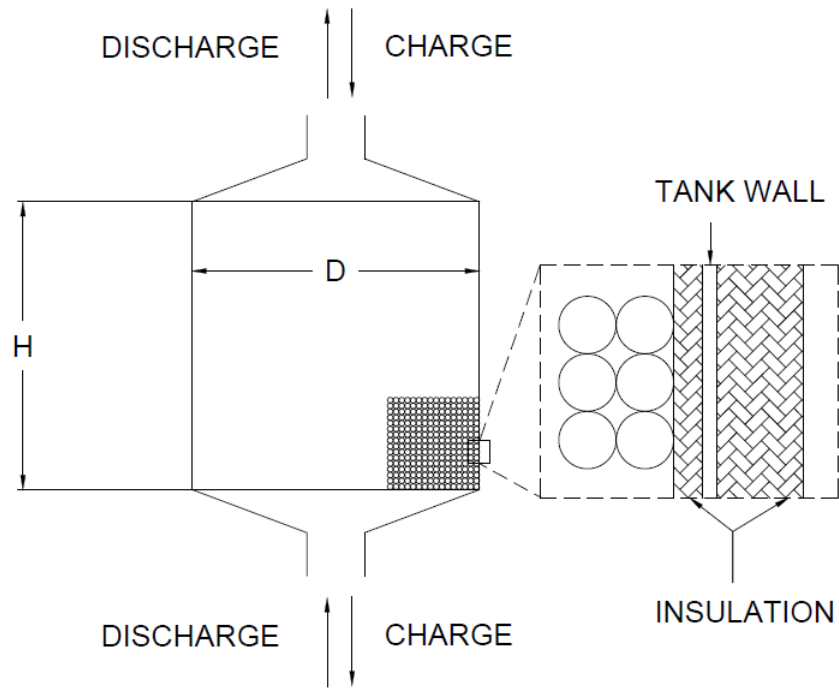
## *Solutions*

Green energy

Use as base load  
Implement storage

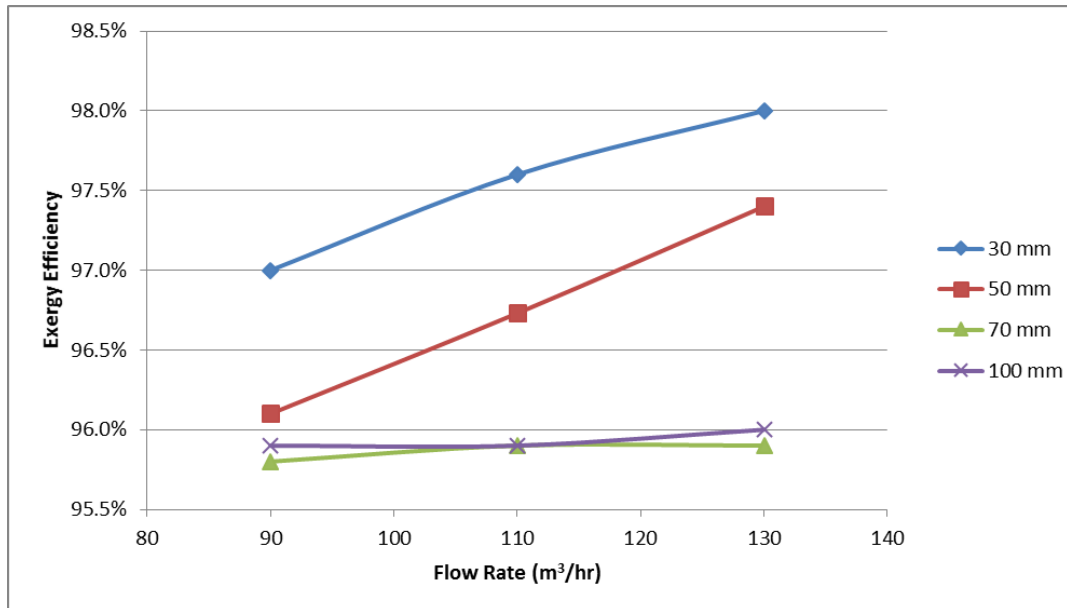
Latent Heat storage

# Analysis - Modeling



# Results

## Exergy Efficiency vs Flowrate and Particle Diameter



## Difference between Energy and Exergy

| Flowrate<br>(m <sup>3</sup> /hr) | Particle Diameter (mm) |      |      |      |
|----------------------------------|------------------------|------|------|------|
|                                  | 30                     | 50   | 70   | 100  |
| 90                               | 0.5%                   | 0.5% | 0.7% | 0.7% |
| 110                              | 0.5%                   | 0.6% | 0.7% | 0.8% |
| 130                              | 0.5%                   | 0.6% | 0.7% | 0.8% |

# Conclusion

- Lower particle size has less energy to exergy losses
- Increasing the flowrate or decreasing the particle size increases the exergy efficiency
- Room for optimization
- Affect of temperature ranges should be analyzed