

# Loop Heat Pipe for Satellite Orbiting Mars

Fall 2000

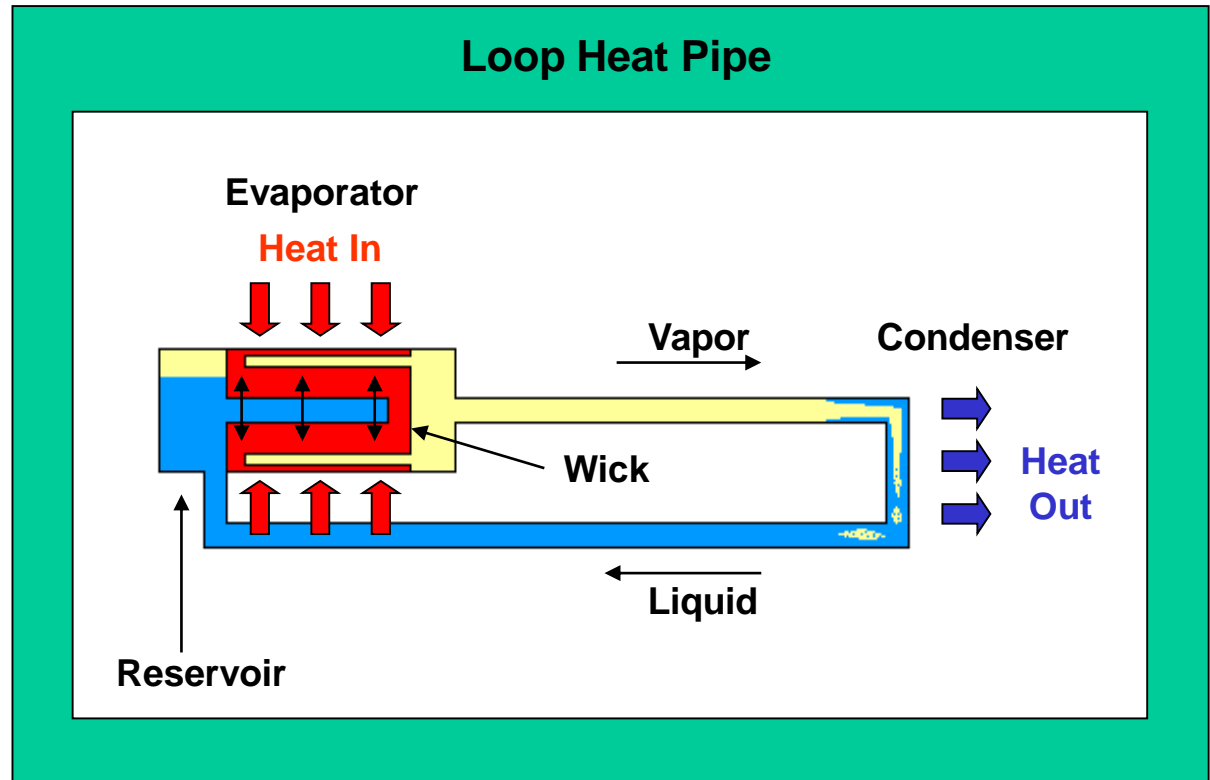
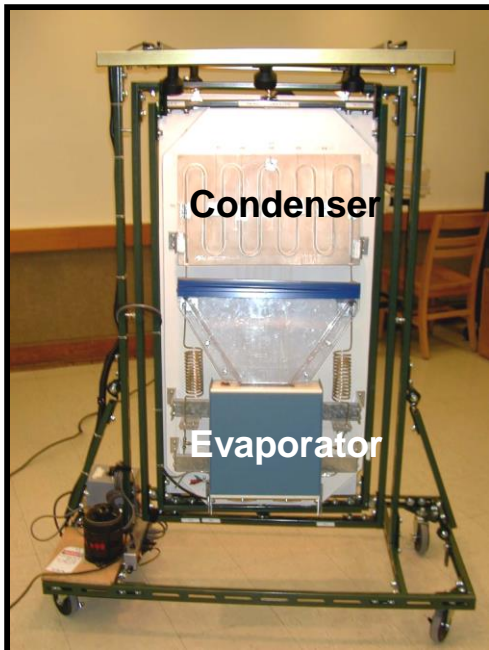
**Project:** Loop Heat Pipe (LHP) for Thermal Management of a Satellite Orbiting Mars

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## Objectives

- (1) Demonstrate effective heat dissipation from electronic hardware to space radiator for a satellite orbiting Mars
- (2) Understanding effects of reduced gravity on loop heat pipe operation



# LHP Testing on

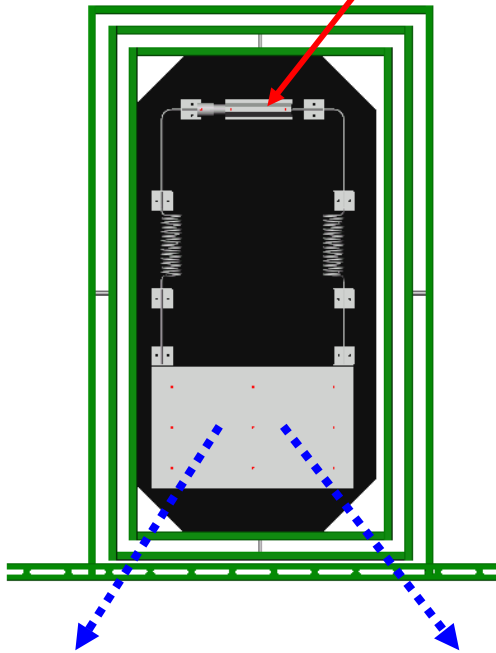
versus

# Mars Orbit

## Earth



Heat Generated  
By Electrical  
Components



Heat Loss  
Due to  
Convection

Heat Loss  
Due to  
Radiation

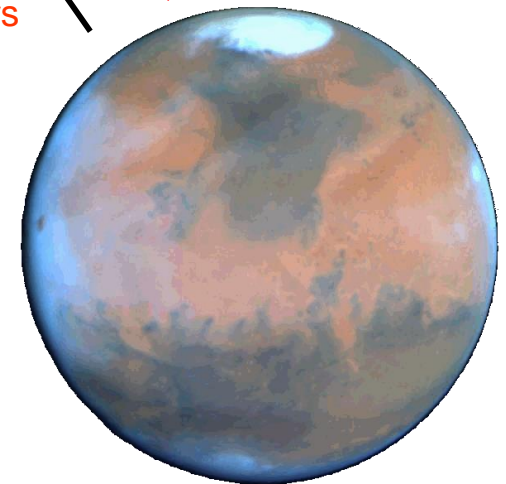
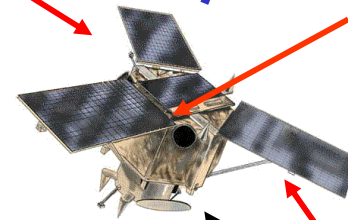
Direct Solar  
Irradiation

Heat Emitted  
by Satellite to  
Deep Space

Heat Generated  
By Satellite  
Equipment

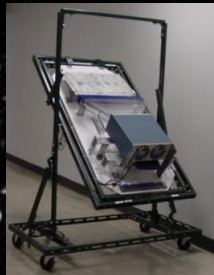
Solar Irradiation  
Reflected by Mars

Irradiation  
from Mars



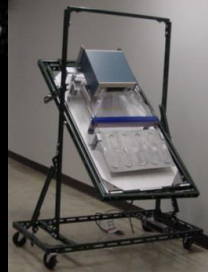
# Test Orientations

Reservoir on Top



C1

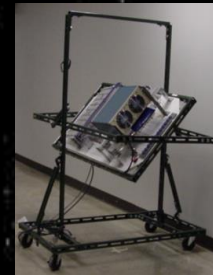
Evaporator on Top



C2



C3



Reservoir on Bottom



C4



C5

Evaporator on Bottom

# Worst Case Performance: Evaporator above Condenser (Case C1)

